Impact of Occupational Hassles and Supervisory Style on Perceived Occupational Stress

by

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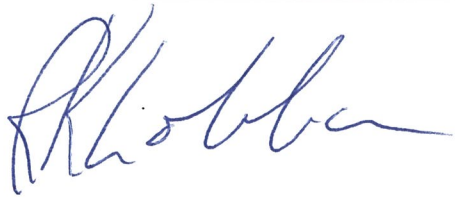
* 

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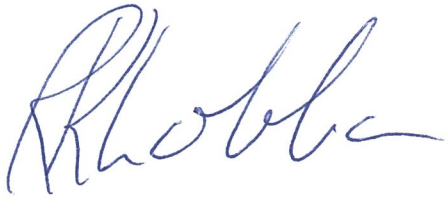
* 

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Abstract

The study of occupational stress and its effect on health has been the subject of increasing research and public awareness in the last twenty years. Research has identified a number of significant factors related to a variety of outcomes, but much of the variation in individual responses has not yet been explained. This study expands the understanding of the role of supervisory characteristics and daily occupational hassles with job satisfaction.

The Abitibi-Price Supervision and Stress (APSS) research included 187 employees from 7 branch locations and 3 job types in a cross-sectional study of the relationships between supervisory style, occupational hassles, previously studied chronic occupational stressors (job demand, decision latitude, role conflict, role ambiguity) and job satisfaction. Measures of individual differences and objective organizational and job characteristics were included in the analysis.

Individual differences in affect intensity and job experience were related to the appraisal of occupational hassles as threatening. In addition, the APSS research found a close link between organizational financial performance and the stress process.

The APSS study provided significant evidence of a relationship between supervisory style and perceived chronic stressors and job satisfaction. Some evidence was found for a relationship between objective measures of supervisory style and the perceived stressors, but the stronger relationship indicated for perceived measures of style supports a role for cognitive perception and appraisal in the stress process. Increased supervisory delegation was related to decreased chronic stressors and increased job satisfaction. Increased supervisory direction corresponded to increases in the job demand stressors, but was not related to the level of role stressors. Direction

was highly related to job satisfaction, with the highest job satisfaction apparent in the middle of the direction range. The measure of supervisor-employee relationship was strongly related to all stressors and satisfaction, with decreased stressors and increased satisfaction related to increased quality of relationship. Measures of perceived supervisory style explained more of the variation in job satisfaction than did the previously studied chronic stressors. The role of daily occupational hassles in the stress process was supported, with an identified relationship to job satisfaction, but not to the other chronic stressors.

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Chapter 1
Introduction

The study of occupational stress and its effect on health has been the subject of increasing focus in the last twenty years, not only in terms of formal research (as discussed in Chapter 2), but also in terms of increasing public awareness from organizational and governmental points of view.

Most large organizations are concerned for the health of their employees. They realize that people are a valuable resource, and that employee health, both physical and psychological, is crucial to the successful running of a company. Although much of the focus has historically been on safety issues relating to workplace accidents, increasing effort has been aimed at occupational stress and general health issues.

Popular management literature has begun to reflect this perceived problem. In a management briefing titled "Healthy Companies: A human resources approach" (Rosen, 1986), the American Management Association addressed the issue of stressful work conditions. They outlined various corporate programs in place at major companies such as IBM, DuPont, Herman Miller and Fisher Price designed to protect workers against the effects of unhealthy work conditions. In April, 1988, Newsweek wrote about "Stress on the Job"; in Spring, 1989, Inside Guide wrote "Controlling Stress is Power"; and in March, 1990, Fortune asked "Is your company asking too much of you?". These articles, all in popular business magazines, examined the growing perception of the workplace as a source of stress to individual employees.

Organizational consulting groups have also responded to the demand from large organizations for a response to this problem. The Assessment and Development Group in Toronto, Canada provides "The Occupational Stress Indicator Questionnaire"

designed to measure both the sources and effects of occupational stress in client corporations. The "Human Resource Climate Survey" implemented in large corporations by Bauer & Associates, Inc. includes sections on stress and potential stressors. In a popular management training program on organizational change, OD Resources, Inc. incorporates a section on stressful situations and reactions to them. The success of these consulting groups provides evidence of the growing corporate interest in occupational stress.

Government departments have also recognized the increasing importance of stress in the workplace. The National Institute for Occupational Safety and Health in the United States has linked chronic diseases with occupational safety by listing cardiovascular disease, lung disease, cancer and psychological disorders as important health problems related to the work environment and the psychosocial stressors in the workplace. Some experts put the overall cost to the U.S. economy as high as $150 billion a year (Miller et al., 1988). Statistics Canada has estimated that in Canada, stress costs businesses up to $12 billion annually. (Workers' Compensation Board, 1991). These costs include absenteeism, loss of productivity, increased medical costs, increased insurance costs, and increased legal costs.

Claims to the Workers' Compensation Board in Ontario for stress related disabilities had reached a sufficient level that the Board was required to develop a specific policy to deal with it. In the 4 years from 1989 to 1992, the Workers' Compensation Board of Ontario heard 25 stress claims, and 6 resulted in benefits being granted to the worker for an emotional disability caused by chronic workplace stress (Workers' Compensation Board, 1992). The Board decided that the workplace stressors were a significant contributing factor to the development of the worker's emotional disability. In order to balance the needs of all constituencies, the Board has had to draw a careful line. In each case where compensation was awarded, there was strong psychiatric evidence supporting the case. In addition, the workplace stressor was

objectively verifiable, and not purely based on the worker's perception. It was recognized, however, that workers could react differently to situations, and as long as the claimant's reaction was reasonable, it was acceptable if they reacted with more sensitivity than most workers might.

Despite the increased interest in, and awareness of, occupational stress, "present knowledge of job stress is not sufficient for rational preventive action, even if it is combined with evaluation" (Levi, 1990). Researchers have yet to identify with sufficient definitiveness primary causes or intermediary steps that are readily susceptible to practical preventative intervention in the workplace. Organizations need well-defined implementable strategies to change the work environment in a manner that results in lower employee stress. These strategies do not currently exist. Many corporations have tried to take advantage of individual level stress reducing programs, but with limited success. In a survey of 1,700 companies the U.S. Department of Health and Human Services found only 4.2% reported reduced health-care costs from stress management programs (Miller et. al, 1988).

In this research, supervisory style, a characteristic of the work environment that can be potentially modified, was examined with respect to its role in the stress process. Chapter 2 contains an overview of different research directions in the stress field, while Chapter 3 focuses on research in the particular areas of interest to this work. Chapter 4 outlines the research design, and Chapters 5 to 8 summarize results of analyses of the survey. In Chapter 9, the overall conclusions are presented, and areas for further study are identified.

Before I begin a more formal discussion of the potential role of occupational stress on disease, I need to define stress. Although many research articles start any such discussion with comments about the lack of consensus regarding the definition of stress, the current paradigm has probably evolved beyond that. Some of the multiple

definitions, conceptual confusion and varying vocabularies that have historically existed in the field still exist, but they can almost all be positioned under a definition of stress which is essentially an organizing concept. Stress can be defined as an integrated biopsychosocial response to events that are perceived to be harmful, and includes physiologic, cognitive, behavioral and environmental components. Most current models acknowledge the existence of all components of this multifactorial definition, but emphasis and focus occasionally diverge.

Within this definition of stress as an organizing concept, definitions are required for other key terms. *Stressors* are the events, people or thoughts that lead an individual to perceive that some potentially threatening demand is being made on him or her. *Strain* is the set of near-term outcomes of stress. It can include physiologic components such as increased blood pressure and heart rate, psychological components such as job satisfaction, depression and negative self image, and work practice components such as increased absenteeism and lower productivity. These strains may affect longer term health.

Chapter 2
Overview of Stress Research

Because of the disparate disciplines that have investigated the stress process, the literature is extensive and varied in focus. Rather than attempt a comprehensive review of all areas, this chapter provides an overview of the directions being followed in stress research. In Chapter 3, the areas most germane to the present research are then examined more critically and in greater detail.

Research in the stress area appears to fall into a number of general categories: major life events, chronic life stressors, hassles, occupational stress, and moderators of the stress process. Each of these areas is discussed in the sections below.

2.1 Life Events

Life events research has focused on the relationship between acute major life events and morbidity and mortality. In response to suggestions that major life events increased the risk of physical illness, Holmes and Rahe (1967) developed the Social Readjustment Rating Scale (a revised version of the Schedule of Recent Experience). This scale, which included major events such as divorce, marriage and births, was developed to produce a single measure that summarized major life events. Each type of event was assigned a different weight (termed life change units - LCU) to adjust for varying levels of incident demand. In early retrospective and prospective studies on navy personnel, Rahe, Holmes and their colleagues found that the number of illnesses was positively correlated with the number of life change units as measured by the SRRS. Shortly after its introduction, a large number of studies by a variety of

investigators (see Holmes and Masuda (1974) and Rabkin and Struening (1976) for reviews) used the scale. In both retrospective and prospective investigations using numerous heterogeneous samples (military personnel, employees of large corporations, clinic patients) results have consistently shown a significant relationship between increasing life change units and sudden cardiac death, myocardial infarction, and a variety of other, non-coronary diseases including leukemia and diabetes.

Other groups have developed life stress scales along similar lines, but with different events or target audiences. Coddington (1972) developed a modification related to childhood which utilized different life experiences for preschool, elementary, junior high school and senior high school age groups. Dohrenwend et al. (1978) developed the Psychiatric Epidemiological Research Interview - Life Events Scale (PERI-LES) as part of a study in New York City on psychiatric research in community populations. The New Haven Measure (Paykel, 1974) used a checklist of 60 items to measure events occurring up to six months prior to the onset of illness. The Life Events and Difficulties Schedule (Brown & Harris, 1978; Brown and Harris, 1989) has been used to study a number of outcomes, both organic and functional (Creed, 1993), including myocardial infarction (Neilson et al, 1989), stroke (House et al. 1990), and depression (Brown & Harris, 89).

The SRRS and similar scales are, however, limited in their power and in their representation of the complete stress concept. The gross correlation of environmental events (such as divorce) with final health outcome (MI or death) does not consider the many facets and mediating factors that have been identified in other work as being integral to the concept of stress. For instance, individual differences in appraisal, coping styles, or social support are not evaluated. As a result, the correlation typically noted in life events studies has been low, in the area of .12 to .30 (Tanig, 1982). Without the large sample sizes that have been characteristic of this research, it is unlikely that a significant relationship would have been identified. The absence of

mediating factors in this type of research, however, does not invalidate the results. The addition of mediating factors would most likely result in improved power and higher correlations, as well as a better understanding of the underlying mechanisms in life event stress. It is less likely that the identified relationships would disappear.

Researchers in this area have tried to respond to the concern about the absence of individual cognitive factors. Subsequent revisions have used many of the same life events, but in addition asked respondents for the degree of positive or negative impact (Sarason et al., 1978; Dohrenwend & Dohrenwend, 1978). This approach allows at least a post-event evaluation that conceptually corresponds to a cognitive appraisal of the event. Studies by Lazarus and his colleagues (Lazarus, 1966; Lazarus and Folkman, 1984 for example) have been instrumental in advancing the acceptance of a cognitive appraisal process in the stress paradigm. Cognitive appraisal is seen as a process through which a person evaluates whether a particular contact with the environment is important to the individual. Based on past experience, the contact is first evaluated as being irrelevant to the individual, a positive state of affairs, or a negative state threatening the individual's well being. Both positive and negative appraisals may lead to stressful situations. Subsequently, an individual evaluates the sufficiency of the resources available to them to handle the situation and chooses an appropriate course of action.

An additional concern with respect to results from life events research is the potential confounding of measures of stress with outcomes. Some researchers (Dohrenwend and Dohrenwend, 1974; Hudgens 1974; Dohrenwend et al., 1984) have suggested that some of the events on the Holmes and Rahe list could be symptoms of physical or mental illness. Hudgens (1974) suggests that "29 of 43 events on Holme's Social Readjustment Scale are events that are often the symptoms or consequences of illness."

2.2 Chronic Life Stress

Some researchers have suggested that the focus on life events as a major source of life stress is unreasonable (Pearlin, 1989). They suggest that events recorded in the various inventories are simply markers of continuing problems, and that the chronic conditions responsible for these events are the underlying causes of life stress. These chronic life stressors are defined as the enduring problems, conflicts and threats that people face in their lives. The number and diversity of such potential chronic stressors, and the measurement problems encountered in their study, has limited research into these areas.

One chronic stressor that has received some attention is unemployment. Hepworth (1980) found that the unemployed sample in her study had a significantly poorer subjective well-being than the employed sample and Warr (1982) reported reduced psychological well-being among the unemployed. Others have suggested a relationship between physiological outcomes and unemployment. Kasel et al. (1975) reported a relationship between high unemployment and stress related illnesses. Keefe (1984) reported that research has demonstrated relationships between cardiovascular and urinary diseases and unemployment. A relationship between unemployment and stressful life events has been shown in other research. Frost and Clayson (1991) compared a stress scale using Holmes and Rahe's life events to employment status for 562 subjects and found a significant positive relationship between unemployment and mean life event stress. Similarly, in a study of technical-professional subjects, Little (1973) found significantly higher levels of stress in unemployed subjects than employed subjects.

Research has shown that low income and low socioeconomic status are associated with higher rates of mental disorder. One review (Neugebauer et al., 1980) found that psychopathology was two and a half times more prevalent in the lowest

social class compared to the highest. In a nine year study, Kaplan et al. (1987) found an increased risk of depressive symptoms among those with inadequate incomes. Hall et al. (1985) found that low income was positively associated with the extent of depressive symptoms among low income mothers of young children. It has been suggested (Belle, 1990) that low income individuals are at a higher risk of experiencing potent chronic stressors such as inadequate housing, dangerous neighbourhoods, and financial uncertainties, while experiencing limited social support.

Two types of role strain are typically examined in research in chronic life stress, but with inconsistent results. Role overload exists when demands on energy and stamina exceed an individual's capacities, and role conflict entails incompatible demands of multiple roles, such as spouse, parent and paid worker (Pearlin, 1989). Both these factors are most commonly found in occupational and homemaker roles. Barnett and Baruch (1985) found that multiple role involvement in work and family was associated with diminished psychological well-being. Pearlin (1975) reported housework overload increased the likelihood of depression in employed wives. Kopelman et al. (1983) found that role conflict had a negative relationship with life satisfaction. Coverman (1989), however, reported mixed results. Although role overload was related to marital satisfaction, it was not significantly related to either well being or psychophysical symptoms of being tired, nervous or dizzy. Role conflict was negatively related to both job and marital satisfaction for men, but only to job satisfaction for women. Role conflict was not related to well-being. Others have suggested that multiple role involvements enhance well-being, rather than exert a negative effect. Vergrugge (1986) found that physical health of both sexes improved as role involvement increased. Thoits (1983) reported similar findings with psychological health.

2.3 Hassles

A third area of focus in the stress research has been the study of minor and frequent demands, termed hassles, that characterize everyday transactions with the environment. Hassles can be conceptualized as measuring either acute or chronic life stress. Events being measured are short-lived by nature, and represent an immediate impact on the individual. On the other hand, although these minor events can vary over time, they can be seen as measuring a chronic and on-going aspect of the individual's environment. The cumulative effect of these minor events (microstressors) is hypothesized to cause a variety of stress outcomes including psychological symptoms (Kanner et al., 1981), digestive complaints (Delongis et al., 1982) and negative mood (Wolf et al., 1989), and hassles have, in many instances, been shown to be better predictors of disease than major life events.

The Hassles Scale (Kanner et al., 1981), one of the early measures focused specifically on daily hassles, was found to be a better predictor of psychological symptoms than major life events. In other work, Caspi et al. (1987) found a significant relationship between daily stress to mood, and Holahan et al. (1984) found a significant relationship between daily events and psychological symptomatology using the Hopkins Symptom Checklist. Brantley et al. (1987) found that the daily stress inventory - a measure of daily hassles - was significantly related to urinary cortisol and urinary vanillylmandelic acid (a metabolite of epinephrine and norepinephrine). They found average cortisol and VMA levels significantly higher on days with a high number of hassles. In the study by Delongis et al. (1982), acute hassles were compared to acute disease. Daily hassles were compared to physical symptoms such as headaches, backaches, respiratory symptoms and digestive complaints. Using 75 married couples, they found that high daily hassles were positively related to reports of illness on the same day or next day. Wolf et al. (1989) compared hassles to life events for 55 freshman medical students and found hassles to be a better predictor of negative mood

than life events. Similarly Chamberlain and Zika (1990) found that for each of four different groups, hassles were significantly better predictors of psychological well being and mental health than life events. In a longitudinal study, Lu (1990) found a significant relationship between hassles and psychological symptoms over and above other identified risk factors.

A few studies have attempted to evaluate the stability or consistency of daily hassles over time to justify the interpretation of hassles as a chronic stressor, rather than simply another measure of acute events. Kanner et al. (1981) found test-retest correlations of hassles over a nine month period to be 0.79. Delongis et al. (1988) found monthly correlations of 0.82. Chamberlain and Zika (1990) found three and six month retest correlations between 0.60 and 0.80 for the four groups tested. Taken together, these studies suggest some measure of stability for daily hassles, at least in time frames up to one year, and thus support the use of hassles as a chronic stressor.

Some researchers have hypothesized a relationship between daily hassles and major life events. Hinkle (1974) has suggested that major life events could operate by affecting the person's pattern of daily hassles. For example, death of a spouse could result in an individual experiencing a completely new set of hassles as they find themselves responsible for weekly banking or shopping chores that had been previously handled by the spouse. Major events might have an impact on health through their disruption of social relationships, habits and patterns of activity such as divorce resulting in the need to develop new companionship. Similarly, Felner et al. (1983, 1986) have argued that major events should be viewed as markers of more dynamic transitional processes. They felt that it was important to focus on the changes and disruptions in the day to day events in addition to the precipitating major life event. Alternatively, Kaplan (1979) has suggested that daily hassles might operate by disrupting characteristic coping processes.

In a similar manner to research in the life events field, the potential confounding of hassles with outcomes has been raised as an issue of concern. Dohrenwend et al. (1984) found Kanner's scale confounded with psychological symptoms. Coyne and Holroyd (1982) found measures overlapped with Hopkins Symptom Checklist of measures of psychological distress. To address this concern, Lazarus et al. (1985) calculated correlations between hassles and psychological symptoms in Kanner's data for two subsets of hassles: those identified as potentially confounded with symptoms, and those not identified. Results were nearly the same. Similarly Rowlinson and Felner (1988) categorized their data based on potential for confounding, and found no difference in identified relationships.

Another concern is introduced by Watson and Pennebaker (1989) who suggested that relationships between stress measures such as Kanner's Hassles scale and reported health complaints may be confounded by individual negative affectivity (NA). Negative affectivity is a trait-like predisposition to experience aversive mood states including anger, disgust, scorn, guilt, fearfulness and depression. They found NA to be correlated with the Hassles scale ($r = 0.43$ for frequency, and $r = 0.34$ for intensity), and with common self reported measures of health. Furthermore, they found that NA was generally not correlated with objectively measured indices of health. This pattern of relationships suggests that NA may account for some of the observed correlations between hassles and self-reported health.

These findings have led many researchers (Ganster et al. (1982), Gardner (1982), Jackson and Schuler (1985), Frew and Bruning (1987) for example) to argue for the use of physiologic stress measures rather that psychological measures when addressing outcomes of stress.

2.4 Occupational Stress

Occupational stress has been the focus of a large body of research that, not unexpectedly, has attacked the problem from a variety of angles. Stressors have generally fallen into two categories: those that can be objectively defined and measured, and those that are subjectively defined and thus incorporate a cognitive component. The outcomes of occupational stress research have included items of psychological, physiological and behavioral natures.

Despite the dichotomy of stressor characterizations, they reflect a common theme. Implicit in the entire area of occupational stress is the assumption that some factor or factors in an organizational environment lead to strain. The objective measures attempt to identify specific items that lead to strain. The subjective measures can be positioned as intervening variables between the environment and strain which include perception and appraisal components.

Some of the work that has focused on objectively measurable characteristics of the work environment (i.e. those that are inherent in the job), has examined the relationship of these work measures to disease. Tasto and Colligan (1978) investigated the impact of rotating shifts on 1200 nurses and 1200 food processors. In both occupations, those on shift work had more serious illnesses and more accidents. In a study of Swedish sawmill workers by Frankenhaueser and Gardell (1976), a higher incidence of cardiovascular and psychosomatic disorders was observed when machine paced workers were compared to non-paced workers. Other work environments have been shown to be related to the development of peptic ulcers. Cobb and Rose (1973) found air traffic controllers to have increased incidence of ulcers and Mendeloff and Dunn (1971) reported that young women who work and have family responsibilities have more ulcers than those with only one type of responsibility.

Other studies have examined the relationship between objective characteristics of employment and endocrine measures of strain. Higher levels of epinephrine have been identified with objective occupational characteristics such as hours worked, machine paced (versus self-paced) work, repetitiveness of work, physical constraints and changes in the work environment. Frankenhaeuser (1979) found that when Scandinavian workers were asked to work overtime, there was a significant increase in epinephrine levels. Dutton et al. (1978) studied paramedics and found higher levels of epinephrine during working days compared to days off. Similarly, Astrand et al. (1973) found increases in urinary catecholamines in fisherman when working compared to measurements taken on days off. When the method of pay was changed from piecework to salary (or vice-versa) which resulted in a significant change to the work environment, Timio and Gentili (1973) found urinary epinephrine and norepinephrine were significantly elevated. Cobb (1974) found that temporary unemployment caused by the closing of a factory resulted in elevated epinephrine levels which persisted for as long as a year.

The work by Karasek and his colleagues (Karasek, 1979; Karasek et al., 1981; Karasek at al. 1982, LaCroix and Haynes, 1987, Spector et al. 1988, Schnall et al., 1990) has looked at both perceived and objective characteristics of the environment that relate to job demand and decision latitude. Their research finds that as job demand increases (the job demands placed on the worker), and decision latitude decreases (the discretion permitted the workers on deciding how to meet those demands), occupational stress increases. The research also "strongly supports the demand-control model with regard to CHD events and symptoms" (Repetti, 1993). Because this area is integral to the current research, a more detailed discussion and analysis occurs in Chapter 3.

Variables from role theory have also been investigated in regard to their relationship with stress. Perceived role ambiguity, when there is uncertainty about what one is supposed to do on a job or the lack of necessary information, and perceived

role conflict, when job behaviors for an individual are inconsistent within the job or incompatible with personal beliefs, have been studied. In work by Kahn (1973), Leigh et al. (1988) and Stout and Posner (1984) these role variables have been shown to be significantly related to job satisfaction. The importance of role variables in occupational stress is discussed in greater detail in Chapter 3.

Others have examined the relationship between role ambiguity and physiological measures of strain, but with mixed results. Howard et al. (1986) found no relation between role ambiguity and serum cholesterol, but found significant relationships with blood pressure and triglyceride levels. Steffy and Jones (1988) found a relationship between perceived job stressors of role ambiguity and work overload with job dissatisfaction and psychosomatic complaints (self reports of headaches, fatigue, sleeping problems), but could find no relationship between perceived job stressors and the physiologic measures of blood pressure, HDL, triglycerides or uric acid.

Perceived underutilization of abilities, insufficient participation on the job, and uncertainty about job future were highly correlated with job dissatisfaction and boredom in a sample of 310 men in a variety of occupations (Caplan and Jones, 1975). Similarly, Margolis, Kroes and Quinn (1974) found non-participation to be correlated with job dissatisfaction and depressed mood in a large national sample of U.S. workers. Ganster et al. (1986) found positive relationships between perceived work underload and job dissatisfaction and depression.

The Person-Environment Fit model (Caplan et al. 1980, French et al. 1982) incorporates the concept of perceived stressors in a more quantifiable manner. This model employs a measure obtained by subtracting the subject's measure of the perceived environment from a measure of the desired environment, and hypothesizes that this will have a stronger relationship with occupational strain than either the objective or perceived measures. Their work, which found that poor P-E fit was the

best predictor of strain, can be viewed as a quantitative measure of a person's appraised ability or inability to handle a situation. The environment desired by an individual in the P-E fit model would include a component derived from individual knowledge of what environment he or she could handle effectively. By including this measure, the P-E fit model includes an attempt to measure the stressor after cognitive appraisal has occurred.

A number of other researchers have used the person-environment fit model as a way of measuring perceived stressors. In addition to the work by Caplan and colleagues (Caplan et al. 1980, French et al. 1982), Burke and Weir (1980) used the model to test the impact of having responsibility for people on psychosomatic symptoms in a sample of male and female administrators in correctional institutions. As the fit between desired and actual responsibility levels improved, symptoms decreased. Similarly, Greenglass (1984) found a relationship between role conflict and psychosomatic symptoms in female managers using the P-E fit model. Arsenault and Dolan (1982) compared job satisfaction to P-E fit in subjects employed in a variety of hospital jobs and found a significant positive relation between fit and satisfaction.

In a recent work, Edwards and Harrison (1993) questioned the use of algebraic differences as a measure of fit. Because of concern regarding the artificial constraints on the relationship between person and environment, concern about potential confounding of the Environment (E) and Person (P) measures with strain, and concern about losing valuable information about the inherently three-dimensional nature of the relationship, Edwards and Harrison reevaluated the relationships in the French et. al (1982) data using more complex terms including higher order terms of P and E, and product terms. As a result, they were able to explain some of the anomalies in the original data, and increase the amount of variation explained (although total variation explained remained low at $R^2 = .059$). They concluded that simple algebraic differences should be abandoned in favour of analysis of higher order terms.

Some researchers have focused on the relationship between psychological outcomes of the stress process and physical measures, but results have been inconsistent. Friedman and Rosenman (1959) found that serum cholesterol was correlated with workplace stress. Howard et al (1986) found a relationship between occupational stress and blood pressure and triglycerides. On the other side, a number of studies have not found the hypothesized relationship between these psychological strains and physiological outcomes. Caplan and Jones (1975) found no relationship between self-reported satisfaction and blood pressure, serum cholesterol or serum uric acid. Henrix et al. (1985) found no relationship between serum cholesterol and job satisfaction. Frew and Bruning (1987) compared role stress characteristics with physiological measures that included blood pressure, but found no significant impact.

Although psychological strains in occupational settings have been fairly consistently correlated with stressors, attempts to identify a relationship between these strains and later disease are not well documented, nor completely consistent. In a study on aging, Palmore (1969) found that the best predictor of longevity was work satisfaction. Kornhauser (1965), and Gechman and Wiener (1975) found a positive relationship between job satisfaction and mental health. On the other hand, when Ronan et al. (1974) tried to replicate the findings across a broader occupational distribution, no correlations were found. Sales and House (1971) found a negative relationship between job satisfaction and mortality from heart disease, but not for other measures of morbidity. House et al (1979) found "clear evidence of association" between eight measures of perceived stress in factory workers and angina and diagnosed hypertension. Falger (1979) found an association between occupational stress defined as work overload, and myocardial infarction.

2.5 Moderators

It is generally accepted that the stress process is moderated at various stages by a number of individual difference and environmental factors.

Notions of coping style as moderators of the stress process have been heavily influenced by Lazarus' work. Coping is, however, a concept which can be confounded with both the appraisal process and the situational determinants in the environment. In theory, coping refers to "the person's cognitive and behavioral efforts to manage ... the internal and external demands of the person-environment transaction that is appraised as taxing or exceeding the person's resources" (Folkman et al, 1986). Because of the inward nature of the experience, however, research into coping strategies has had to rely primarily on self-report procedures, that may be confounded with the appraisal process or be remembered incorrectly as time passes. Despite this concern, coping is still considered a critical moderator of the person-environment transaction.

Coping styles can be dichotomized into emotion-oriented (which focuses on reducing the emotional arousal from stress) and action-oriented (which focuses on altering the events themselves) (Newton, 1989). Lazarus and Folkman (1984) suggest that the style of coping chosen depends on how the problem is appraised and the repertoire of available tactics. If a person confronts a problem that is appraised as capable of being changed, then active coping is more likely to occur. Most often, however, both coping styles are hypothesized to occur concurrently (Folkman and Lazarus, 1980).

There is evidence that coping style is influenced by situational and individual determinants. A number of researchers (for example Folkman and Lazarus, 1980) have found the choice of coping styles from day-to-day to be quite variable. McCrae (1984) found the type of stressor was consistently and significantly related to the choice of coping mechanism. When comparing stressors categorized by loss, threat or challenge,

he found some evidence that more concrete actions were associated with threatening stressors than those associated with loss. Newton and Keenan (1985) suggested that the nature of the stressful incident can moderate the choice of coping strategy. Young engineers who took direct action as their choice of coping style were more likely to describe the stressful incident being coped with as technical versus non-technical in nature. Puffer and Brakefield (1989) suggested that degree of competence can affect coping style, with increased perceived competence resulting in more active coping. Coping styles may also be affected by feelings of control or mastery. Moos and Billings (1982) found that people with high feeling of self-efficacy were more active and persistent in their efforts to handle threatening situations than those with lower feelings of self-efficacy.

Despite the general acceptance of the concept of coping in the stress process, there is little empirical research on the effectiveness of coping in actual work settings. Pearlin and Schooler (1978) investigated the effectiveness of coping in the realms of marriage, parenting, household economics and work. Although coping was found to reduce strain in the first three areas, it had little effect on work strain. Ashford (1988) found that coping during organizational transitions at AT&T had only a limited buffering effect on the stress process. Shinn et al. (1984) did not find a buffering effect for coping strategies regarding burnout in human service professions. The difficulty in identification of a significant effect could be the result of individual difficulty in distinguishing the different stages of the appraisal process. If subjects cannot properly distinguish the stages of identification of a threat, evaluation of the adequacy of resources, and choice and implementation of a coping strategy, then self-reports of coping style may not be valid.

Some work has been done to evaluate the impact of coping styles and coping success on the physiological outcomes of stress in laboratory settings. Obrist et al. (1978) found that when stressors were used that forced either active or passive coping,

active coping (in response to a reaction time test) produced significantly higher systolic blood pressure and heart rate than passive coping (in response to a cold pressor test). These results could, however, be confounded by the type of test, rather than strictly measures of coping reactions. Mason (1975) found different physiological patterns when persons responded to stressors with fear rather than anger; Obrist (1976) found differences with vigilance rather than action, and Dembroski (81) found differences between hostile and calm approaches. This research suggests that the impact of physiological arousal can vary with coping styles and more research in this area is probably warranted.

Like other constructs in the stress process, coping has been the subject of some concern because of the reliance of its measurement on self-reports. Tunks and Bellissimo (1988) have raised a number of issues regarding the validity of the coping concept. They suggest that the content validity is suspect in that a comprehensive list of strategies may not exist, and that any attempt to measure the construct is difficult because of the linkage between different coping styles. A question remains on the construct validity of the concept. Insufficient work has been done to show that differences in individual's coping skills are related to a number of independent outcomes. Furthermore, Tunks and Bellissimo question whether a questionnaire or interview can truly access the thinking that leads to coping. Subjects may not be able to effectively identify the coping strategies used.

Another factor implicated in the stress process though a wide body of research is Type A Behaviour Pattern (TABP) In a meta-analysis, Harbin (1989) analyzed 71 studies that employed psychological tasks to produce physiological activation. From this work he concluded that Type A individuals were more responsive than Type B individuals in terms of heart rate and systolic blood pressure in response to cognitive and psychomotor stimuli; increased physiological reactivity was evidenced for male Type As, but not female; the Structured Interview was more sensitive to identification

of A/B differences than Jenkins Activity Survey; arithmetic problem solving tasks were less effective in identifying A/B differences; age was not a significant predictor of differences in responsivity and evidence was inconclusive for diastolic blood pressure, cortisol secretion and catecholamine production;

Other research has suggested that TABP may be a moderator in the stress reactions, either at the appraisal stage, or the coping stage. Houston (1983) found that individuals with TABP had significantly larger reactions to high challenge situations than their non-TABP counterparts. This psychophysiological reactivity (measured on cardiovascular and endocrine measures) was in response to laboratory stressors, but may also extend to more naturalistic settings. Ivancevich et al. (1982) found that Type A nurses reported more work overload, more time pressures, and more role conflict. Glass et al. (1980) found that the higher reactivity observed in TABP individuals varied depending on circumstances. Greater plasma epinephrine was observed only when additional harassment by a competitor was present. Newton and Keenan (1985) examined comparative coping styles. They found TABP individuals more likely to use coping styles involving venting of feelings or acceptance. In contrast, Latack (1986) found TABP individuals to be more likely to use active control strategies such as direct action or reappraisal. These two experiments were, however, significantly different in the point in time at which the evaluation of coping strategies was performed. The latter study evaluated coping after sufficient time had passed to allow the individuals to rationalize their actions. Cottington et al (1986) examined suppressed anger, a key sub-component of TABP, as a potential modifying factor in the association between perceived job demands and blood pressure. He found suppressed anger significantly modified the relationship between hypertension and three measures of job satisfaction used in his study. The prevalence of hypertension was greatest among those men who suppressed their anger and who reported more job stress. In response to laboratory

stressors, Dembroski et al. (1978) and MacDougall et al (1981) found that the potential for hostility significantly increased cardiovascular reactivity to stressful tasks.

Social support is another factor that has been hypothesized to mediate reactions to stressful events and that has been supported by research results. Singer and Lord (1984) suggest that social support may act as a type of coping that prevents stress because events are perceived as less threatening. Berkman and Syme (1979) found that social support was a significant predictor or mortality after controlling for other behaviours and initial health status - fewer social relationships were correlated with higher mortality. In studies of Canadian air traffic controllers, MacBride (1978) found various measures of social support to be negatively associated with emotional distress. Caspi et al. (1987) showed that social supports moderated the effects of stressful daily events on self-reported mood. In the occupational area LaRocco et al. (1980) found that social support buffered the effects of perceived role and load stress on depression, while Wells (1982) found that social support reduced the likelihood that work demands would be perceived as overloading. Attempts to relate social support and blood pressure have, however, generally failed to find a significant effect (House, 1981; Gore, 1978).

A further construct that may affect the stress process is affect intensity. Affect intensity describes individual differences in the intensity of response to emotion-provoking stimuli. Although the intensity of the stimulation, or background excitability factors (such as fatigue, hunger, caffeine intake) may influence the magnitude of response, research (Larson, Diener and Emmons, 1986; Diener et al., 1985, Larsen & Diener, 1985) has found that affect intensity is a stable individual difference measuring the strength of individual emotions when the level of stimulation (objectively rated) in daily events is controlled.

2.6 Conclusions

An overview of the research that has occurred in the field of stress research identifies a number of areas needing additional study in occupational settings.

The issue of acute versus chronic situations needs to be addressed. Much of the work focused on demonstrating a plausible biological mechanism leading to morbidity is based on laboratory experiments that use acute stressors, while naturalistic investigation of the occupational characteristics that influence stress focus on chronic conditions. Very little work bridges this gap. Furthermore, although the stress process in general populations has addressed the issues of acute stressful life events, hassles and chronic conditions, the occupational research has focused only on chronic conditions. The role of daily hassles, either as a chronic or acute factor has not been tested. A model needs to be developed and verified that integrates both acute and chronic situations in the occupational stress paradigm.

This same concern extends to the biological mechanisms. Although chronic stressful situations have been related to heart disease, researchers have had only limited success identifying physiological outcomes of these chronic stressors that correspond to the biological research into mechanisms and risk factors for CHD. On the other hand, Frankenhaeuser's work (1967, 1972), for example, has identified large cardiovascular and neuroendocrine responses to short term stressors and Obrist et al. (1978) found different responses to acute stressors with type of coping. There is, however, little evidence that this type of short term physiologic responses is a CHD risk factors. The sum of the research is indicative of potential mechanisms, but still requires significant advancement to fully understand the nature of the relationship.

In the occupational setting, a variety of objective and perceived stressors including job demand, decision latitude, role conflict and role ambiguity have received significant attention. Although these appear to be tapping dimensions of the work

environment that are related to the stress process, are there other factors that may be more effective in predicting occupational stress? From a more pragmatic view, organizations continue to require evidence regarding factors such as supervisory styles or shift hours that are readily understood by managers and modifiable within organizational constraints. Factors that provide feasible opportunities for organizations to modify should be addressed to allow development of potential interventions.

Individual differences have not received concentrated effort in occupational settings. Although widely accepted conceptually, more evidence is required to support the role of coping and other personal characteristics.

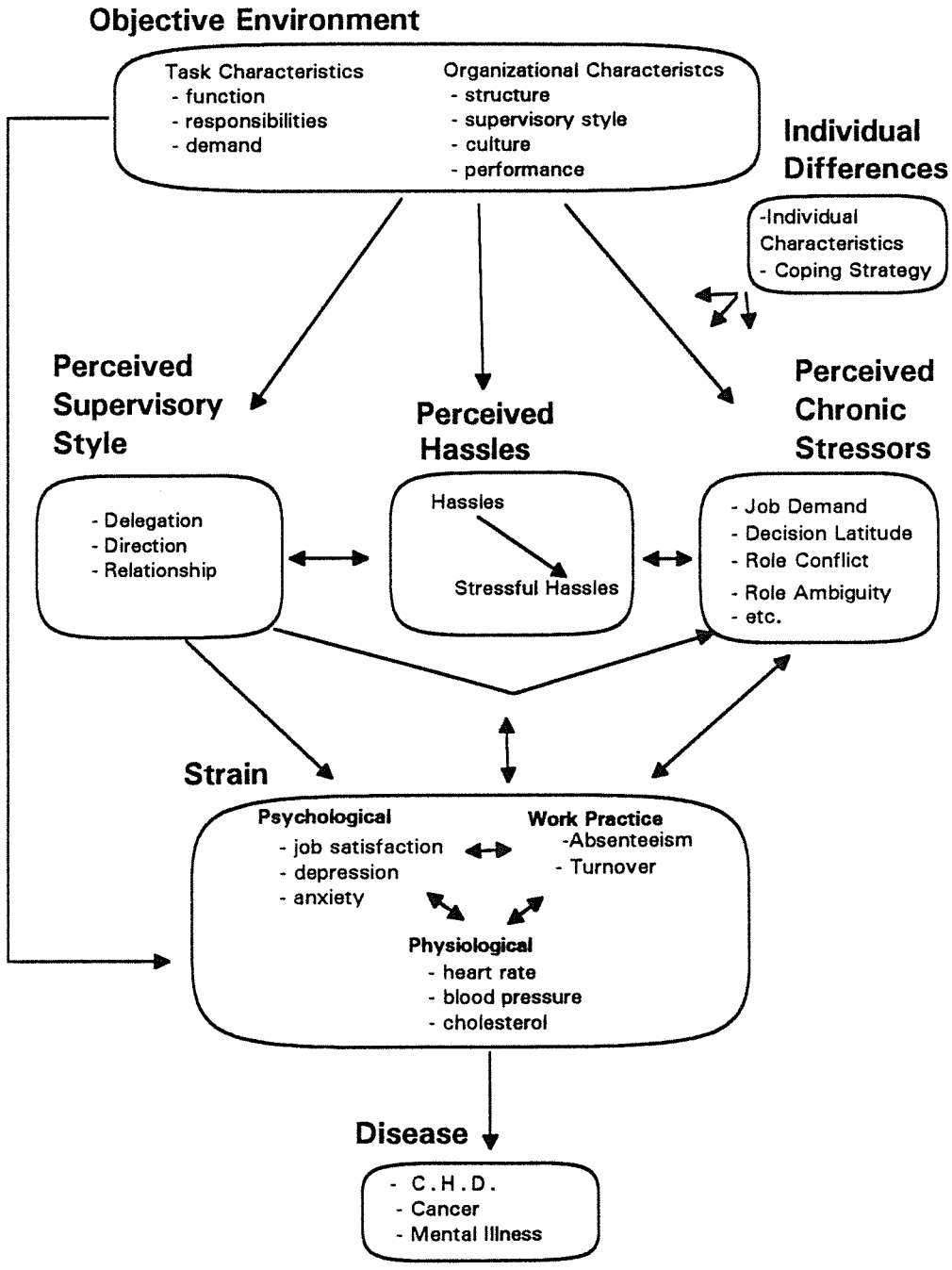
The reliance on self-reports in stress research is a continuing concern. Although they provide a means to access individual perceptions, objective measures of stressors should also be used when possible to ensure measures of stress, strain and moderating factors are not confounded.

Chapter 3
Research Focus

In this thesis, research is focused on a number of areas of particular import to stress in a large organizational setting that have been identified as requiring further study. Firstly, the concept of hassles which is evolving in the life stress literature has been largely ignored in the occupational stress area. The evidence of an effect in life stress indicates a potential opportunity to better understand the occupational stress area through the use of a similar construct. Secondly, although some dimensions of the occupational environment, such as job demand or role measures, have received consistent and focused attention, research into supervisory style has been limited and varied in focus. Supervisory variables have been seen alternately as a determinant or moderator in the stress process, and research has employed a variety of measures of the supervisory environment. These inconsistencies, in conjunction with the ease of understanding of supervisory concepts by line supervisors and the ability to institute organizational interventions if appropriate, led to the inclusion of supervisory style as a key component of this research. In addition to these two primary focal points, the secondary areas of interest in the research were the roles of coping as a moderator in the stress process and of affect intensity as an individual difference affecting the appraisal processes. Although coping has received much attention, research evidence in an occupational setting remains sporadic. Similarly, the evaluation of individual differences such as affect intensity in occupational settings is limited and requires further study.

Prior to discussing these areas and the current research in greater detail, it is useful to present an overall model of the occupational stress process and highlight the areas of research focus within its context. Figure 3.1 shows a proposed model for the

Figure 3.1 - Generalized occupational stress model



stress concept with some extensions beyond the broadly accepted view. The "Objective Environment" illustrated in the model includes the basic characteristics of the work environment that can be objectively measured and would include both characteristics that are inherent in the task, and those that are a function of the organization. Occupational measures that have been measured objectively in previous studies have typically focused on task characteristics such as job demand, decision latitude, overload or underload.

The model proposes a layer of intervening variables that include a cognitive perception component. The perceived measures are positioned as mediating variables between the objective environment and strains. This approach adopts a form of the cognitive appraisal approach espoused by Lazarus and his colleagues (Lazarus, 1966; Lazarus and Folkman, 1984 for example). Their approach includes cognitive concepts of perception and appraisal. The perceived stressors shown in this model embody a cognitive perception stage, but are conceptually prior to the appraisal of threat. The appraisal of threat inherent in Lazarus' model, occurs between the perceived stressor and the strain outcome.

Previously studied chronic stressors such as role variables, job demand or decision latitude would fall into the category of "Perceived Chronic Stressors" when measured with self-reports that, by their nature, include a component of perception. Although these perceived chronic stressors are typically interpreted as measuring the identical dimensions of the environment as their objective counterparts, it is quite possible that the perception process may involve multiple facets of the objective environment. For example, an individual's perception of job demand may include not only evaluation of objective job demand, but also his evaluation of whether the organization is fair in its allocation of work. In other words, the resulting perceived measures may represent a composite of a number of basic environmental characteristics.

"Perceived Hassles" are the individual's perceptions of the numerous minor incidents of short duration that occur regularly in a job. As in life stress, these hassles are assumed to be stable and representative of a chronic occupational condition. This component can also be broken conceptually into two stages: the absolute count of the number of hassles that are perceived, and the number of hassles that are appraised as stressful after the subject employs an appraisal of threat as outlined by Lazarus and Folkman (1984).

"Perceived Supervisory Style" is indicated separately in this model because of the focus in this research Like the other chronic stressors, the perceived supervisory style is the individual's perception of an objective organizational characteristic.

The perceived intervening variables are shown to be interlinked by a complicated set of relationships, including potentially bi-directional ones. Perception of one stressor could readily influence an individual's other cognitive perceptions. A perceived poor relationship with a supervisor could influence an individual to feel that he is being given too much work, or confusion over an individual's role could increase the stressfulness of perceived hassles.

"Strain" is the set of proximal outcomes of stress, and is the result of the individual appraising their work environment as potentially threatening. "Disease" includes physical or psychological morbidity and "Individual Differences" that may effect the process are shown in the model.

An examination of the literature shows that, although this particular framework has not been used previously, almost all work in the occupational area can be explained within this framework. Although the bulk of the proposed model would be acceptable to most other researchers, the inclusion of perceived hassles diverges from the current occupational paradigm and has not been widely discussed.

Figure 3.2 - Research focus in terms of the generalized occupational stress model

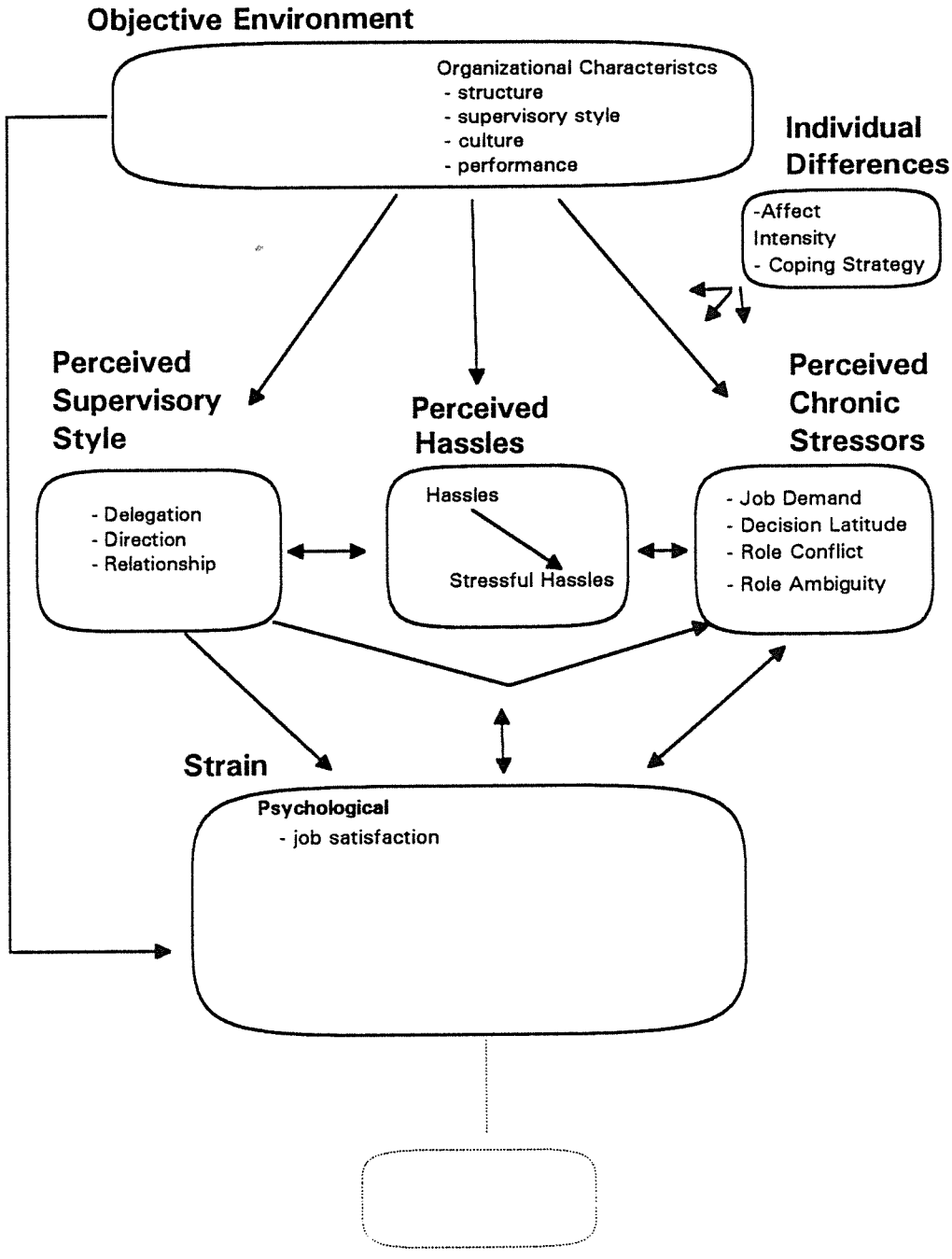


Figure 3.2 highlights the areas that were the primary focus of this study in the context of the proposed model. Only selected aspects of the objective environment and strain were studied, and no attempt was made to investigate disease or biological relationships. The following sections outline previous research in the immediate areas of interest in more detail.

3.1 Occupational Hassles

Although the concept of hassles does not appear widely in the literature on occupational stress, the model shown in Figure 3.1 hypothesizes a role for this factor in the stress process as a mediator between the objective environment and strain, and as a factor related to other chronic stressors. Hassles may be related to the other perceived chronic stressors through a reciprocal causation relationship. The appraisal of the number and significance of regular occupational hassles may influence the individual perception of chronic job characteristics. In addition, however, the perceived hassles could be influenced by an individual's already existing perception of job characteristics. For example, an individual's previous appraisal of a job as excessively demanding might influence his current appraisal of requested overtime.

The basis for the inclusion of hassles in a stress process is found in the research into life event hassles. Some of the work reviewed in Chapter 2 demonstrated the relationship of hassles in life stress settings to psychological and physiological symptoms. This approach, which assumes that strain can be attributed to the frequency with which stressful events occur and the intensity of stressfulness for the individual, might reasonably be extended to occupational settings.

The study and integration of hassles in the occupational setting, however is rare. Motowidlo, Packard and Manning (1986) do propose a model that "assumes that there are *specific* events which are more likely than others to cause stress and that they vary from one job to another." In two exploratory studies in nursing populations, they identified specific events (hassles) associated with stress for hospital nurses, and examined the relationships between these events and work conditions, individual characteristics, subjective stress, and job performance. In the first study, they identified 82 items through small group discussions with 104 nurses. After comparing the correlation of these events to a composite stress index, they selected a final list of 45 incidents with frequency ratings showing a correlation of .20 or more with the stress index. In the second study, this list of incidents was rated on frequency and intensity by 171 nurses in five hospitals. They found that hassles that involve work overload, uncooperative patients, criticism, negligent co-workers, lack of support from supervisors, and difficulties with physicians are associated with feelings of stress for nurses.

Cummins (1990) studied 96 employed subjects taking evening classes at a university using an 11 item subset of Kanner's Daily Hassles Scale as a measure of job stress. The items used in the subset of Kanner's scale (such as "concern about job security", "don't like current work duties") tend to be more general than those used for the current research. His results showed a high correlation ($r = -0.39$, $p < .001$) between the frequency of hassles and a single question measure of job satisfaction.

In the current research, the role of hassles was again investigated. In addition, however, to examining relationships with overall stress, the study examined the relationships with a number of chronic stressors that have been identified by other studies.

3.2 Perceived Chronic Stressors

One stressor that has been included in a variety of studies in both objective and perceived form is "job strain" as defined by Karasek. In work by Karasek and his colleagues (Karasek, 1979; Karasek et al., 1981; Karasek at al. 1982) they found that jobs objectively characterized as having high demand and low decision latitude (termed "high job strain" in Karasek's model) were found to be related to mental strain, cardiovascular disease and mortality. Using the University of Michigan Quality of Employment Survey for 1972 in the U.S. (N=911) and the Swedish Level of Living Survey (N=1,896), Karasek compared outcome measures of exhaustion, depression, job dissatisfaction, life dissatisfaction, pill consumption and sick days across a two-dimensional grid of self-reported decision latitude and job demand. They found increased strain (dissatisfaction, exhaustion, etc.) for jobs that have high job demand and low decision latitude. The Swedish data used objective ratings of job characteristics and similar findings were observed. In a six year study of Swedish men, the risk of cardiovascular or cerebrovascular death was significantly higher for men who described their jobs as having high demands and low control.

Objective measures of job strain were employed in the analysis of myocardial infarction (MI) data from the Health Examination Survey (HES) and the Health and Nutrition Examination Survey (HANES) (Karasek et al., 1988). Job characteristics were estimated using the occupational census codes for each individual. The study found that the relative risk for MI for someone in the top decile of job strain compared to someone in the lowest decile was 3.8 in the HES, and 4.8 in the HANES.

LaCroix and Haynes (1987) applied the same job strain model to the Framingham Heart Study data. Nearly 900 subjects were examined for the development of coronary heart disease over a 10 year period. Using job titles to identify high strain jobs, they were able to document a relative risk for CHD of 1.5 for high strain jobs

compared to low strain. When they incorporated an aspect of individual perception by using a self-report of job demand and decision latitude (rather than the job title approach) the relative risk for CHD in "high strain" jobs was 3.

Schnall et al. (1990) compared Karasek's job strain measure to blood pressure and left ventricular mass in a case-control study of 215 men. After adjusting for a wide variety of risk factors, they found perceived job strain significantly related to hypertension, with an estimated odds ratio of 3.1. Although left ventricular mass was not significantly related to job strain in the overall sample, they did find a significant increase in mass for men aged 30 to 40 years.

Karasek's job strain measure has not proven universally significant in studies, however. The job strain model was also applied in a longitudinal study of 391 male employees of a Swedish pulp and paper company (Astrand et al., 1989). Using all cause mortality as the outcome and perceived measures of job characteristics, neither psychological nor physical job demands influenced mortality. Although the decision latitude factor was significant, the interaction gave no better prediction of mortality than the latitude measure alone.

The relationship of the demand-control model to some CHD risk factors has not been verified. In a meta-analysis of five studies on U.S. males, Pieper et al. (1989) found no association between the demand control interaction and either cholesterol levels or blood pressures.

A second area of research into perceived stressors that has received significant support is based in role theory. In addition to the investigation of the relationship of hassles to job strain, the current research examined the relationship of hassles to role ambiguity and role conflict.

In occupational role theory, role ambiguity occurs when there is uncertainty about what one is supposed to do on a job or the lack of necessary information, and role conflict, when job behaviors for an individual are inconsistent within the job or incompatible with personal beliefs. Using a variety of instruments to measure role ambiguity and role conflict, (often one developed by Rizzo et al. (1970)), researchers have identified significant and consistent relationships between these role measures and various measures of occupational strain.

Kahn et al. (1964) investigated role ambiguity in a self-report survey of 1500 respondents. They found their measure of ambiguity correlated with job satisfaction (r = -0.32), with job-related tension (0.51) and with self confidence (-0.27) French and Caplan (1970) studied 205 NASA engineers, scientists and administrators. They found role ambiguity correlated with job satisfaction (r = -0.42) and with feelings of job related threat to well-being (0.40). In work by Stout and Posner (1984), perceived role ambiguity and role conflict were negatively correlated with job satisfaction (r = -0.39 and -0.26 respectively). Leigh et al. (1988) found role ambiguity and role conflict to be negatively correlated with the psychological climate of an organization (r = -0.45 and -0.36 respectively). One hundred and fifty aerospace engineers and administrators were studied by Kahn (1973). In his study, role ambiguity was associated with job satisfaction (r = -0.4), job related threat (0.5), self esteem (0.2) and a measure of somatic symptoms of depression (0.5). Margolis et al. (1974) surveyed a national sample of 1496 workers from a variety of occupations. Although their results were lower than the previous studies, they still found role ambiguity significantly correlated with job satisfaction (r = -0.13) and self-esteem (-0.16). House et al. (1979) compared perceived occupational stressors including role conflict, workload and responsibility to self reported (and for a subset, measured) health outcomes of angina, peptic ulcer and poor mental health and found significant associations. Revicki and May (1989) found a significant correlation between role ambiguity and job satisfaction (r = -0.47) Spector

et al. (1988) included role ambiguity in their study of 181 female secretaries which used self-report measures of stress, and reports from the secretaries' supervisors. Their measure of role ambiguity did not indicate convergent validity between secretaries' and supervisors' measures. Although the subordinate measure of ambiguity was correlated with a number of affective measures of stress (anxiety: $r = 0.28$, frustration: $r = 0.29$, satisfaction: $r = -0.51$), correlations were not significant for somatic symptoms or illness. The relation of supervisory measures of ambiguity to outcomes was not significant. Since the factors measured in ambiguity reflect directly on the supervisor's skills as a manager, it is possible that the measure was less likely to be poorly rated by the supervisor or that the secretaries measures of role ambiguity and outcomes were confounded.

3.3 Supervisory Variables

Much of the work addressing the role of the supervisor in the stress process focuses on supervisory support, rather than supervisory style, and falls into one of two main categories. Some researchers consider supervisory support to be a moderating factor in the process, while others conceptualize it as a direct effect.

In one of the few studies examining supervisory style, Chemers et al. (1985) used a person/environment fit approach to compare an individual's supervisory style with the job environment. They hypothesize that a match between leadership orientation and situational control is closely related to stress. In this work they measure task-oriented versus relationship-oriented styles indirectly through the measurement of least preferred co-worker (LPC - low LPC suggests task orientation, while high LPC shows an orientation towards interpersonal relationships). Job stress was measured using a self-report scale of psychological stress and of symptoms and illness. They

found that in a sample of university administrators, those whose personal supervisory style matched the level of situational control in which they operated had significantly fewer health problems, fewer days missed from work, and less reported job stress.

In Cummins' (1990) examination of the role of supervisory support, he also used the LPC measure of task vs. relationship orientation. In this case, however, rather than being used as a measure of supervisory style, LPC is positioned as an individual difference characteristic that might buffer the role of supervisory support on the stress process. Using a subset of Kanner's Daily Hassles Scale as a measure which he termed job stress, the multiple regression of the data indicated that the significant predictors of job satisfaction were job stress, supervisory support and the interaction term combining job stress, supervisory support and LPC. The interaction term that would support the hypothesis of a moderating role of supervisory support with stress in the prediction of job satisfaction was, however, not significant.

In a study of 419 female clerical staff, Balshem (1988) also examined the role of supervisory support as a direct effect in the stress process. Measures of stress that included a subjective rating, a self-report of somatic complaints, and a perceived job satisfaction index were all found to be significantly correlated with low supervisory support.

Kirmeyer and Dougherty (1988) examined the role of supervisory support as a moderator of workload in the stress process for 60 police radio dispatchers. Perceived supervisory support was compared to stress as measured by tension-anxiety. Although no direct relationship was identified after accounting for the other variables in multiple regression analysis, there was a significant interaction of load and supervisory support. They found that when perceived or objective workload was high, support from superiors moderated the stressful effects of workload.

Beehr and Gupta (1987) compared two companies with different macro level management styles, one used a democratic management approach, while the second had a traditional managerial style. When they compared perceived stressors of underutilization of skills and job overload between the two companies, they found a direct affect of organizational style, with the traditional organization having greater levels of these stressors.

A number of studies have investigated the association between the quality of relationships between supervisor and subordinate and symptoms of depression (Beehr, King & King, 1990; LaRocco, House & French, 1980, for example). Almost all have reported significant correlations in the range $r = 0.16$ to $r = 0.52$ (Repetti, 1993).

In addition to preliminary research indications of an effect for supervisory variables, common organizational knowledge provides support for investigations in this area. In personal discussions with senior managers, it was apparent that managers have found that two different supervisors, with the same employees, and the same tasks to perform, can produce two completely different work environments with different levels of job dissatisfaction among employees. Furthermore, some employees are happier with one supervisor, while others are happier with a supervisor that would be unsatisfactory to the first employees. This anecdotal evidence provides some support for a role for supervisory style in the stress process.

The results of these studies that indicate a role for supervisory factors, and the intuitive link between supervisory support and style suggested that further investigation into the impact of supervisory style was warranted. Two possible approaches are apparent from the literature (supervisory style as moderators or supervisory style as direct effects). Although Kirmeyer and Dougherty (1988) identified a significant moderating effect for supervisory support, the other studies listed found a significant main effect only. Extending this approach to supervisory style, we chose to use a

direct effect conceptualization in the current study The current research examines the relationship of objectively measured style, perceived supervisory style, and supervisor-employee relationships to hassles, to historically identified chronic stressors, and to job satisfaction.

Organizational research provided some direction with respect to the factors within supervisory style that might be of interest. Contemporary management theory is moving away from the idea of a single factor adequately describing style, to one that includes a number of potential components that are applied differently in different circumstances (Green & Mitchell, 1979; Crouch & Yetton, 1987; Morgan, 1989; Smith et al., 1989). Throughout the research into the driving factors behind supervisory styles there is a consistent recognition that one of the axes along which leader actions are perceived to fall, is a democratic/autocratic one.

One of the other focuses in management theory concentrates on the relationship between leaders and subordinates. The Vertical Dyad Linkage (VDL) approach to leadership style (Dansereau, Graen & Haga, 1975; Graen & Cashman, 1975) uses the relationship between leader and subordinate (measured as leader member exchange (LMX)) as a key component influencing style. This factor is intuitively related to the one used for measuring supervisory support in occupational stress research (Kirmeyer & Dougherty, 1988; Cummins, 1990). In addition, "the key premise of LMX theory [which] is that the exchange relationship between a leader and a member has an influence on many organizational outcomes." (Liden et al., 1993) suggests a potential role in the stress process.

3.4 Affect Intensity

The sporadic historical use of individual differences and other moderators in occupational research identifies another area that needs to be expanded in stress research. Affect intensity, considered a stable individual characteristic, is of particular interest in this work because of the inclusion of daily hassles in the formulation of the model. Larsen et al.'s work (1986) on individual differences in the reaction to daily events is consistent with our interest in moderating factors for the appraisal of daily hassles. In Larsen's first study on 62 university students, the difference between objectively scored daily hassles and individual perceptions of daily hassles were compared between high and low scorers on the affect intensity measure. They found that high-intense subjects responded more strongly to the day-to-day events in their lives than do less intense subjects. In a second study of 176 students, imagined events rather than actually experienced events were used to control for bias because of possible correlations between actual events and affect intensity. This study mirrored the results from the first study showing higher intensity individuals reporting more intense subjective emotional responses to events.

3.5 Hypotheses

The hypothesized model described earlier, and the research focus outlined above, led to a number of specific hypotheses that were investigated in this research. The primary hypotheses of interest related to the role of supervisory style in the occupational stress process. It was hypothesized that both objective and perceived measures of the supervisory style of a subject's immediate superior would be related to the appraised impact of occupational hassles, to previously identified perceived chronic stressors, and to job satisfaction. The appraised impact of hassles, chronic stressors and

job dissatisfaction were expected to increase as delegation style decreased, direction style increased, and employee / supervisor relationship decreased.

The second set of hypotheses considered the mediating role of daily hassles. It was hypothesized that the number and appraised stressfulness of daily occupational hassles would be positively correlated with perceived chronic stressors of job demand, decision latitude, role ambiguity and role conflict. Furthermore, the number and impact of daily occupational hassles would be negatively correlated with job satisfaction.

Ancillary hypotheses covered the role of coping and affect intensity. It was hypothesized that affect intensity and coping style and success would effect the appraisal processes for the impact of hassles and job satisfaction.

Chapter 4
Research Design

To investigate the hypotheses outlined in Chapter 3, a naturalistic, rather than a laboratory, setting was critical. Only in a true job environment could realistic measures of occupational hassles and supervisory style be obtained. To allow this approach, permission and support for the implementation of a study in seven Abitibi-Price branches in south-western Ontario was obtained from the senior managers of the Abitibi-Price Diversified Group. This study was titled the Abitibi-Price Supervision and Stress (APSS) study.

To succeed in a naturalistic setting, the choice of study design needed to balance the requirements of pure research and those of practical organizational considerations. Results from an occupational setting risked being useless if defensibly proper research methods were not followed, but the study would not have been allowed, or would have had low participation rates, if organizational concerns were not addressed.

The research design had to address a number of organizational issues. Normal organizations are focused on overall profitability, not health care, and some form of payback must be evident to encourage active participation. The relatively low profile of occupational stress, and the inconsistent evidence of its impact on long term morbidity or organizational productivity, generated only limited interest and resulted in cooperation that was, at best, passive. This passive support limited the amount of time made available during normal working hours and required minimal disturbance to the normal branch activities. Although agreement was obtained from the then current senior managers, management changes over time. There was concern that changes in top personnel, or changes in business conditions, could lower the priority if the study were to extend over a significant length of time.

To address the organizational issues of passive support, limited allowable disruption, and cooperation potentially limited to the short-term, a cross-sectional design was implemented. This cross-sectional design provided the best opportunity to address the hypotheses with a reasonably large sample size, and in a naturalistic setting.

Cross-sectional designs cannot, however, disentangle the causal directions of a relationship. The ability to move towards causal statements depends on the ability of investigators to date an event in relation to the onset of somatic or psychological symptoms. This normally implies some form of longitudinal study. In the model hypothesized in Figure 3.1, the bi-directional relationships add an additional degree of difficulty by requiring changes of degree in the factors to be examined rather than simply identifying presence or absence of a factor at different points in time. Although the presence of relationships can be identified with simple cross-sectional studies, the additional degree of complication in verifying bi-directional relationships will require a relatively sophisticated research design. Given the preliminary nature of the investigation of a role for supervisory style and occupational hassles with perceived chronic stressors and strain, the additional complication of a longitudinal study was not warranted.

An examination of the literature in occupational research suggests that many other authors have made similar decisions with respect to study design and have focused on cross-sectional studies. For example, much of the work by Karasek and his colleagues (Karasek, 1979; Karasek et al., 1981; Karasek at al. 1982) on job demand and decision latitude concentrated on cross sectional studies. The major study reported by Caplan et al. (1980) examining person environment fit in a broad occupational sample was cross-sectional. Studies with nurses (Motowidlo et al., 1986), with burnout in human service occupations (Shinn et al., 1984), with secretaries at a University (Spector et al., 1988), and in a wide variety of other settings have all used

cross-sectional designs, possibly to overcome constraints applied by naturalistic settings.

As Fletcher (1988) suggests, however, longitudinal studies in occupational stress are rare but not completely absent. Frese (1985) included a longitudinal component in a study of blue collar workers. Parkes (1982) analyzed a natural longitudinal experiment on 164 nurses who rotated wards during a three month period. Keenan and Newton (1987) identified occupational stressors in a 4 year longitudinal study of engineers. Wolpin et al. (1991) analyzed longitudinal data on the relationship between job satisfaction and psychological burnout using surveys done one year apart and found support for the causal relationship between job satisfaction and psychological burnout. The examples, however, are limited and often used specialized populations where occupational stress enjoyed a higher priority, and thus higher commitment to on-going study.

4.1 Subjects

The study was performed in a single organization with multiple autonomous branches. The diverse histories of the branches has resulted in distinct cultures, and a variety of management styles.

The choice of subjects within the organization was limited to large homogeneous groups to take into consideration objective differences among jobs. Job differences can be caused by a wide variety of variables, including physical environment and job demands, and these differences can influence the corresponding perceived job stressors. By choosing job groups with limited physical hazards and focusing on a limited number of well-defined task groups, I prevented non psychosocial stressors from potentially overwhelming the factors of interest and avoided the

confounding impact of task definitions. The three groups that were used, warehouse pickers, truck drivers, and inside sales personnel, are each relatively homogeneous (although different from each other), and were present in all of the locations.

Using the 7 organizational locations in south-western Ontario, the total population available for the survey in early 1992 was 255 employees reporting to 37 different supervisors. Table 4.1 shows the breakdown of employees by the three task groups.

Table 4.1 - Total study population by branch and job.

Branch	Inside Sales	Warehouse	Driver	Total
Branch 1	16	19	19	54
Branch 2	5	8	8	21
Branch 3	14	39	30	83
Branch 4	4	8	6	18
Branch 5	11	20	19	50
Branch 6	3	3	4	10
Branch 7	5	5	9	19
Total Population	58	102	95	255

4.2 Measures for Demographic Variables

The study collected demographic variables that might be correlated with the various dependent variables under question. This category included gender, age, years of experience, and affect intensity.

Gender

Gender was collected through the questionnaire.

Age

Year of birth was requested on the questionnaire. To alleviate confidentiality concerns from the subjects, this information was requested, but listed as optional. As a result, it was not available for all subjects.

Years at branch

The number of years at the branch was collected through the questionnaire. To alleviate confidentiality concerns from the subjects, this information was requested, but listed as optional. As a result, it was not available for all subjects.

Affect Intensity

Affect Intensity is hypothesized to represent a stable individual difference that may moderate the other hypothesized relationships.

The Affect Intensity Measure (AIM) is a 40 item questionnaire developed by Larsen (1984) to assess the intensity with which an individual typically experiences emotions. Larsen (1984) reported adequate construct validity with significant correlations with parental evaluations (.50), with self-reported daily mood (.61 and .52), and with variability in positive and negative affect (.41 and .39). He also found it correlated significantly with resting heart rate (-.26) and resting galvanic skin response (-.31). In addition, Larsen (1984) reported measure stability with 1-month, 2-month and 3-month test-retest correlations of .80, .81, and .81.

For the affect intensity measure as well as many of the following items, Cronbach's coefficient alpha was calculated as a measure of internal consistency. The coefficient is calculated as:

$$\alpha = \left(\frac{n}{n-1}\right)\frac{\sigma_t^2 - \sum \sigma_i^2}{\sigma_t^2}$$

where n is the number of items in the measure, σ^2_t is the variance of the total score, and σ^2_i is the variance of the *i*th item score in the measure. Larsen (1984) reported an alpha above .90 in 4 samples, while in the APSS study, Cronbach's alpha was calculated at .88 for affect intensity.

4.3 Measures for Job Environment Variables

A second category of variables describing the work environment reflected dimensions of the objective environment that might be stressors. These measures, which were independently and objectively measured, included the size of the work group, the size of the branch, the number of decision making layers in the branch above the subject, the union status of the subject, branch profitability and sales volume compared to budget, and productivity measures. In addition the job (one of three) and the branch in which the subject worked (one of seven) were identified.

Type of Job

Three distinct task groups were studied in the research and the subject's job was requested in the questionnaire. Inside sales representatives were responsible within each branch for responding to customer calls to take orders and enter data into the computer, or resolve customer problems or complaints. Although fairly junior positions in the

organization, these positions often led to greater responsibility and promotion. Warehouse personnel used forklift equipment in the warehouse to select merchandise ordered by customers and prepare it for shipment. Drivers used large delivery trucks to drop-off ordered products at customer locations.

Branch

The information was collected from seven distinct branches within the organization and was recorded by the researcher.

Management Layers

The number of management layers between a subject and the local branch manager was recorded by the researcher after examining organization charts.

Group Size

The number of people in a work group (i.e. the number reporting directly to the same supervisor) was recorded for each subject by the researcher using branch organization charts.

Branch Size

The number of employees in each branch was recorded by the researcher.

Union Status

Each work group was coded by the researcher as unionized or not.

Return on Capital Employed

The primary measure of branch financial performance used within the organization was Return on Capital Employed. This was calculated as branch earnings divided by the value of capital used by the branch. The researcher obtained this information directly from company financial records for the first fiscal quarter of 1992.

Branch Sales Performance

Another measure of branch success was performance compared to budget. The percentage difference between budget and actual sales level for each branch was recorded by the researcher.

Branch Profit Performance

In a similar manner to sales performance, the percentage difference between budget and actual profit level was recorded by the researcher.

Productivity

A unique productivity measure was associated with each function and calculated for each branch. For inside sales staff, the measure was the average number of incoming calls per inside sales person; for warehouse staff, the measure was the average number of order picks per person; and for drivers, the measure was the average number of customer stops per person. Although not calculated at the individual level, these measures provided information on the relative activity levels between branches for comparable positions. The researcher obtained this data for each branch for the first quarter of 1992.

4.4 Measures for Supervisory Style / Hassle variables

The third class of variable was the primary focus of the thesis. Supervisory style was measured along axes of direction style, delegation style, and supervisor-employee relationship (termed Leader-Member Exchange). The second factor of interest, occupational hassles, was measured in terms of the number of hassles and the appraised stressfulness of hassles.

Although for the previously defined demographic and job variables the differentiation between objective and subjective measures was clear, for the supervisory style data the interpretation can vary. In the discussion by Frese and Zapf (1988) of the concepts of objective and subjective, three different conceptualizations were presented. Objective can be interpreted as material objects and processes in the world while subjective refers to the psychological processes involved. Secondly, objective can refer to anything that is part of reality, while subjective means illusory. The third concept of objective includes anything not related to a specific individual's perception. The second interpretation is overinclusive and not applicable to stress research, and Frese and Zapf suggest that the third conceptualization is the most appropriate.

With this conceptualization in mind, both objective and subjective (perceived) measures of supervisory style were obtained in this study. The branch manager, as a local expert who was independent of the supervisory relationship, provided objective measures of supervisory style variables. The subject, as the individual involved in the study and for whom outcomes were measured, provided perceived measures of supervisory style. The subject's immediate supervisor provided another measure, most appropriately positioned between the other two measures. Although the supervisor's measure was objective in the sense that it was independent of the subject's appraisals, it was subject to the evaluation of an individual involved in the supervisor-employee relationship being studied. Although the degree of objectivity may not be the same as

the manager's measure, both measures were considered to be objective throughout this study.

Supervisory Style - Direction / Delegation

Supervisory style on the direction and delegation axes was hypothesized to be related to hassles, perceived chronic stressors and job satisfaction. To provide both objective and perceived information on these factors, and thus allow investigation of the role of perception on this factor, measures were taken from a number of viewpoints. The subject's perception of his supervisor was obtained; the subject's preference for the way his supervisor should act was asked; the supervisor gave his view of the way a supervisor should act; and the branch manager provided an objective measurement of the supervisor.

Bass and Valenzi (1974) developed scales using factor analysis on 72 leader behavior items in data sampled from a number of heterogeneous organizations to develop 5 distinct scales measuring different management styles - direction, negotiation, consultation, participation, and delegation. Bass et al. (1975) confirmed the validity of the scales with extensive tests.

Shapira (1976) used the scales on 407 subjects, and Chitayat and Venezia (1984) on 224 subjects while investigating the role of information and power on management style. In Shapira's data (1976), the consultation, participation and delegation scales were highly correlated (all $> .66$), but delegation and direction were not significantly correlated. This suggested that using the two scales alone would provide two independent measures of key components of supervisory style.

Internal consistency of the direction and delegation scales was calculated for the APSS data. Table 4.2 which summarizes the internal consistency of each application of

the scale shows good consistency with the direction scale, but somewhat weaker results, particularly from the supervisors and managers, for the delegation scale.

Table 4.2 - Internal consistency for direction and delegation scales.

	Direction	Delegation
Subject	0.83	0.68
Desired	0.78	0.77
Supervisor	0.74	0.57
Manager	0.81	0.51

Leader Member Exchange

A second measure of supervisory style was taken from research on supervisor-employee relationships.

Graen and Cashman (1975) developed a measure of Leader-Member Exchange (LMX) addressing the level of communication and relationship between supervisors and employees. In a "natural experiment" that they conducted, they used LMX as a measure while evaluating the psychometric properties of the instrument. They found it to be relatively stable over the 7 month period ($r = 0.73$). Measurement validity was supported by a multimethod-multisource analysis using member and superior reports from the instrument compared to a mapping of vertical relationships.

The scale was also used by Scandura and Graen (1984) where they found Cronbach's alpha of 0.86, and test/retest stability of 0.67 in their sample. When Kozlowski and Doherty (1989) tested the LMX measure against another, more direct scale of information exchange and found high correlation (0.73), they concluded that the LMX showed reasonable construct validity.

The scales are designed such that an employee's view of desired behavior would be redundant. As a result, this measure was obtained only for the subject's view of his supervisor, and the branch manager's view of a supervisor. In the APSS data, the internal consistency was 0.89 for the subject's measure, and 0.80 for the manager's measure

Number of occupational hassles / Proportion of hassles appraised as stressful

Both the number, and the appraisal of occupational hassles were hypothesized to affect perceived chronic stressors. No work, however, has been found that attempts to develop a standard instrument for occupational incidents. In fact, the diversity of task functions and occupational environments that can be expected across any broad sample probably preclude a standard set of hassles without generalizing to the point of possible irrelevance. To identify a list of occupational hassles to be used during the study, focus groups of 3 to 5 people were convened within each of the task groups. These groups were asked to brainstorm events that they themselves might find upsetting during the course of the day, or that other employees in their types of jobs might find upsetting. After amalgamation for duplicate responses, each group developed 12 to 16 different hassle types typical for their job function. These are listed in Appendix A. Because of the homogeneity of job function across the multiple branches, it was felt that these lists would be applicable in each location. Separate questionnaires were developed for each of the three task groups requesting frequency and impact of each hassle type during the previous working day, and the previous working week.

4.5 Measures for Historically Identified Perceived Chronic Stressors

The fourth category of variable, the elements of which were treated as both independent and dependent variables depending on the hypothesis being examined, were the self-reported measures that had been previously shown in the literature to be significant factors in occupational stress.

Job demand / Decision latitude

Job demand and decision latitude have been used in a variety of studies and have been shown to represent chronic stressors in occupational settings.

In this study, data on perceived job demand and decision latitude used a scale developed by Karasek (1979) to evaluate chronic occupational stressors. Verification of the psychometric properties of this measure did not appear to be available in the literature. In the study by Schnall et al. (1990), internal consistency was calculated giving Cronbach's alpha = 0.82, for latitude, 0.64 for demand. Construct validity, is supported by the large number of studies that have used this measure. For example, Frankenhaeuser (1979) showed machine paced workers (i.e. those with low decision latitude) had higher urinary catecholamine excretion then those with control over job pace. The job demand / decision latitude model has been predictive of cardiovascular disease and mortality in two studies of male workers in Sweden (Karasek et al, 1981). Lacroix and Haynes (1987) tested this model using Framingham Heart Study data and found a higher risk of CHD was associated with job demand/decision latitude. Schnall et al. (1990) used Karasek's job strain measure and found it to be correlated with hypertension.

In the APSS study, internal consistency was acceptable with alpha = 0.67 for latitude, and 0.77 for demand.

Role Conflict / Ambiguity

Like job demand and decision latitude, role conflict and ambiguity have received significant focus in other research.

Perceived role conflict and ambiguity were obtained by using a scale developed by Rizzo et al. (1970) that has since been extensively used in the study of role conflict and ambiguity. Using data from a questionnaire given to 199 subjects, the scale authors used factor analysis on the results to identify the two concepts as separate dimensions. The instrument used includes only items which had high loading ($>.30$) in this original work.

Schuler, Aldag & Brief (1977) tested the validity of the scale using 1,573 employees in six samples within four organizations. Their factor analysis and calculation of coefficients of congruence supported the two factor solution developed by Rizzo. They concluded that the instrument also had construct validity after examining coefficients of concordance calculated with measures of satisfaction, expectancies and task characteristics.

Breaugh (1980) tested the validity of role ambiguity using three scales (including the one by Rizzo et al., 1970). He found that all three appeared to be measuring the same factor. For Rizzo's scale, he calculated internal consistency of 0.86. Breaugh did, however, have some concern regarding the construct validity since correlations with theoretically related dependent variables were modest in size.

House et al. (1983) tested scales for validity of wording because of some concern that had been expressed regarding built in biases. Their work, however, largely reaffirmed the validity of the original scales.

A meta-analysis by Fisher & Gitelson (1983) supported relative independence of the two scales. Internal consistency calculated in Frew & Bruning (1987) was .81 for

role ambiguity, and .77 for conflict. In the APSS data, internal consistency was similar with results of .78 for ambiguity, and .81 for conflict.

4.6 Measures for Job Satisfaction

Much of the APSS study focused on the stress process up to the development of chronic stressors, and for this component multiple outcome measures were obtained. To evaluate the relationships with strain, a single outcome measure, job satisfaction, was collected. Although consideration was given to the addition of other strain measures, they were excluded to resolve design and organizational concerns. Confidentiality of information was key to subject co-operation, particularly in light of my position within the organization. To ensure this confidentiality, I was unable to access individual records on absenteeism or other work behaviour to provide additional strain measures. The passive support from the organization precluded the implementation of more intrusive measures of strain. Blood pressure or heart rate measurements could not have been taken in an appropriate manner without significant organizational disruption and reduced participation

Job satisfaction has been a commonly used measure of strain, but does not have a consistently used format for measurement. For example, it has been measured by a single question, "All in all, how satisfied are you with your job" (Chemers, 1990); by three items from the Michigan Organizational Assessment Questionnaire (Spector et al, 1988); and by a 17 item questionnaire by Jones and DuBois (1985). Although little verification of the psychometric properties of the questionnaires appears in the literature to differentiate the value of one approach from the other, this research used the more comprehensive scale by Jones and DuBois.

In the APSS study, the internal consistency for this measure was .77.

4.7 Measures for Coping Style and Success

Type of coping behavior, and the perceived success of coping were identified in a secondary hypothesis as having moderating impacts in the studied relationships. The checklist plus open-ended response developed by Stone & Neale (1984) was chosen for this research because of its ease of use and flexibility to accommodate acute coping behavior rather than focusing on long term coping styles. Stone & Neale verified the content validity by analyzing the written descriptions, and by the comparison of these to the checked categories. They acknowledged, however, that like other coping instruments, theirs relied on self-reported data and was thus subject to reporting bias.

4.8 Procedures

After contacting local branch management for approval, meetings were set up with groups of employees at the beginning or end of the working day. Because of different work schedules and staffing considerations, two or three meetings were scheduled in each location. After explanation of the purpose of the study, the role of the organization, and the time requirement, employees were given the option to leave the meeting and not participate in the study. Those that remained were then asked to fill in the questionnaires and submit them to the researcher. After the branch meetings, brief questionnaires were completed by branch managers and by the supervisors of study subjects to provide objective information on supervisory style.

A pre-test was completed that attempted to collect the information on an on-going basis for one work shift using a diary approach to avoid recall bias. Feedback from participants in the pre-test, however, identified a complication that precluded this approach from further use in the study. Because a number of the hassles related to

actions of co-workers, subjects found that the presence of the diary in a worker's pocket modified the normal behavior of co-workers. Workers were much more cognizant of "irritating" behavior, and attempted to correct it to avoid having a co-worker record a hassle in their diary. To avoid the concern about the data collection process becoming an intervention, the diary approach was canceled and replaced by short-term recall using results from the latest shift worked.

Because a number of employees were unavailable for the meetings due to schedules or vacations, a mail-out/mail-in survey was circulated to absent employees in the larger branches. The detail of participation results is shown in Appendix C.

Chapter 5

Preliminary Data Analysis

This chapter, which introduces the data analysis, comprises two distinct sections. In the first, descriptive statistics of the research data and two-way relationships are examined. In the second, the strategy for a more comprehensive analysis is outlined.

5.1 Participation Rates

Participation rates for the research were high. Table 5.1 shows an overall participation rate of 73% of the population, while Appendix C provides detailed participation information by location.

Table 5.1 - Summary of research participation rates.

	Population	Participation*	Percent
Inside Sales	58	51	88%
Whse	102	74	73%
Driver	95	62	65%
Total	255	187	73%

* Includes mail-in surveys

Reasons for non-participation can be segregated into two components: failure to attend the arranged session, and a decision not to participate. Because of the high level of cooperation of local branch management, attendance at the arranged sessions was high. Virtually all of the inside sales subjects (51 of 58 in the total population) attended

the meetings. Those not attending were on holidays or attending other meetings. With warehouse staff and drivers, the logistics of continuing to run the warehouse lowered meeting attendance. Drivers typically left the branch at staggered hours ranging from 5:30 a.m. until 8:00 a.m. and returned over a corresponding interval in late afternoon, while warehouse staff operated on staggered shifts. Although multiple sessions were scheduled in an attempt to accommodate as many as possible, attendance at the sessions was lower for these groups (74 of 102 for warehouse, and 59 of 95 for drivers). Only 3 employees of 184 actively declined to participate and left the arranged meetings.

Although the participation rate was high, the one-quarter of the population that did not participate remain a potential source of bias in the research. This relatively small group could represent a unique group with respect to their reactions to the study variables. In an attempt to identify any systematic differences associated with the non-participating group (and to increase the participation rate), the survey was mailed out to 50 subjects (in branches with relatively higher non-attendance) who were unable to attend the sessions. Explicit instructions were given about timing of completing the questionnaire in an attempt to replicate the recall situation vis-a-vis the remainder of the subjects. Six employees returned a completed questionnaire (12% participation).

The subset of the data constituting the six mail-in surveys can be considered as a sample of the non-attendees, even though it can not be considered random since it was defined by the subjects' willingness to participate. Although the sample was small, it was, nonetheless, analyzed in an attempt to provide some information regarding the differences that might be attributable to the group of non-attendees. An indicator variable was introduced in the final regression analyses described in Chapters 6, 7, and 8 to identify the mail-in responses. In no case was this variable a significant contributor to the models. The small number of mail-in surveys, however, would result in the identification of only the largest effects.

Basic demographic data was not available on the subject populations, so no comparison of participants with the total population could be undertaken. In lieu of this, the researcher discussed attendance with the local branch manager to ascertain whether the non-participating group were perceived to be unusual in terms of their relationship with their supervisors, their attitude towards work, their apparent job satisfaction, or their age and length of time on the job. No differences were identified by the managers. These managerial appraisals were purely subjective, but they were, nonetheless, at least indicative of homogeneity between participants and non-participants.

Any research with less than 100% participation is subject to bias. In the APSS data, however, the relatively high participation rate, the non-significant effect from the mail-out surveys, and the managers' reassurance of homogeneity all work to alleviate concern in this area.

5.2 Distribution of Data

Appendix D provides a detailed list of the variables collected, and descriptive statistics for each variable.

Examination of the distribution of demographic variables presented no surprises. Both age and experience produced profiles consistent with expectations. The gender variable showed a high proportion of males. Although this was expected because of the male-dominated nature of both the warehouse and driver jobs, it could limit the generalizability of the conclusions. The gender variable was examined throughout the analysis to identify any significant effects. The results from the affect intensity instrument showed a typically normal distribution, consistent with the results in the development of the scale by Larsen (1984).

The job environment variables summarized the objective measures of the environment related to differences between branches, organizational structures and jobs. The variable measuring the number of management layers between the subject and the branch manager had a very limited range because of the similarity of organizational structure between the various branches. The majority of the subjects had 3 or 4 management layers, while a few had 5. This narrow range of observations could have limited the effectiveness of this variable in model development. Although the observations of the size of the work group reasonably covered a range from 1 to 30, the branch size observations were relatively sparse over the range 20 to 200. This sparseness could have limited the ability to generalize an effect from this variable if one were identified. Most locations in the organization were not unionized, but there were enough unionized locations represented in the APSS survey to allow evaluation of a union effect. Branch financial performance, as measured by Return on Capital Employed, sales performance versus budget, and profit performance versus budget showed that the survey occurred during a period when business performance was poor. Although the Return on Capital Employed data was relatively sparse, the other measures covered the ranges. The fact that all branches were operating below their profit budget again limits the conclusions that could be drawn if this variable were significant. The productivity measures show one branch with an unusual level of warehouse productivity compared to the others, but the other variables reasonably cover the ranges.

The supervisory style variables reported by the subject all cover the range of possible results. The delegation variables tended towards the high end, in terms of both the subject's perception and his desired state, while the direction variable tended towards the centre with the extreme observations not being chosen as a desired state. From an examination of the scale items, it was apparent that some measures of increased direction are intuitively attractive, while others are not. (For example, "My

supervisor tells me what is expected of me.", and "My supervisor rules with an iron hand." were both evaluated as increases in direction style.) The observed distributions provided an indication that direction style may not operate in a strictly linear manner as a predictor of job stress and that a quadratic form may be required. The differences between the subjects' actual and desired measures and the measures by supervisors and managers demonstrated different viewpoints . The supervisor's ideal style indicated higher levels of supervisory direction than either the subject's perception, or his desired state. The manager believed that the supervisory style includes more direction, and less delegation than the subject perceived.

The number of hassles, as measured by both daily and weekly instruments, demonstrated a typical Poisson distribution. Although one would expect the weekly mean to be approximately 5 times the daily mean, the APSS data produced a weekly mean 3 times the daily results. This could suggest that a large proportion of the population had had an extraordinarily "hassled" day on the day of the survey. This is, however, an unlikely scenario given the large size of the population, the variety of branches and the fact that branches were surveyed on different days over a two week period. A more likely explanation is based on the difficulties associated with longer recall. The subjects may have had difficulty remembering the number of incidents earlier in the week. In addition, the weekly results could be biased with less stressful hassles exhibiting poorer recall. These concerns suggested that the daily measure was more useful for analytic purposes. Although the weekly hassles were included in subsequent analyses, the interpretation of the strength of results took into consideration these concerns. The impact of hassles, with the exception of a large number of observations in the lowest category, was distributed reasonably uniformly across the range for both daily and weekly hassles.

All responses for the most important coping style used by the subject were represented in the data, but with notable differences in the frequency chosen. The

response "did something about it", was chosen far more often than any of the others. The measure of coping success presented an approximately normal distribution over the range of values.

The historically identified chronic stressors of role ambiguity, role conflict, job demand and decision latitude, as well as the measure of job satisfaction, all demonstrated distributions consistent with a normal probability distribution. The comparison of these results with others in previous studies is discussed in Chapter 8.

5.3 Missing data

With the exception of three general areas, all questions on the surveys were answered completely. Questions requiring a rating on a Likert scale (1 to 5, 1 to 7, etc.) were complete in all questionnaires, but questions on demographics, on coping, and on hassles were incomplete as shown in Table 5.2.

Table 5.2 - Summary of missing observations

Variable	# of Missing Observations Out of 187
Age	30
Experience	29
Coping Style	53
Coping Success	43
Daily Hassles	22
Weekly Hassles	37

Anecdotal comments during the questionnaire completion, and analysis of the data, identified separate explanations for the missing data. In pre-tests, some subjects expressed concern about the confidentiality of the data. They suggested that

management would use the year of birth and starting date information to associate answers with individuals. To alleviate this concern, the instructions at the beginning of each session included a statement that year of birth and starting date were optional if an individual was concerned about confidentiality. Every attempt was made to reassure the participants of confidentiality and to encourage 100% completion of the data, but 30 people declined to provide this information (although 1 of these 30 provided starting date but not year of birth). Once again, concern arises that the group worried about confidentiality might be unique in their response to supervisory style or stress. To investigate this possibility, an indicator variable was included in the final regressions in Chapters 6, 7, and 8 to identify any effect associated with this group. In no case was a significant effect identified.

The second area of missing data was in the coping information. Unlike the Likert scales used in the other measures, the instrument for coping styles was open-ended. In Table 5.3, one can see the differing rates of missing data by job type.

Table 5.3 - Missing coping data by job type

	Inside Sales	Drivers	Whse	Total
Completed	47	37	50	134
Missing	4	25	24	53
Total	51	62	74	187
Percent Missing	8%	40%	32%	28%

The differing rates of missing coping data may be partially explainable by the difference in educational characteristics for each job. The nature of the jobs requires a higher level of education for the inside sales employees than either the drivers or warehouse staff. This, combined with the open-ended nature of the instrument that by its nature requires greater understanding and effort, could suggest that the coping instrument was too difficult for some of the population. The instrument developed by

Stone and Neale (1984) may not be appropriate for all populations. The populations used in other studies using this same instrument had populations with higher education levels. Although more investigation of this issue was outside the scope of this work, it is an area that might benefit from further investigation.

The hassles information also required more effort and greater specific recall than the main part of the questionnaire. A differential response rate with job type was not apparent, however, and the rate of missing data was considerably lower than that for the coping data. Unwillingness to complete the weekly information after having provided the daily data could be a result of a perceived redundancy between the two questions.

As in previous cases, indicator variables were used to identify the subpopulations with missing data. Whenever the missing variable was not part of the final model, these indicator variables were tested in the equation. Significant effects related to the population with missing data were not identified.

5.4 Correlations of Supervisory Measures

The APSS data set contains a number of supervisory style measures, some of which were intended to provide objective and subjective measures of the same intrinsic variable, while others were expected to measure different aspects of supervisory style. In this section, those expected relationships are examined in preparation for the more in-depth analysis in subsequent chapters.

Both delegation and direction style were measured in four different ways: the subject's perception, the subject's desired level, the supervisor's self-reported ideal level, and branch manager's perception. With the exception of the desired measure, one

would expect the other three measures to have a significant correlation clouded only by the perception process of the different reporters. The observations, however, did not strongly support this expectation. In Table 5.4, the correlation of the different measures of direction style are shown, while Table 5.5. shows the same information for delegation.

Table 5.4 - Correlation of different measures of direction style

	Subject	Desired	Superv.
Desired	0.619		
Superv.	-0.243	-0.097	
Manager	0.234	0.042	-.172

Table 5.5 - Correlation of different measures of delegation style

	Subject	Desired	Superv.
Desired	0.559		
Superv.	0.018	0.097	
Manager	0.177	0.083	-.054

The high observed correlations of perceived and desired measures for direction style ($r = 0.619$) and delegation style ($r = 0.559$) reflected a general correspondence between the subject's perception of the current state and his preferred supervisory style. This relationship suggested a fairly good fit between the actual and desired environment. There was limited evidence, however, of a significant relationship between the subject's desired supervision measures and either the supervisor's or the manager's objective measure..

In both cases, the correlations between the subject's perception and the manager's perception ($r = 0.234$ for direction and $r = 0.177$ for delegation) were

significant at the 5% level. The correlations were, however, lower than would be intuitively expected for perceived and objective measures of the same variable. It appears either that individual perception may be playing a very important role in the subject's perception of supervisory style, or that the location managers did not have a good understanding of the relationships between branch supervisors and their employees.

The supervisor's ideal measure provided something of an anomaly. The supervisor's objective measure of direction style was significantly ($p < .05$) and negatively associated with both the subject's measure ($r = -0.243$) and the manager's ($r = -0.172$). Although the correlations were not high, they nonetheless indicated that the subject perceived the supervisor acting in a contrary manner to the supervisor's perception of ideal. In the analysis in subsequent chapters, these different measures were introduced to the analyses separately to ensure identification of effects from either source.

In the development of the supervisory style scales by Bass and Valenzi (1974) and in subsequent work by Shapira (1976), the direction and delegation scales were found to be distinct measures of different management styles, with low correlation between the two. Table 5.6 shows the correlations identified in the APSS data using the different measures. The correlation of the subject's perception of delegation and direction was low and negative ($R=-0.216$), but statistically significant ($p < .05$). Although Shapira's data did not demonstrate a significant correlation, the low level of correlation was consistent between the APSS data and Shapira's work, and suggested that the two measures were evaluating distinct aspects of supervisory style. Once again, the incongruity of the supervisory measure was apparent. The supervisor's measure of delegation and direction were positively correlated, unlike the subject's measures. On the other hand, the supervisor's measure of direction and manager's measure of delegation were significantly negatively correlated.

Table 5.6 - Correlation of direction, delegation and Leader Member Exchange measures

		Direction				LMX	
		Subject	Desired	Supervisor	Manager	Subject	Manager
Delegation	Subject	-0.216	-0.029	-0.059	-0.196	0.502	0.052
	Desired	-0.006	0.137	0.063	-0.087	0.218	-0.004
	Supervisor	0.054	-0.073	0.311	0.094	-0.122	-0.203
	Manager	-0.069	-0.054	-0.387	-0.054	0.106	0.499
LMX	Subject	0.110	0.110	-0.299	-0.026		0.285
	Manager	0.208	0.139	-0.455	0.528	0.285	

Table 5.6 also presents the correlations of the Leader Member Exchange measures with themselves, and with the direction and delegation measures. Similar to the observations on the direction and delegation measures, the correlation of the subject's perception and the manager's objective measure of LMX ($r=.285$) was significant, but lower than what might be expected. Both of the previously identified explanations, the impact of individual appraisal or lack of knowledge by managers, might be applicable here. In addition, the conceptualization of the LMX construct embodies a dyad linkage between supervisor and employee. The measure provided by the manager contained only a single average evaluation of the relationship between the supervisor and his work group. The correlation of LMX to delegation style was readily apparent in the data. The subject's perceived measures of delegation and LMX, and the manager's measure of delegation and LMX had correlations near 0.5 ($p<.001$). Although delegation and LMX are conceptually distinct, the data provided evidence that they were closely related with higher levels of relationship linked to increased use of delegation as a supervisory style.

Although the manager's measure of LMX also appeared to be related to direction style, the subject's perceived measures of LMX were not related to direction. There was no evidence in the APSS data that the subject's perception of direction style, and his perception of Leader Member Exchange were related. The supervisor's measure of direction continued to present an anomaly. Both the subject's LMX measure and the manager's LMX measure were significantly negatively correlated ($r=-0.299$ and $r=-0.455$) with the supervisor's measure of ideal direction style. This continued inconsistency between the supervisor's direction measure and the other direction measure reinforced the belief that the supervisors' responses were measuring a notably different construct than other direction measures.

5.5 Correlation of Historical Variables

Previous studies into occupational stressors have typically focused on one set of stressors, with little attempt to evaluate their independence from stressors identified in different fields. In the APSS data, information was available for both the role stressors of ambiguity and conflict, and the demand-latitude stressors. Table 5.7 shows that role ambiguity was correlated significantly with role conflict ($r=-.231$, $p<.05$) and with decision latitude ($r=.221$, $p<.05$). Job demand and role conflict were highly correlated ($r=.553$, $p<.001$). The different chronic stressors, often studied in different fields, may therefore simply be different measures of the same stressful dimension of the work environment.

Table 5.7 - Correlation of historical chronic stressors

	Role Ambiguity	Job Demand	Decision Latitude
Role Conflict	-0.231	0.553	-0.144
Role Ambiguity		-0.149	0.221
Job Demand			0.114

5.6 Analysis Strategy

The independent variables in the consideration of the various hypotheses fell logically into four categories. One category included demographic information about the subjects that might be correlated with the various dependent variables under question. This category includes gender, age, years of experience, and affect intensity. A second group included variables describing the work environment that were independently and objectively measured. This group included the size of the work group, the size of the branch, the number of decision making layers, the union status, branch profitability and sales volume compared to budget, and productivity measures. In addition the job (one of three) and the business unit in which the subject works (one of seven) were included in this group. The third class was the primary focus of the thesis. It included self-reported measures of supervisory style as well as objective supervisory style measures from other sources. Also included in this group were the self-reported count and appraisal of daily hassles. The fourth category of variable, the elements of which were treated as either independent or dependent variables depending on the hypothesis being examined, were the perceived job characteristics that have been previously shown in the literature to be significant factors in occupational stress.

As an overall analysis strategy, the classes of variable were treated in a sequential manner. With multiple regression techniques, the demographic variables were first fit against the dependent variable. This identified and removed any variation that was attributable to gender, age, etc.

As a second step, the independent work environment variables were included in the regression equation. Initially, all variables except the indicator variables for job and business unit were examined. The detailed work variables were chosen to quantify key characteristics that varied from one branch and job to another and that might impact job stressors or job stress. Inclusion of these variables before the indicator variables, removed variation identifiable to specific factors, and limited the necessity of including the indicator variables if specific measures could be identified instead. Limiting the need for the general indicator variables improves the generalizability of results to other branches and jobs. As the second component of this step, the job and business unit variables were included to see if there was additional variation beyond that already identified by the more specific variables. As a result of this stage of the analysis, any relationships between the variables being studied and the more objective measures of the organizational climate were identified. The variation assignable to this second class of demographic variable was removed before investigation of the key variables.

In the analysis where job satisfaction was the dependent variable, the historically identified factors of job demand, decision latitude, role ambiguity and role conflict were included as the next step. As the final step, the variables of primary interest, supervisory style and hassles were introduced into the regression. Where multiple measures of the same factor were available (for example the subject's perception, the supervisor's objective measure and the manager's objective measure), they were entered singly to the base equation to identify individual effects.

This sequential approach provided a logical and effective structure to identify the potential roles of the variates without losing information because of the correlation between independent variates.

Finally, a best fit model was produced for each hypothesis. Because of the correlation of the independent variables, a step-wise regression approach that produced a single equation was considered to be too limiting with potential for missing valuable insights from other equations close to the best-fit identified in a step-wise regression. To deal with this concern, the best five equations were calculated for each stage of the model fitting process, i.e. the five best for a one parameter model, then the five best for a two parameter model, etc. until all parameters were added. To compare the large number of equations that were being considered, the R^2 statistic and Mallow's C_p statistic (Daniel and Wood, 1980) were used.

Mallow's C_p statistic is calculated as:

$$C_p = RSS_p/s^2 - (n-2p)$$

where RSS_p is the residual sum of squares from a model containing p parameters, p is the number of parameters in the model including the constant, and s^2 is the residual mean square from the equation with all hypothesized parameters included. The statistic assumes that s^2 calculated from the model with all available independent variables included is an unbiased estimate of the true error variance σ^2. C_p then increases as the bias in a model (i.e. the degree to which it exhibits lack of fit compared to the full model) increases. For an adequate model,

$$E(C_p) = p$$

To identify adequate models, one can graph the calculated C_p statistics for each model against p and compare the graph to a line $C_p = p$. Models with good fit will plot near or below the $C_p = p$ line. The preferred model is then one that limits the number of parameters included while minimizing C_p.

In the analysis described in the subsequent chapters, Mallow's statistic was used extensively, but with a minor modification. Because the overall analysis strategy first identified demographic variables that helped explain the variation, and then forced these into all following models, the search for an appropriate model normally began with d parameters forced into the model (where d was identified in preliminary analysis). The graphs thus compare C_p to the line

$$C_p = p' + d$$

where p' is the number of additional hypothesized variables added to an equation with d demographic variables included.

The analysis provided indications of a quadratic effect for some variables. The software used for the calculation of the numerous regressions for Mallow's procedure, however, did not allow forcing the linear factor into the regression equation whenever a quadratic component was indicated. To ensure that the quadratic factors were included where appropriate, both linear and quadratic factors were allowed to enter the regression equation independently, but quadratic factors were not included in the selected best fit models without the corresponding linear term.

In a few situations within the analysis, their was some ambiguity regarding the identification of a best fit model when multiple models produced comparable results for the C_p measure. In these cases, the best fit model was chosen by considering the relative strength of the roles of the explanatory variables in question in the models with fewer parameters. The information provided by the multiple acceptable models, however, was considered in the development of conclusions.

A large number of analyses were performed, and consideration was given to the inclusion of formal procedures to account for multiple comparisons. Given the nature of the study and the analysis, however, this was not viewed as necessary. The primary concern with multiple comparisons is the development of hypotheses or analyses based

on the data rather than on the motivating hypotheses of the study (Cox, 1965; Breslow and Day, 1980). This approach was rigorously avoided in the study. Demographic and job variables were included for adjustment purposes, and no conclusions were drawn in their regards. Each chronic stressor was individually hypothesized, and their analyses stand independently, and thus do not represent a multiple comparisons issue. In addition, the chronic stressors have been previously identified, and the analysis of their relationship to job satisfaction was confirmatory in nature. To alleviate any residual concern about multiple comparisons, conservative critical values were used to draw conclusions. Values of 5% were considered to be only marginal evidence.

Chapter 6

Predictors of Job Hassles

Chapter 3 hypothesized a potential mediating role for daily job hassles in the stress process. Figure 3.1 graphically depicts a relationship between perceived and objective supervisory style characteristics and the number of daily hassles and their appraised "degree of upset" for the individual. These hassles were then hypothesized to affect both the perceived chronic stressors and the strain outcomes. This chapter investigates the first component of this hypothesized process, the relationship between supervisory style and daily job hassles. As previously explained, the nature of the APSS study precluded conclusions regarding causal directions, but nonetheless, the analysis followed an intuitive cause and effect pattern for ease of understanding.

A literature search identified no previous work in the area of job hassles and supervisory style. Thus, there were no benchmarks with which to compare the APSS results and the data stand on their own for future replication.

In Chapter 5, the potential for a quadratic form of the direction measure was discussed in light of the observed distribution and the form of the instrument. In this chapter and in subsequent analysis, both linear and quadratic forms were tested for all the direction and delegation measures. Gap, supervisory and manager measures did not contribute significantly in their quadratic form in this analysis, or that for any other hypothesis, so these results were omitted from all tables. On the other hand, actual and desired measures of both direction and delegation did contribute in at least one analysis, and so were included everywhere.

6.1 Number of Hassles

Subjects were asked to identify the number of times that the specifically identified hassles occurred during the course of the day, regardless of their appraisal of the degree of upset felt by the individual. Examination of the observed distribution for the data shown in Appendix D, and recognition that the data were obtained as an incident count over time suggested that a normal regression on the untransformed data was inappropriate, and that a Poisson distribution might be more representative. Using a generalized linear model package, a Poisson model with a logarithmic link function was fit to the data. The lack of fit measures, however, were unacceptably high, even after all independent variables were fit. This suggested that some form of extra-poisson variation was present in the data, and the use of a model defined by a single parameter (as is the case with a Poisson model) was insufficient. An adjustment to the Poisson model was included to account for the extra-poisson variation (McCullagh & Nelder, 1983), and the results were then compared to the results of fitting a normal model to the data after a logarithmic transformation. Because results from the extra-poisson model and the normal model were effectively identical, and to be consistent with the remainder of the analyses in the thesis, the normal model was used for all analyses.

As outlined at the end of Chapter 5, the classes of variables were entered sequentially using daily hassles as the dependent variable. Although no demographic variables were significant in the regression, branch profitability was significant. When the indicator variables were subsequently included in the model, they also contributed significantly to the regression. This suggested that there was some difference attributable to the job beyond the information provided in the specific job variables. Table 6.1 shows that the resulting equation with only work environment variables included explained 12.5% of the variation. The daily number of hassles increased with the profitability of the branch, and was lowest with the drivers. This equation then became the base for further analysis of supervisory style variables.

Table 6.1 - Base regression for daily number of hassles

Predictor	Coefficient	t-ratio	Significance
Constant	3.085	19.64	0.000
Prof	0.002	3.63	0.000
Whse worker	-0.265	-1.42	0.158
Driver	-0.570	-3.01	0.003

R^2 = 12.5% F-Ratio = 7.68 Significance = 0.000

Note: In this table and all subsequent tables, "significance" refers to the significance level of the data using the t-distribution under the hypothesis that the coefficient equals zero.

Table 6.2 summarizes the results of adding direction style measures to the base regression equation. The linear form of the subject's perception of direction style contributed significantly to the model ($p = 0.026$) and increased the variation explained to 15.2%. The inclusion of the quadratic form of the subject's perception did not add to the model fit. The supervisor's objective measure of direction style also added significantly to model fit ($p = 0.002$, and $R^2 = 17.6\%$). The desired and manager's measures were marginally significant ($0.05 < p < 0.10$). In all cases, as the amount of direction provided by the supervisor increased, the number of hassles increased.

Table 6.2 - Direction style measures added to base regression for daily number of hassles

Type of measure	Coefficient	Significance	R^2
Base Model			12.5%
Subject- Linear only	0.2138	0.026	15.2%
- Linear plus	0.5890	0.256	
Quadratic	-0.0689	0.461	15.5%
Desired - Linear only	0.2050	0.062	14.4%
- Linear plus	0.8693	0.251	
Quadratic	-0.1189	0.376	15.6%
Gap - Subject	-0.0776	0.497	12.8%
Supervisor	0.4223	0.002	17.6%
Manager	0.2458	0.097	14.4%

The subject's measure of delegation style also contributed significantly to the fit of the model as shown in Table 6.3, although once again, the quadratic form did not significantly improve the fit. As the subject perceived increased delegation, the number of hassles decreased. The highest increase in variation explained, however, was observed when the gap in delegation style between the subject's perceived and desired measures was fit in the model. As the gap increased, the number of hassles increased. Inclusion of this measure increased the variation explained to 20.1%

Table 6.3 - Delegation style measures added to base regression for daily number of hassles

Type of measure	Coefficient	Significance	R^2
Base Model			12.5%
Subject- Linear only	-0.2224	0.009	16.2%
- Linear plus	0.4551	0.344	
Quadratic	-0.1036	0.153	17.3%
Desired - Linear only	0.0955	0.290	13.1%
- Linear plus	-0.1101	0.840	
Quadratic	0.0288	0.703	13.2%
Gap - Subject	0.3312	0.000	20.1%
Supervisor	0.2344	0.065	14.4%
Manager	-0.2962	0.080	14.2%

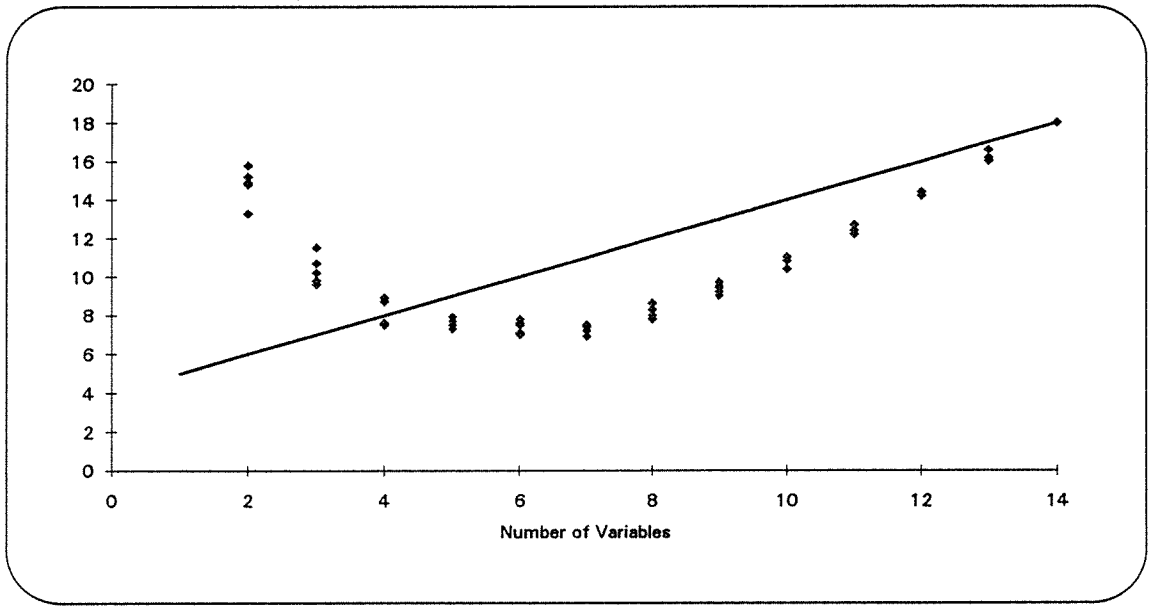
In Table 6.4, one can see that the number of hassles decreased significantly ($p = 0.009$) as the subject's perception of the LMX between supervisor and employee improves. The manager's measure of the supervisor-employee relationship did not demonstrate the same relationship.

Table 6.4 - Leader Member Exchange measures added to base regression for daily number of hassles

Type of measure	Coefficient	Significance	R^2
Base Model			12.5%
Subject	-0.3001	0.009	16.2%
Manager	-0.0858	0.661	12.6%

As described in the analysis strategy in Chapter 5, the best five regressions were calculated for each number of variables included in the model, and Mallow's C_p statistic used to identify models that adequately fit the data so that a best fit model could be identified. As can be seen in Figure 6.1, a minimum of four variables was required to produce an unbiased model.

Figure 6.1 - Mallow's C_p for supervisory styles vs. daily number of hassles.



In Table 6.5, the variables included in the best regressions are shown along with the amount of variation explained. All five of the equations shown with four variables added were reasonably close to the unbiased line, but all but one had a mixture of quadratic terms without the corresponding linear term. Examination of the five regressions for each of the 3, 4 and 5 variable cases provided strong evidence for the significant role of the supervisor's objective measure of direction style, and some form (linear or quadratic) of the subject's perceived measure. Thus, to maintain a simple model with low bias, the preferred model included the supervisor's measure of direction style, the subject's measure (in linear and quadratic form) and the LMX measure.

Table 6.5 - Best regressions for daily number of hassles

# of Variables	R^2	C_p	Variables
1	17.6	21.7	DirS
1	16.8	23.3	$DelA^2$
1	16.2	24.6	LMX
1	16.2	24.6	DelA
1	15.2	26.8	DirA
2	22.4	13.3	DirA, DirS
2	21.7	14.8	$DelA^2$, $DelD^2$
2	21.6	14.9	DirS, $DirA^2$
2	21.5	15.2	DelD, $DelA^2$
2	21.2	15.8	DirS, DelA
3	25.1	9.6	DirA, DirS, LMX
3	25	9.8	DirS, $DelA^2$, $DelD^2$
3	24.8	10.2	DirS, DelD, $DirD^2$
3	24.5	10.7	DirS, DirA, $DelA^2$
3	24.2	11.5	DirS, DirA, DelA
4	27	7.5	DIrS, DirA, $DelA^2$, $DelD^2$
4	26.9	7.6	DIrS, DirA, DelD, $DelA^2$
4	26.4	8.7	DirS, $DirA^2$, $DelA^2$, $DelD^2$
4	26.3	8.9	DirS, DelD, $DirA^2$, $DelA^2$
4	26.3	8.9	DirS, DirA, LMX, $DirA^2$
5	28	7.3	DirS, DIrA, $DirA^2$, $DelA^2$, $DelD^2$
5	27.9	7.5	DirS, DirA, DelD, $DirA^2$, $DelA^2$
5	27.8	7.7	DirS, DirA, DirM, $DelA^2$, $DelD^2$
5	27.7	7.9	DirS, DirA, DelD, DirM, $DelA^2$
5	27.7	7.9	DirS, DirA, LMX, $DelA^2$, $DelD^2$

Note: Base includes 4 variables so C_p should be near #var + 4

Table 6.6 summarizes the results of the regression of this preferred model. The model suggested that the number of hassles in the last working day increased significantly as branch profitability increased, and as both the supervisor's and subject's measure of direction style increased. As the relationship between supervisor and employee increased, the number of hassles decreased.

Table 6.6 - Selected model for daily number of hassles

Predictor	Coefficient.	t-ratio	Significance
Constant	0.718	0.81	0.417
Prof	0.002	3.72	0.000
Whse worker	-0.445	-2.49	0.014
Driver	-0.790	-4.34	0.000
DirA	1.118	2.23	0.027
$DirA^2$	-0.146	-1.62	0.107
DirS	0.455	3.35	0.001
LMX	-0.301	-2.65	0.009

R^2 = 26.3% F-Ratio = 8.00 Significance = 0.000

The APSS data requested information on coping success and styles as they related to occupational hassles. If a moderating effect from coping existed, it would be expected to manifest itself primarily in the model for the proportion of hassles that were appraised as stressful. Nonetheless, an effect for coping on the perceived number of hassles might also be hypothesized. To test this hypothesis, the model shown in Table 6.6 was re-analyzed with the inclusion of the coping success measure, and separately with the inclusion of the indicator variables for the type of coping used. In neither case was there any notable improvement in the variation explained, nor were the coping variables significant.

In addition to the daily measure, the APSS data included a second measure of the number of hassles: the number of hassles in the last five working days. Although in Chapter 5 I identified a concern with potential recall bias for the weekly measure, the analysis was repeated for the weekly data. Conclusions from this component must, perforce, be considered in light of this concern.

Table 6.7 shows the base regression of demographic and job variables. In a similar manner to the daily data, branch profitability compared to budget appeared as a significant variable with the number of hassles increasing as branch performance improves. The job indicator variable that was apparent in the daily data was not significant in the weekly data. An age variable, although not identified in the daily data, was significant, with older subjects reporting fewer weekly hassles.

Table 6.7 - Base regression for weekly number of hassles

Predictor	Coefficient	t-ratio	Significance
Constant	5.168	10.89	0.000
Age	-0.037	-2.88	0.005
Prof	0.003	2.64	0.009

R^2 = 10.6% F-Ratio = 7.34 Significance = 0.001

The inclusion of direction style measures in the weekly model, as shown in Table 6.8, presented a similar pattern to the daily measure, although some variables with marginal significance in the regression for daily hassles increased in significance for the weekly data , and conversely some of the significant variables became marginal. The supervisor's objective measure was highly significant with both daily and weekly data. The subject's measure, however, became only marginally significant with the weekly data. Both the subject's desired level of direction style, and the manager's measure contributed significantly to the weekly model.

Table 6.8 - Direction style measures added to base regression for weekly hassles

Type of measure	Coefficient	Significance	R^2
Base Model			10.6%
Subject- Linear only	0.1894	0.138	12.2%
- Linear plus Quadratic	-0.5847 0.1435	0.380 0.237	13.2%
Desired - Linear only	0.3252	0.025	14.2%
- Linear plus Quadratic	-0.655 0.1750	0.538 0.353	14.8%
Gap - Subject	0.0775	0.599	10.8%
Supervisor	1.0087	0.000	27.4%
Manager	0.4093	0.025	14.2%

The delegation measures were added to the base regression to produce the results shown in Table 6.9. Once again, there was similarity between the results for weekly and daily hassles. The gap between the subject's perception of the level of delegation and their desired level of delegation was highly significant in the model for weekly hassles. As the gap increased, the number of hassles that were reported increased. Both of the objective measures of delegation, the supervisor's and the manager's, were significant predictors of the weekly data, although only marginally significant with the daily hassles model. These two variables were, however, related in opposite directions. As the supervisor's measure of the ideal delegation style increased, so did the number of hassles. As the manager's perception of the supervisor's delegation style increased, the number of hassles decreased.

Table 6.9 - Delegation style measures added to base regression for weekly hassles

Type of measure	Coefficient	Significance	R^2
Base Model			10.6%
Subject - Linear	-0.1697	0.129	12.3%
- Quadratic	-0.3317	0.652	
	0.0241	0.824	12.3%
Desired - Linear	0.1961	0.101	12.5%
- Quadratic	-0.4916	0.569	
	0.0933	0.422	13.0%
Gap - Subject	0.3963	0.001	18.4%
Supervisor	0.5863	0.001	18.5%
Manager	-0.4665	0.019	14.5%

In Table 6.10, the results of the addition of LMX measures to the weekly model reflected exactly the results for the daily model. An increased relationship between supervisor and employee resulted in fewer hassles.

Table 6.10 - Leader Member Exchange measures added to base regression for weekly hassles

Type of measure	Coefficient	Significance	R^2
Base Model			10.6%
Subject	-0.4956	0.001	18.3%
Manager	-0.4413	0.106	12.5%

Figure 6.2 and Table 6.11 repeat the analysis of best regressions that were used for the daily hassles data. Once again, four variables need to be added to produce an unbiased model, but in the case of weekly hassles some variables were different. The supervisor's measure of direction style, and the subject's perceived LMX measure of relationship were integral parts of the best model for both weekly and daily hassle counts. Although the subject's measure of direction style was significant in the daily

hassles model in a quadratic form, only the linear form contributed to the weekly model. Examination of the various models with similar C_p statistics also suggested that the subject's perceived measure could be replaced by the desired measure to produce an equally acceptable model. The supervisor's delegation style was significant with the weekly data, despite an absence in the daily model.

Figure 6.2 - Mallow's C_p for supervisory styles vs. weekly number of hassles

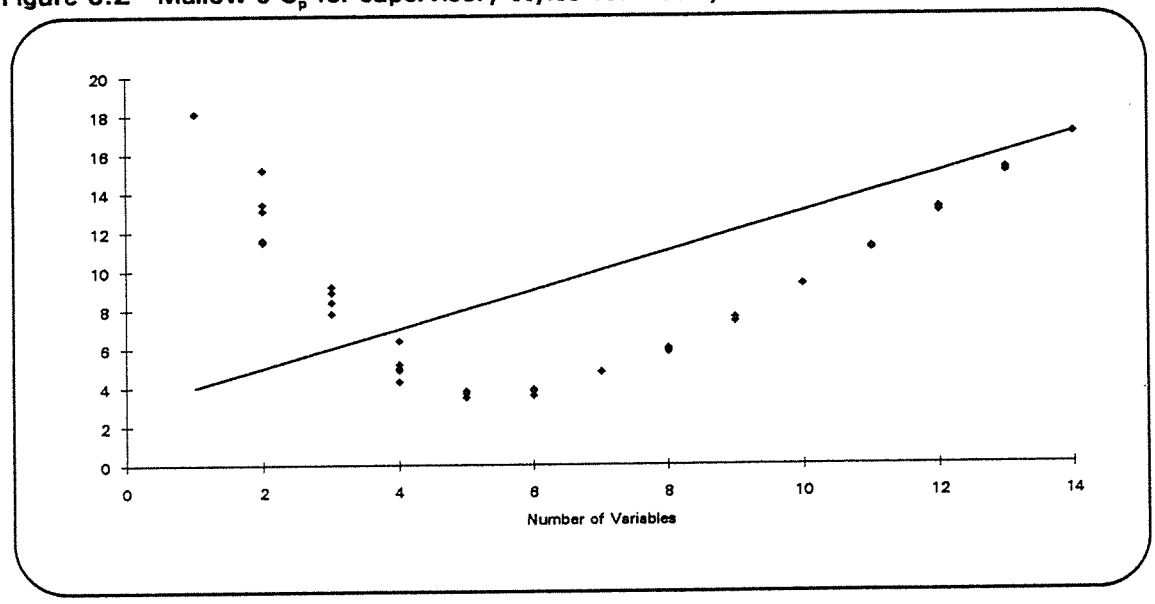


Table 6.11 - Best regressions for weekly number of hassles

# of Variables	R^2	C_p	Variables
1	18.5	35	DelS
1	18.3	35.4	LMX
1	14.5	42.5	$DirD^2$
1	14.5	42.5	DelM
2	32	11.5	DirS, DelS
2	31.9	11.6	DirS, DirM
2	31.2	13.1	DirS, $DirA^2$
2	31	13.4	DirS, DirA
2	30	15.2	DirS, $DirD^2$
3	35	7.8	DirS, DelS, $DirA^2$
3	34.7	8.4	DirS, DelS, $DirD^2$
3	34.7	8.4	DirS, DelS, DirA
3	34.4	8.9	DirS, DelS, DirD
3	34.3	9.2	DirS, DelS, DirM
4	37.9	4.3	DirS, DelS, LMX, $DirD^2$
4	37.6	4.9	DirS, DelS, LMX, DirD
4	37.5	5	DirS, DelS, LMX, $DirA^2$
4	37.4	5.2	DirS, DelS, LMX, DirA
4	36.8	6.4	DirS, DelS, LMX, $DirD^2$

Note: Base includes 3 variables so C_p should be near #var + 3

Although either of two four-variable models could have been chosen while still avoiding the inclusion of quadratic terms without the corresponding linear terms, the presence of the subject's perception in the daily model suggested that the model with it present was preferred. In Table 6.12, the results of the selected regression are shown. The number of hassles increased with the amount of direction, measured either objectively by the supervisor or subjectively by the subject, increased with the amount of delegation measured by the supervisor, and decreased with a perceived increasing relationship between the supervisor and subject.

Table 6.12 - Selected model for weekly number of hassles

Predictor	Coefficient	t-ratio	Significance
Constant	0.617	0.58	0.565
Age	-0.023	-2.05	0.043
Prof	0.003	2.91	0.004
DirS	0.859	4.50	0.000
DelS	0.396	2.57	0.011
LMX	-0.315	-2.30	0.023
DirA	0.277	2.50	0.014

R^2 = 37.4 F-Ratio = 11.97 Significance = 0.000

As with the daily measure, a moderating effect for coping success and style were tested by inclusion of these variables in the selected model shown in Table 6.12. No significant effect was indicated for either coping success or coping style.

6.2 Appraisal of Hassles

Subjects were asked to evaluate, for each type of hassle, the upset felt on a 4 point scale: none, a little, some, a lot. The proportion of hassles for each subject that were rated as having caused "some" or "a lot" of upset thus provided a measure of the appraised negative reaction to the hassles experienced. The hypotheses outlined in Chapter 3 suggested that this reaction would be influenced by the perceived and objective supervisory styles experienced by the subject.

The distribution of the proportion of hassles that were stressful is shown in Appendix D to be relatively flat (except for a peak at the zero point) in the range 0 to 1 for both the daily and weekly data. To allow the use of multivariate normal regression analysis, a logit transformation was performed on the proportion, using a correction to avoid the presence of infinite points. The new dependent variable for analysis purposes was:

Logit (proportion stressful)=Ln ((Number stressful + 0.5)/(number not stressful + 0.5))

Following the outlined analysis strategy, the first step identified significant demographic variables for the daily data. Two of this group of variables were identified as having significant effects on the proportion of stressful hassles: the number of years of experience with the company and the subject's affect intensity. The proportion of stressful hassles increased with both of these factors. Table 6.13 summarizes the resultant regression showing 10% of the variation was explained by the demographics.

Table 6.13 - Base regression of demographic variables on proportion of stressful hassles

Predictor	Coefficient	t-ratio	Significance
Constant	-5.039	-3.94	0.000
Expr	0.048	1.98	0.050
AI	1.120	3.38	0.001

R^2 = 10.0% F-Ratio = 7.81 Significance = 0.001

As a second stage, job variables were analyzed and a single variable was identified as having a significant effect on the proportion of hassles appraised as stressful. As the productivity of the inside sales group increased, the proportion of

stressful hassles also increased. The variables recording productivity, however, required special treatment in the analysis. Three variables were used in the analysis, one for each job type. The variable "Inside sales productivity" showed inside sales productivity by branch for subjects coded as inside sales , and 0's for those coded as warehouse-persons or drivers. Similarly "Warehouse-person productivity" was entered only for warehouse workers, and "Driver productivity" was entered only for drivers. Thus, these three variables formed a type of interaction of productivity with job type, but with the additional complication of different types of productivity measures for each job type. Although these variables were not standard interactions, they did require the inclusion of the job indicator variables in the regression, regardless of the apparent significance of the indicators. Without the inclusion of these job variables, the significance of the productivity variables could be attributed to job differences rather than productivity differences. Table 6.14 shows the resulting regression with 22.7% of the variation explained by the combination of the demographic and job variables.

Table 6.14 - Base regression of demographic and job variables on daily proportion of stressful hassles

Predictor	Coefficient	t-ratio	Significance
Constant	-6.056	-3.68	0
Expr	0.052	2.24	0.027
AI	1.018	3.18	0.002
Prod-IS	0.028	2.29	0.024
Whse-worker	0.66	0.66	0.511
Driver	1.34	1.34	0.184

R^2 = 22.7% F-Ratio = 8.06 Significance = 0.000

The regression shown in Table 6.14 became the base from which the analysis proceeded to examine supervisory style effects on the proportion of hassles perceived as upsetting. Table 6.15 shows the contribution to the model of each measure of direction style added singly. None of the measures of direction style contributed significantly to the model.

Table 6.15 - Direction style measures added to base regression for daily proportion of stressful hassles

Type of measure	Coefficient	Significance	R^2
Base Model			22.7%
Subject- Linear only	0.0786	0.695	22.8%
- Linear plus	-0.575	0.574	
Quadratic	0.1208	0.514	23.1%
Desired - Linear only	-0.1632	0.471	23.0%
- Linear plus	0.314	0.852	
Quadratic	-0.0839	0.774	23.1%
Gap - Subject	-0.2561	0.250	23.5%
Supervisor	-0.1056	0.723	22.8%
Manager	0.0800	0.741	22.8%

Table 6.16 summarizes the effect of each measure of delegation on the base model. Two measures of delegation style appeared to be significant contributors to the model. The coefficient of the subject's perceived measure of delegation style was significant at the 3.8% level, and the variance explained by the model increased from 22.7% to 25.1%. When the quadratic form was tested, no additional increase in the variation explained was apparent. The manager's objective measure of delegation style also contributed very significantly when added to the base model and increased the explained variation to 29.9%. The two measures, however, acted in opposite direction. As the subject's perception of delegation style increased, the proportion of hassles

perceived as stressful decreased. On the other hand, an increase in the manager's objective measure of delegation style corresponded to increases in the proportion of hassles appraised as stressful. In Chapter 5, these two measures were identified as having a lower correlation ($r = 0.177$) than expected for subjective and objective variables that were measuring the same factor. The concern that the variables may be measuring two different constructs is reinforced by their significant, but opposing relationships with the proportion of stressful hassles.

Table 6.16 - Delegation style measures added to base regression for daily proportion of stressful hassles

Type of measure	Coefficient	Significance	R^2
Base Model			22.7%
Subject - Linear only	-0.3491	0.038	25.1%
- Linear plus	-0.7729	0.432	
Quadratic	0.0640	0.662	25.2%
Desired - Linear only	-0.0831	0.649	22.8%
- Linear plus	-2.133	0.076	
Quadratic	0.2801	0.085	24.5%
Gap - Subject	0.2913	0.092	24.3%
Supervisor	-0.2774	0.287	23.4%
Manager	0.9165	0.000	29.9%

The two measures of Leader Member Exchange (LMX) were also added to the base model to evaluate their contribution to the model independently of other supervisory measures. The results summarized in Table 6.17 provide no evidence that the LMX measures significantly improved the fit of the model.

Table 6.17 - Leader Member Exchange measures added to base regression for daily proportion of stressful hassles

Type of measure	Coefficient	Significance	R^2
Base Model			22.7%
Subject	-0.3653	0.115	24.1%
Manager	0.5590	0.077	24.5%

As described in the analysis strategy in Chapter 5, the best five regressions were calculated for each number of variables included in the model, and Mallow's C_p statistic was used to identify models that adequately fit the data so that a best fit model could be identified. Figure 6.3 shows that although no single variable added to the base model produced an adequate fit, a single two parameter model was unbiased. With three or more variables added, there were a large number of acceptable models but no significant improvement in model fit.

Figure 6.3 - Mallow's C_p for supervisory styles vs. daily appraisal of hassles

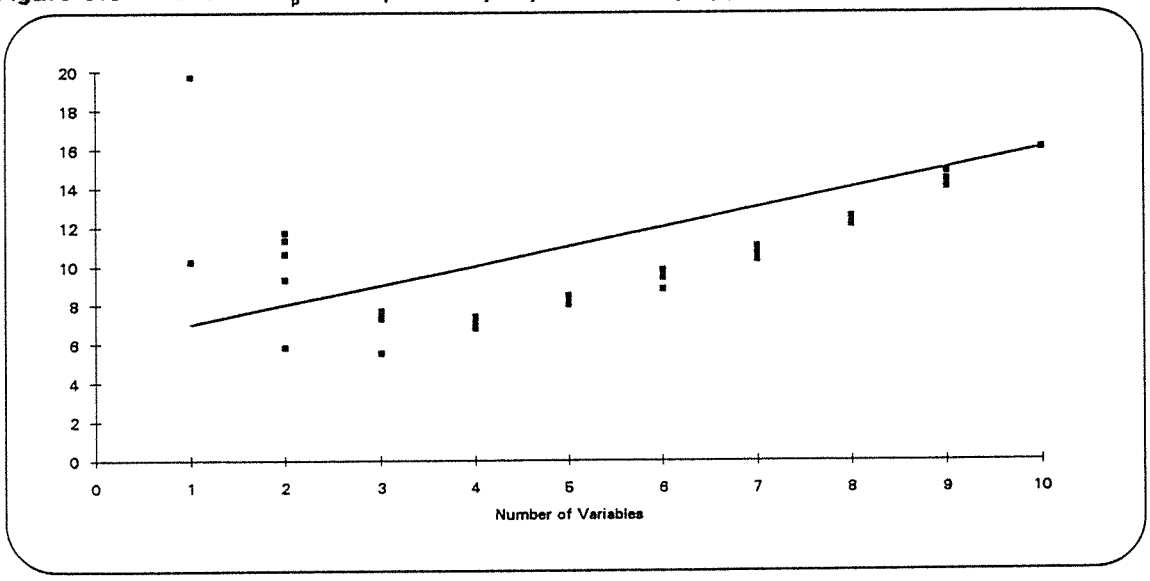


Table 6.18 summarizes the variables included at each stage, and shows the variation explained and the C_p statistic for each regression. It was apparent from this data, that the combination of the subject's perceived measure of delegation style, and

the manager's objective measure of delegation style contained all the predictive information available for the proportion of hassles appraised as stressful, and that both measures were required to produce an acceptable unbiased model.

Table 6.18 - Best regressions for daily proportion of hassles perceived as stressful

# of Variables	R^2	C_p	Variables
1	29.9	10.2	DelM
1	25.1	19.7	DelA
1	24.5	21	LMXM
1	24.1	21.7	LMX
1	23.4	23.2	DelS
2	33.1	5.8	DelM, DelA
2	31.4	9.3	DelM, LMX
2	30.7	10.6	DelM, DelS
2	30.4	11.3	DelM, DirS
2	30.2	11.7	DelM, DirA
3	34.3	5.5	DelM, DelA, DelS
3	33.4	7.3	DelM, DelA, DirS
3	33.4	7.4	DelM, DelA, DelD
3	33.2	7.7	DelM, DelA, DirD
3	33.2	7.7	DelM, DelA, LMX
4	34.7	6.8	DelM, DelA, DelS, DirS
4	34.6	6.9	DelM, DelA, DelS, DelD
4	34.5	7.1	DelM, DelA, DelS, DirA
4	34.4	7.3	DelM, DelA, DelS, LMX
4	34.3	7.4	DelM, DelA, DelS, DirD

Note: Base includes 6 variables so C_p should be near #var + 6

An examination of this preferred model for the proportion of hassles appraised as stressful shown in Table 6.19 shows that the manager's objective measure of delegation style and the subject's perceived measure were working in opposite directions. The proportion of hassles appraised as stressful increased as the manager perceived increasing delegation, but decreased as the subject perceived increasing delegation.

Table 6.19 - Selected model for daily proportion of hassles perceived as stressful

Predictor	Coefficient	t-ratio	Significance
Constant	-9.581	-4.83	0
Expr	0.060	2.70	0.008
AI	1.169	3.87	0.000
Prod-IS	0.044	3.65	0.000
Whse-worker	1.910	1.94	0.055
Driver	0.969	2.59	0.011
DelM	0.969	4.02	0.000
DelA	-0.403	-2.54	0.012

$R^2 = 33.1$ F-Ratio = 9.56 Significance. = 0.000

Coping success and coping style were hypothesized to moderate the proportion of hassles that were appraised as stressful. Table 6.20 shows the regression coefficients and significance levels resulting from the inclusion of these variables in the selected model shown in Table 6.19. The amount of variation explained in the selected model shown in Table 6.20 was different from 6.19 because of the inclusion of fewer observations (108 subjects included complete coping information). The notable increase in variation explained by the same model, from 33.1% to 43.4% was associated with an interaction between coping respondents and the explanatory variables included in the model. Inclusion of coping success in the selected model showed a significant effect at the 5% level. Although two of the indicator variables for coping style were significant, the global test for the addition of the style indicator variables did not show a significant effect.

Table 6.20 - Coping success and style measures added to selected model for daily proportion of stressful hassles

Type of measure	Coefficient	Significance	R^2
Selected Model*			43.4%
Coping Success	-0.321	0.050	45.6%
Coping Style - global test		>0.100	50.0%
diversion	base		
different light	-0.653	0.483	
did something	-1.415	0.035	
expressed emotion	-0.993	0.181	
acceptance	-0.786	0.290	
emotional support	0.223	0.817	
relaxing	-1.131	0.174	
spiritual	-0.357	0.733	
other	-2.174	0.026	

*Note different base because of missing data.

The analysis was repeated with the weekly measures of the proportion of hassles perceived as stressful. Once again, the data was transformed using a logit transformation. As discussed in Chapter 5, however, the concern over accurate recall suggested that the results of this analysis need to be interpreted with some care.

The base regression of demographic and job-related variables resulted in the same variables being identified as contributing significantly to the model. Table 6.21 summarizes the regression results.

Table 6.21 - Regression of demographic and job variables on weekly proportion of stressful hassles

Predictor	Coefficient	t-ratio	Significance
Constant	-8.800	-2.83	0.005
Expr	0.096	2.68	0.008
AI	1.019	2.15	0.034
Prod-IS	0.060	2.01	0.046
Whse-worker	2.396	0.95	0.343
Driver	3.158	1.26	0.212

R^2 = 24.7% F-Ratio = 7.92 Significance. = 0.000

Similar to the proportion of stressful daily hassles, there was no evidence of a significant effect of direction style for the weekly data as summarized in Table 6.22

Table 6.22 - Direction style measures added to base regression for weekly proportion of stressful hassles

Type of measure	Coefficient	Significance	R^2
Base Model			24.7%
Subject- Linear only	-0.0437	0.886	24.7%
- Linear plus	-0.659	0.660	
Quadratic	0.1157	0.675	24.8%
Desired - Linear only	-0.0654	0.848	24.7%
- Linear plus	2.399	0.344	
Quadratic	-0.4347	0.327	25.3%
Gap - Subject	-0.0102	0.976	24.7%
Supervisor	0.0558	0.900	24.7%
Manager	-0.1487	0.685	24.8%

Although the daily data on proportion of hassles perceived as stressful led to the identification of both the subject's perceived measure of delegation, and the manager's objective measure of delegation as contributing significantly to the model, the weekly data showed no evidence of a delegation style effect (Table 6.23) when added to the base model.

Table 6.23 - Delegation style measures added to base regression for weekly proportion of stressful hassles

Type of measure	Coefficient	Significance	R^2
Base Model			24.7%
Subject - Linear only	-0.3667	0.169	25.8%
-Linear plus	0.213	0.895	
Quadratic	-0.0865	0.716	25.9%
Desired - Linear only	-0.3385	0.219	25.6%
- Linear plus	-1.931	0.288	
Quadratic	0.2176	0.375	26.1%
Gap - Subject	0.0492	0.854	24.7%
Supervisor	-0.4180	0.330	25.3%
Manager	0.6826	0.079	26.6%

As in the daily data, no effect was identified for either measure of Leader Member Exchange for weekly data. (Table 6.24)

Table 6.24 - Leader Member Exchange measures added to base regression for weekly proportion of stressful hassles

Type of measure	Coefficient	Significance	R^2
Base Model			24.7%
Subject	-0.3967	0.268	25.4%
Manager	0.3560	0.456	25.0%

The identification of best models using Mallow's procedure (not shown here) indicated an unbiased model without inclusion of any supervisory or hassle variables. Thus, with no indication of any effect from supervisory styles on the proportion of hassles perceived as stressful for the weekly data, the selected model showing the best fit was the model shown in Table 6.21 with only demographic data included.

The coping factors were included in the base equation to test for a coping effect in the weekly data. The results shown in Table 6.25 reflected almost exactly the results for the daily hassles: coping success was marginally significant, but coping style was not significant.

Table 6.25 - Coping success and style measures added to selected model for weekly proportion of stressful hassles

Type of measure	Coefficient	Significance	R^2
Selected Model*			27.8%
Coping Success	-0.533	0.055	30.7%
Coping Style - global test		>0.100	36.4%
diversion	base		
different light	-1.871	0.255	
did something	-2.517	0.027	
expressed emotion	-2.050	0.122	
acceptance	-1.988	0.120	
emotional support	0.919	0.600	
relaxing	-1.456	0.291	
spiritual	-1.642	0.348	
other	-3.730	0.023	

*Note different base because of missing data.

6.3 Summary and Discussion

The demographic and job variables that were identified as having a significant relationship with the number of hassles and the proportion of hassles perceived as stressful provides an interesting insight into the dynamics of hassles in the work environment. With both daily and weekly data, the higher the profitability in a branch compared to budget, the higher the number of hassles. Since increases in profitability are often related to increasing workloads, this is intuitively consistent.

There was evidence in both the daily and weekly data that individuals' reactions to daily job hassles varied based on individual differences in affect intensity. As affect intensity increased, so did the proportion of hassles that were appraised as stressful. The significance of this measure of individual difference provides evidence that some component of an individual's appraisal process varies between individuals.

The significant impact of experience in both daily and weekly data showed that as subjects gained experience with the company, they were more likely to be upset by job hassles. Rather than adapting to the environment, there is evidence that workers become less tolerant of hassles as their experience increases.

Productivity, which like branch profitability is intuitively linked to increased workload, appeared to have an effect only for inside sales staff. For this group, increases in productivity corresponded to increases in the proportion of hassles appraised as being stressful. The other measures of productivity were, however, not significant.

The number of hassles appeared to be related to supervisory styles in a very complex manner. Both objective and perceived measures of direction style were significantly related to the number of hassles in either the daily or the weekly analysis. As the amount of supervisory direction increased, the number of hassles increased. In

addition, the evaluation of a best fit equation that included the best summary of available information in the supervisory style data included direction style measures from both the subject and the supervisor. Since both were required in the model, this suggested that the supervisor's measure was measuring something different than the subject's .

Evidence of an effect from delegation style was also present. A gap between the subject's perceived and desired delegation styles was significant for both daily and weekly counts, while the other measures were significant in only one set of data. The supervisory measure, however, acted in an opposite manner to the other measures. Whereas the number of hassles decreased with increasing delegation as measured by the subject or manager, it increased with delegation as measured by the supervisor. It appears that the supervisory measure was assessing a different factor than the other measures. The subject's perceived LMX measure of relationship was significant with both data sets, with increasing relationship resulting in a decreasing number of hassles.

Because the hassles which the subjects were counting were designed to be related to concrete events, and thus not highly effected by individual appraisal, one would not necessarily expect that supervisory style would be significantly related to hassles. The study design relied, however, on self-reported counts of the number of hassles and was thus subject to the subject's perception of the number of hassles. Without a study design that provides independent counts of the number of hassles, there are two contrasting potential explanations. Objective supervisory style could have a direct affect on the number of hassles. As a supervisor uses increasing direction, the subject may be required to perform tasks that lead to an increased number of hassles. Alternatively, the observation may be the result of subject perception and differential recall of hassles as a result of perceived supervisory style. The subject's perception of certain supervisory styles might cause the subject to notice, or remember, more hassles. The significance of the gap measure of delegation style provides some support for this

explanation. Since the gap was an interaction of the subject's perception of supervisory style and the subject's desired style, the gap is less likely to have a direct effect on hassles (which implies an objective component), and more likely to relate to selective recall.

Of the supervisory styles that were tested for an effect on the proportion of appraised stressful hassles, only the delegation style provided evidence of a significant effect for daily data. As subjects perceived decreases in delegation, the proportion of hassles that were appraised as stressful increased. This provided evidence that as employees see themselves having been delegated increased authority to make decisions, they were less likely to be upset by daily hassles. Conversely, there was no evidence that the relationship between employee and supervisor, and the amount of direction provided by the supervisor significantly affect the model. The manager's measure of delegation, however, measured a different construct from the employee's perception of delegation. As the manager's measure increased, so do the proportion of hassles that were perceived as stressful. There was strong evidence, therefore, that the subject's perception was an important filter of objective supervisory styles.

The subject's perceived success in coping with hassles had a significant impact on the proportion of hassles that they felt were stressful. As subjects coped better, they experienced fewer stressful hassles. This observation was replicated in both the daily and weekly measures. There was no evidence, however, for any effect of coping style on stressful hassles.

Thus in summary, there is evidence for the first half of the mediating relationship of job hassles between supervisory styles and chronic stressors: supervisory styles and job hassles were related. The mechanisms of the mediating relationship could, however be different for the different style measures. Strong evidence of a relationship was apparent between direction style and employee-supervisor relationship

on the one hand, and the number of hassles on the other. Slightly weaker evidence was found for delegation style. The appraised impact of hassles, however, was only shown to be related to the delegation style.

Chapter 7

Predictors of Perceived Chronic Occupational Stressors

Research into the stress process has typically considered perceived chronic stressors such as job demand, decision latitude, role conflict or role ambiguity to be independent variables in the prediction of job satisfaction and other outcomes. Although this approach has improved the understanding of one segment of the occupational stress process, a better understanding of the background factors in the objective or perceived organizational environment that are being measured by these chronic stressors will contribute not only to the understanding of the process, but also to the development of strategies to modify organizational cultures to reduce occupational stress.

In Chapter 3, the general structure hypothesised for the stress process shows perceived chronic stressors being influenced not only by the objective environment, but also by perceptions of daily job hassles and supervisory style. Measures of some of the perceived chronic stressors which have been identified in previous research (job demand, decision latitude, role conflict, role ambiguity) were gathered in the APSS study. This chapter evaluates the hypothesised relationships of perceived hassles and both objective and perceived measures of supervisory style with these chronic stressors.

The hypothesised model suggests that some components of supervisory style may be mediated by daily hassles. In Chapter 6, the number of hassles was shown to be related to both objective and perceived measures of direction style, and the perceived measure of supervisor-employee relationship. Objective and perceived measures of delegation style were significantly related to the proportion of hassles appraised as stressful.

7.1 Predictors of Job Demand

As outlined in the description of the analysis strategy in Chapter 5, a base equation was developed to remove variation explainable by demographic or job related variables. None of the demographic variables had a significant effect on the subject's perceived job demand. When the specific job and branch environment variables were analysed, only the branch performance measured by Return on Capital Employed (ROCE) was a significant factor in reducing variation. However, when the indicator variables for branch and job were tested, job type was also significantly related to job demand. This suggested that some differences between jobs, beyond that attributable to the job environment variables being measured in the APSS study, were significantly related to job demand. Job demand was perceived highest by subjects in the inside sales group. Table 7.1 summarises the base regression.

Table 7.1 - Base regression equation for job demand

Predictor	Coefficient	t-ratio	Significance
Constant	2.958	31.72	0.000
ROCE	0.017	2.92	0.004
Whse. worker	-0.364	-3.02	0.003
Driver	-0.248	-2.00	0.047

R^2 = 7.9% F-Ratio = 5.24 Significance = 0.002

To this base regression, the different measures of direction style were added singly and the results are summarised in Table 7.2. Both the subject's perception of the supervisor's direction style, and the subject's desired direction style were significantly and positively related to job demand. As the amount of direction increased, the

perceived job demand increased. Quadratic terms were examined in both cases, but no improvement in fit was observed.

Table 7.2 - Direction style measures added to base equation for job demand

Type of measure	Coefficient	Significance	R^2
Base Model			7.9%
Subject- Linear only	0.2005	0.000	14.0%
- Linear plus Quadratic	-0.1447 0.0636	0.627 0.238	14.6%
Desired - Linear only	0.1548	0.020	10.6%
- Linear plus Quadratic	-0.0628 0.0390	0.885 0.613	10.7%
Gap - Subject	-0.1293	0.069	9.6%
Supervisor	0.1055	0.222	8.7%
Manager	0.1348	0.127	9.1%

The results from adding the delegation measures are summarised in Table 7.3. The subject's perception of delegation style contributed significantly to the model in its linear form, while the addition of a quadratic term did not appear to improve the model fit. On the other hand, the subject's desired level of delegation only contributed significantly to the model when a quadratic form was used. Since both the actual and desired measures were significant, the gap measure also was significantly related. (Subsequent analysis of the best fitting models showed that both the actual and desired measures were not required simultaneously, but both appeared in the separate regressions because of their correlation.) The supervisory measure was also significantly related to job demand, but in an inverse relationship. As the supervisor's ideal level of delegation increased, so did the subject's perception of job demand.

Table 7.3 - Delegation style measures added to base equation for job demand

Type of measure	Coefficient	Significance	R^2
Base Model			7.9%
Subject- Linear only	-0.1242	0.020	10.6%
- Linear plus Quadratic	-0.3624 0.0367	0.219 0.411	10.9%
Desired - Linear only	0.0354	0.527	8.1%
- Linear plus Quadratic	-0.7468 0.1103	0.027 0.019	10.9%
Gap - Subject	0.1656	0.002	12.4%
Supervisor	0.2909	0.000	14.7%
Manager	0.0710	0.435	8.2%

The data on Leader Member Exchange demonstrated a significant relationship for only the subject's perception, not the manager's objective measure. As the subject perceived the relationship with his supervisor to be better, the subject's perception of job demand decreased.

Table 7.4- Leader Member Exchange measures added to base equation for job demand

Type of measure	Coefficient	Significance	R^2
Base Model			7.9%
Subject	-0.2262	0.002	12.8%
Manager	-0.0361	0.768	8.0%

Tables 7.5 and 7.6 show the results of adding the number of hassles and the appraisal of those hassles to the base equation. There was evidence that both the number and the appraisal were significantly related to a subject's perception of job demand. The daily measure of the number of hassles added significantly to the model at the 2% level, and although the relationship of the weekly measure was at best,

marginally significant (p = 8%), it was at least supportive information. The higher the number of hassles, the more likely the subject was to perceive high job demand. Similarly, the subject's appraisal of the hassles, i.e. the degree of upset felt, was significantly and positively related to job demand for both the daily and weekly measures. As the reaction to hassles became more severe, the subject perceived higher job demand.

Table 7.5- Number of hassles added to base equation for job demand

Type of measure	Coefficient	Significance	R^2
Base Model*			12.9%
Daily	0.0063	0.022	15.9%
Weekly	0.0017	0.085	14.6%

* Note different base because of missing data.

Table 7.6 - Appraisal of hassles added to base equation for job demand

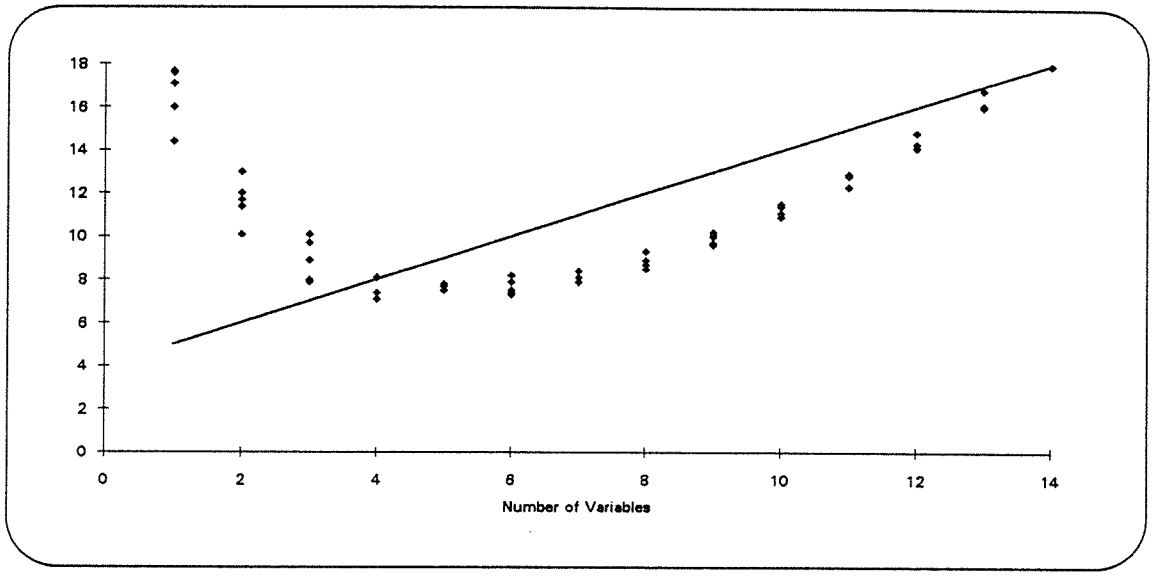
Type of measure	Coefficient	Significance	R^2
Base Model*			12.9%
Daily	0.3369	0.029	15.6%
Weekly	0.4041	0.005	17.5%

* Note different base because of missing data.

Because of the correlation between the independent variables, the analysis examined the set of best fitting regressions to identify the key variables. The comparison of the best regressions for different numbers of variables, and the identification of unbiased models is shown in Figure 7.1. The addition of at least three of the supervisory style and hassles variables was required to provide a model with low bias. The addition of a fourth variable appeared to offer only marginal improvement in

the variation explained or the bias, and the addition of more variables neither improved the bias nor reduced the overall error.

Figure 7.1 - Mallow's C_p for supervisory styles vs. job demand



The examination of the set of best regressions for job demand shown in Table 7.7 demonstrated that information from a number of areas was required to provide a good fitting model. In particular, the supervisor's objective measure of the ideal delegation style (which measures a different factor than the subject's perceived measure), and the proportion of hassles that were appraised as upsetting (using the weekly measure) appeared in almost all models with three variables or more. The addition of either the LMX measure of relationship or the daily number of hassles produced similarly effective models (R^2 = 23.2 and 23.1 respectively). The addition of a fourth variable was not significant and provided only a limited increase in the variation explained

Table 7.7 - Best regressions for job demand

# of Variables	R^2	C_p	Variables
1	17.4	14.4	DelS
1	16.5	16	Hhiw
1	15.9	17.1	Hasn
1	15.6	17.6	Hahi
1	15.5	17.7	LMX
2	20.9	10.1	DelS, Hhiw
2	20.2	11.4	DelS, Hasn
2	20	11.7	DelS, Hahi
2	19.8	12	DelS, LMX
2	19.3	13	Hhiw, LMX
3	23.2	7.9	DelS, Hhiw, LMX
3	23.1	8	DelS, Hhiw, Hasn
3	22.7	8.9	DelS, Hhiw, DelA
3	22.2	9.7	DelS, Hasn, Hahi
3	22	10.1	DelS, LMX, Hahi
4	24.7	7.1	DelS, Hhiw, LMX, DirA
4	24.6	7.4	DelS, Hhiw, LMX, Hasn
4	24.6	7.4	DelS, Hhiw, DelA, DelD
4	24.2	8.1	DelS, Hhiw, Hasn, DelM
4	24.2	8.1	DelS, Hhiw, LMX, DirD

Note: Base includes 4 variables so C_p should be near #var + 4

Although it was clear that the supervisor's delegation measure and the weekly measure of upsetting hassles were critical to a best-fit model, there was ambiguity regarding which of the perceived LMX measure or the daily number of hassles should also be included. Because of the inclusion already of one measure relating to hassles, the selected model shown in Table 7.8 also included the daily number of hassles. The model showed job demand increasing significantly with increases in the supervisor's ideal measure of delegation, the proportion of weekly hassles that are perceived as upsetting, and the number of hassles.

Table 7.8 - Selected model for job demand

Predictor	Coefficient	t-ratio	Significance
Constant	1.727	4.75	0.000
ROCE	0.015	2.32	0.022
Whse. worker	-0.182	-1.33	0.185
Driver	-0.009	-0.06	0.949
DelS	0.247	2.67	0.008
Hhiw	0.326	2.32	0.022
Hasn	0.005	2.02	0.045

$R^2 = 23.1\%$ F-Ratio = 6.93 Significance = 0.000

7.2 Predictors of Decision Latitude

The base regression calculated for perceived decision latitude is shown in Table 7.8. (Note that the decision latitude measure was coded so that increases show decreases in decision latitude. Coefficients reflect this coding, but the text attempts to make the direction clear.) Of the demographic variables, only affect intensity was significantly related to decision latitude. Decreases in affect intensity corresponded to decreases in decision latitude. When the job environment variables were analysed in the model, three specific measures were significant: increases in branch profitability as measured by return on capital employed (ROCE) were related to decreases in latitude; increases in the number of layers between the subject and the branch manager corresponded to decreases in latitude; and increases in the size of the subject's work group were related to increases in latitude. After the specific job and branch environment variables were analysed, there was still significant variation in the model

that was explainable by the job types (as indicated by the significant impact of the job indicator variables in the regression). Decision latitude varied by job with the inside sales group having more latitude than either of the other jobs.

Table 7.9 - Base regression equation for decision latitude

Predictor	Coefficient	t-ratio	Significance
Constant	2.177	6.59	0.000
AI	-0.184	-2.51	0.013
ROCE	0.011	2.44	0.016
Layr	0.193	3.04	0.003
Grp	-0.017	-3.07	0.002
Whse worker	0.323	3.87	0.000
Driver	0.435	4.35	0.000

$R^2 = 20.1\%$ F-Ratio = 7.54 Significance = 0.000

The results of adding each of the direction measures singly are shown in Table 7.10. Only two measures were significantly related to decision latitude, and even these did not explain large amounts of additional variation. The subject's perception of the direction style was significant when entered in a quadratic form, but not as a linear variable. In addition, the supervisor's measure was significant, with increases in the supervisors objective direction style corresponding to decreases in perceived decision latitude.

Table 7.10 - Direction style measures added to base equation for decision latitude.

Type of measure	Coefficient	Significance	R^2
Base Model			20.1%
Subject- Linear only	-0.0151	0.715	20.1%
- Linear plus	-0.5224	0.014	
Quadratic	0.0937	0.014	22.8%
Desired - Linear only	-0.0575	0.224	20.7%
- Linear plus	-0.0995	0.743	
Quadratic	0.0075	0.888	20.8%
Gap - Subject	-0.0423	0.399	20.4%
Supervisor	0.1200	0.050	21.8%
Manager	0.0476	0.437	20.4%

The analysis of the delegation measures (Table 7.11) indicated a strong relationship between the subject's perception of the supervisor's delegation style and perceived decision latitude. Although the manager's measure was only significant at the 6.6% level, it nonetheless offered some support for this relationship. This is intuitively consistent and could represent a largely trivial result. The degree to which a supervisor is seen to delegate decisions and authority, and the decision and skill latitude which an individual feels they have in a position are likely just different measures of a single dimension. Since the identification of this relationship added little to the knowledge base, the evaluation of the best regression equations in Table 7.15 excluded the measures of delegation style.

Table 7.11 - Delegation style measures added to base equation for decision latitude.

Type of measure	Coefficient	Significance	R^2
Base Model			20.1%
Subject - Linear only	-0.1533	0.000	27.5%
- Linear plus	-0.5066	0.009	
Quadratic	0.0544	0.064	28.9%
Desired - Linear only	-0.0578	0.133	21.1%
- Linear plus	-0.3626	0.116	
Quadratic	0.0430	0.180	21.9%
Gap - Subject	0.1021	0.007	23.3%
Supervisor	-0.0289	0.617	20.2%
Manager	-0.1216	0.066	21.6%

The two measures of Leader Member Exchange (Table 7.12) provided evidence of a strong relationship between perceived decision latitude and the subject's relationship with his supervisor. As the relationship improved (measured as increasing LMX), the perceived degree of decision latitude increased. Although the subject's perception of LMX explained the larger amount of variation, the more objectively measured manager's view was also significant, and thus provided corroborating evidence of a relationship.

Table 7.12 - Leader Member Exchange measures added to base equation for decision latitude.

Type of measure	Coefficient	Significance	R^2
Base Model			20.1%
Subject	-0.2207	0.000	28.4%
Manager	-0.1904	0.024	22.3%

Tables 7.13 and 7.14 show the results of the analysis of the effect of the number of hassles and the reaction to hassles on decision latitude. There was no evidence that either factor was significantly related to decision latitude.

Table 7.13 - Number of hassles measures added to base equation for decision latitude.

Type of measure	Coefficient	Significance	R^2
Base Model*			25.9%
Daily	0.0025	0.209	26.2%
Weekly	0.0011	0.133	27.1%

* Note different base because of missing data.

Table 7.14 - Appraisal of hassles measures added to base equation for decision latitude.

Type of measure	Coefficient	Significance	R^2
Base Model*			25.9%
Daily	0.1666	0.140	26.5%
Weekly	0.0625	0.557	26.1%

* Note different base because of missing data.

The evaluation and analysis of the best regressions shown in Figure 7.2 and Table 7.15 excluded the measures of delegation style because of the concern that the two constructs are largely trivially related. The analysis suggested that a single variable, the subject's measure of Leader Member Exchange, contained effectively all the predictive information for decision latitude. Once it was accounted for, no additional variables significantly increased the amount of variation explained.

Figure 7.2 - Mallow's C_p for supervisory styles vs. decision latitude

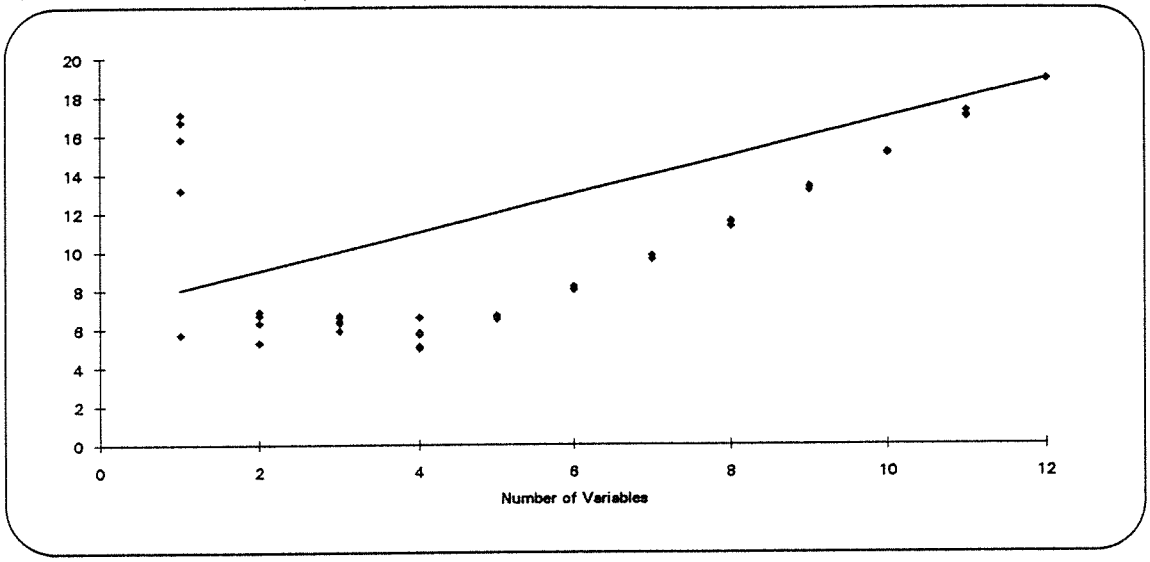


Table 7.15 - Best regressions for decision latitude

# of Variables	R^2	C_p	Variables
1	32.2	5.7	LMX
1	28.4	13.2	DirS
1	27.1	15.8	LMXM
1	26.7	16.7	Hasw
1	26.5	17.1	Hahi
2	33.4	5.3	LMX, DirS
2	32.9	6.3	LMX, LMXM
2	32.8	6.7	LMX, $DirA^2$
2	32.8	6.7	LMX, Hahi
2	32.6	6.9	LMX, Hasw
3	34.1	5.9	LMX, DirS, $DirA^2$
3	33.9	6.3	LMX, DirS, Hahi
3	33.9	6.4	LMX, DirS, DirA
3	33.8	6.6	LMX, DirD, Hhiw
3	33.8	6.7	LMX, $DirD^2$, DirS

Note: Base includes 7 variables so C_p should be near #var + 7

The preferred model that was clearly indicated by the analysis is summarised in Table 7.16.

Table 7.16 - Selected model for decision latitude.

Predictor	Coefficient	t-ratio	Significance
Constant	2.697	8.58	0.000
AI	-0.129	-1.82	0.070
ROCE	0.007	1.67	0.097
Layr	0.154	2.53	0.012
Grp	-0.014	-2.67	0.008
Whse worker	0.291	3.66	0.000
Driver	0.364	3.79	0.000
LMX	-0.22	-4.55	0.000

R^2 = 28.4% F-Ratio =10.13 Significance = 0.000

7.3 Predictors of Demand / Latitude Interaction

Because much of the work investigating job demand and decision latitude focuses on the interaction of the two terms as an occupational stressor, the analysis to identify supervisory style or hassle effects on chronic stressors was repeated with the interaction term as the dependent variable. The interaction was defined as the simple product of job demand with decision latitude. Because the decision latitude term had been coded to increase with decreasing decision latitude, the product of the two terms provided a monotonically increasing measure of the interaction.

When the relationship of the demographic variables to the interaction was analysed, a number of the variables that were significantly related to the main effect of demand or latitude were not significant. The job indicator variables were significant with each factor, but not the interaction. Affect intensity, the number of management

layers, and the work group size were all significantly related to latitude, but were not significantly related to the interaction of demand and latitude. Only the branch profitability (ROCE) remained as a significant factor (see Table 7.17) for both the main effects and the interaction. As branch profitability increased, so did the stressor of demand / latitude.

Table 7.17 - Base regression for demand / latitude

Predictor	Coefficient	t-ratio	Significance
Constant	5.700	36.09	0.000
ROCE	0.055	3.22	0.002

$R^2 = 5.3\%$ F-Ratio = 10.34 Significance = 0.002

There was evidence that direction style was significantly related to the demand / latitude interaction. In Table 7.18, the subject's perceived measure was shown to be linearly and positively related to demand / latitude. The quadratic form, however, explained an increased amount of the variation and suggested that the demand /latitude interaction also increased slightly with very low levels of direction. The supervisor's and manager's measure of direction provided evidence that not only was the perceived direction style important, but the objective environment was as well. (although the manager's measure was at best marginally significant ($p = 9.4\%$))

Table 7.18 - Direction style measures added to base equation for demand / latitude.

Type of measure	Coefficient	Significance	R^2
Base Model			5.3%
Subject - Linear only	0.4596	0.006	9.1%
- Linear plus	-1.3736	0.118	
Quadratic	0.3364	0.034	11.3%
Desired - Linear only	0.1248	0.528	5.5%
- Linear plus	0.1040	0.935	
Quadratic	0.0037	0.987	5.5%
Gap - Subject	-0.5438	0.008	8.9%
Supervisor	0.5830	0.020	8.0%
Manager	0.4251	0.094	6.7%

As previously discussed, there was concern that the measures of delegation style and decision latitude may be simply measuring the same element. Table 7.19 shows the highly significant results of testing the delegation measures with the interaction term, but the delegation measures were excluded from further analysis.

Table 7.19 - Delegation style measures added to base equation for demand / latitude.

Type of measure	Coefficient	Significance	R^2
Base Model			5.3%
Subject - Linear only	-0.7379	0.000	18.0%
- Linear plus	-2.2523	0.006	
Quadratic	0.2320	0.059	19.5%
Desired - Linear only	-0.1951	0.215	6.1%
- Linear plus	-2.6458	0.007	
Quadratic	0.3459	0.012	9.3%
Gap - Subject	-0.5438	0.008	8.9%
Supervisor	0.6954	0.002	10.0%
Manager	-0.1181	0.652	5.4%

The Leader Member Exchange (LMX) analysis shown in Table 7.20 indicated a strong relationship between LMX and the demand / latitude interaction. Although it had already been identified as a significant factor for both demand and latitude independently, the amount of variation in the interaction that was explained by LMX was notably higher than that explained for the main effects. The subject's perception and the objective measure by the manager were consistent, with stronger results for the subject's measure.

Table 7.20 - Leader Member Exchange measures added to base equation for demand / latitude.

Type of measure	Coefficient	Significance	R^2
Base Model			5.3%
Subject	-1.3007	0.000	24.6%
Manager	-0.8163	0.019	8.1%

In the earlier analysis, job demand was shown to increase with both the number of hassles and the appraisal of hassles, but no relationship was found between hassle measures and decision latitude. When analysing the interaction (Tables 7.21 and 7.22), there was no evidence of a relationship between perceived hassle measures and the demand / latitude interaction.

Table 7.21 - Number of hassles measures added to base equation for demand / latitude.

Type of measure	Coefficient	Significance	R^2
Base Model*			8.7%
Daily	0.0132	0.115	9.0%
Weekly	0.0046	0.124	10.2%

* Note different base because of missing data.

Table 7.22 - Appraisal of hassles measures added to base equation for demand / latitude.

Type of measure	Coefficient	Significance	R^2
Base Model*			8.7%
Daily	0.6306	0.166	9.7%
Weekly	0.5050	0.229	9.6%

* Note different base because of missing data.

The examination of the best fitting regressions (Figure 7.3 and Table 7.23) identified three variables that appeared to contain all the available information predicting the demand / latitude interaction. Both the subject's perceived measure of Leader Member Exchange and the manager's objective measure contributed to the regression. Although these two measures were correlated and conceptually measuring the same dimension within the environment, they appeared to each contribute an independent component to the fit of the model. The third factor influencing the

demand / latitude interaction was the subject's perception of direction style. Although the quadratic form also appeared in the equations, support for its inclusion was not strong enough to warrant the additional complexity it would entail. The linear component appeared sufficient.

Figure 7.3 - Mallow's C_p for supervisory styles vs. demand / latitude

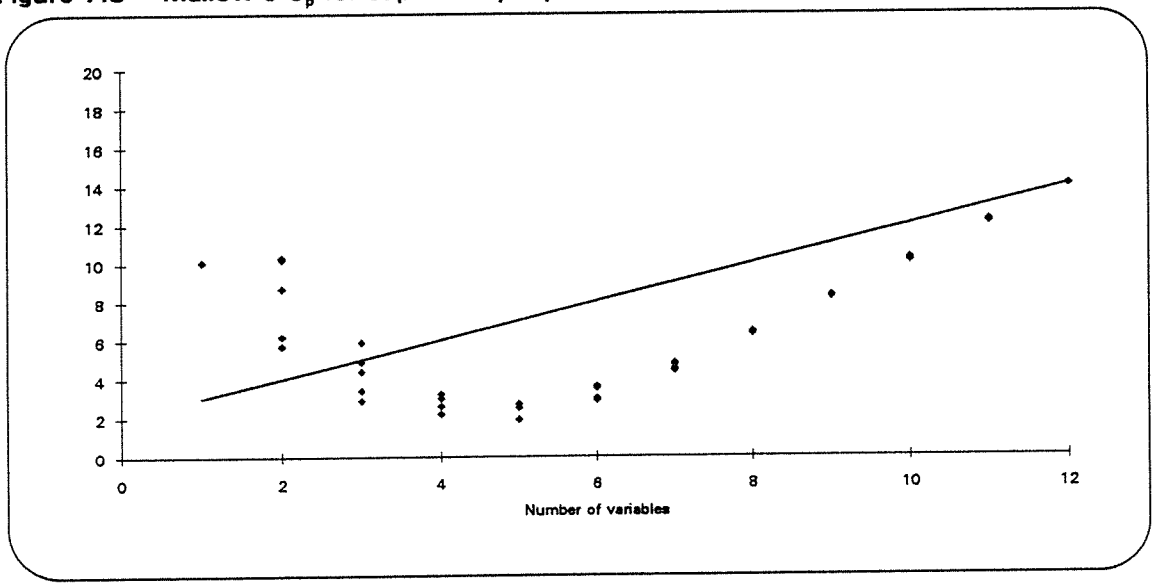


Table 7.23 - Best regressions for demand / latitude

# of Variables	R^2	C_p	Variables
1	22.4	10.1	LMX
1	12.3	29.4	LMXM
1	11.4	31.2	DirS
1	9.5	34.7	$DirA^2$
1	9	35.8	Hasn
2	25.7	5.7	LMX, $DirA^2$
2	25.5	6.2	LMX, DirA
2	24.1	8.7	LMX, LMXM
2	23.4	10.2	LMX, Hhiw
2	23.3	10.3	LMX, DirS
3	28.2	2.9	LMX, LMXM, $DirA^2$
3	27.9	3.4	LMX, LMXM, DirA
3	27.4	4.4	LMX, DirS, $DirA^2$
3	27.2	4.9	LMX, DirA, DirS
3	26.6	5.9	LMX, Hhiw, $DirA^2$
4	29.6	2.2	LMX, LMXM, Hhiw, $DirA^2$
4	29.4	2.6	LMX, LMXM, Hahi, $DirA^2$
4	29.4	2.6	LMX, LMXM, Hhiw, DirA
4	29.2	3	LMX, LMXM, DirA, Hahi
4	29.1	3.2	LMX, LMXM, $DirA^2$, DirM

Note: Base includes 2 variables so C_p should be near #var + 2

Thus, the selected regression for the demand / latitude interaction was as shown in Table 7.24. As supervisor-employee relationship decreased (as calculated by either perceived or objective measures), the demand / latitude interaction increased. Furthermore, as the subject's perception of the direction style of the supervisor increased, so did the interaction measure.

Table 7.24 - Selected model for demand / latitude.

Predictor	Coefficient	t-ratio	Significance
Constant	5.700	36.09	0.000
ROCE	0.055	3.22	0.002
LMX	-1.296	-6.98	0.000
LMXM	-0.561	-1.78	0.076
DirA	0.618	4.18	0.000

R^2 = 31.6% F-Ratio = 21.02 Significance = 0.000

7.4 Predictors of Role Conflict

In the development of the base equation for role conflict, no demographic variables were identified as having a significant relationship. The inclusion of specific job variables, and the subsequent inclusion of the job type indicator and branch indicator variables resulted in only the branch performance (ROCE) being significantly related to role conflict, and even it contributed only slightly to the explanation of the variance (R^2 = 3.4%)

Table 7.25 - Base equation for role conflict

Predictor	Coefficient	t-ratio	Significance
Constant	3.378	32.26	0.000
ROCE	0.029	2.54	0.012

R^2 = 3.4% F-Ratio = 6.45 Significance = 0.012

Table 7.26 shows the results obtained when each direction measure was added singly. Neither the perceived or objective measures of direction style were significantly related to role conflict.

Table 7.26 - Direction style measures added to base equation for role conflict.

Type of measure	Coefficient	Significance	R^2
Base Model			3.4%
Subject - Linear only	0.1691	0.131	4.6%
- Linear plus	-0.5785	0.330	
Quadratic	0.1372	0.201	5.4%
Desired - Linear only	0.0565	0.666	3.5%
- Linear plus	-0.7143	0.401	
Quadratic	0.1383	0.359	3.9%
Gap - Subject	-0.1866	0.166	4.4%
Supervisor	0.2147	0.200	4.2%
Manager	0.1363	0.419	3.7%

The delegation style, on the other hand, was a significant predictor of role conflict using either the subject's perception of delegation style, or their desired delegation style. As the level of delegation increased, role conflict decreased. The quadratic form, which provided a better fit for both measures, indicated that role conflict increased slightly as delegation style approached the extreme high end of the range.

Table 7.27 - Delegation style measures added to base equation for role conflict.

Type of measure	Coefficient	Significance	R^2
Base Model			3.4%
Subject - Linear only	-0.3058	0.002	8.4%
- Linear plus	-1.5457	0.006	
Quadratic	0.1900	0.026	10.9%
Desired - Linear only	-0.1108	0.288	4.0%
- Linear plus	-1.6557	0.012	
Quadratic	0.2180	0.017	6.9%
Gap - Subject	0.2471	0.021	6.1%
Supervisor	0.2112	0.167	4.4%
Manager	-0.0192	0.912	3.4%

The analysis of Leader Member Exchange measures (Table 7.28) indicated a strong role for the subject's perception of LMX, with increases in this relationship resulting in less role conflict. The manager's objective measure did not provide any evidence of a relationship.

Table 7.28 - Leader Member Exchange measures added to base equation for role conflict.

Type of measure	Coefficient	Significance	R^2
Base Model			3.4%
Subject	-0.7106	0.000	16.8%
Manager	-0.2142	0.358	3.8%

The analysis of the number and appraisal of daily hassles (Table 7.29 and Table 7.30) indicated that role conflict increased with the perceived number of hassles, and the subject's appraisal of the hassles. Although the daily information produced relationships significant at the 5% level, the weekly data (although limited because of the previously discussed concern for recall) did not provide any supporting evidence.

Table 7.29 - Number of hassles measures added to base equation for role conflict.

Type of measure	Coefficient	Significance	R^2
Base Model*			4.4%
Daily	0.0124	0.021	7.1%
Weekly	0.0016	0.414	4.8%

* Note different base because of missing data.

Table 7.30 - Perception of hassles measures added to base equation for role conflict.

Type of measure	Coefficient	Significance	R^2
Base Model*			4.4%
Daily	0.5752	0.048	6.1%
Weekly	0.4096	0.128	5.9%

* Note different base because of missing data.

The identification of best fitting regressions (Figure 7.4 and Table 7.31) indicated that the explanation of the variation relies on a number of dimensions of supervisory style. To provide an unbiased model for role conflict, four variables were required. The subject's measure of LMX appeared to be the strongest contributor to the model, with the subject's perception of delegation style, entered in a quadratic form, the next most important factor. Additional variation was explained by the inclusion of one of the two measures (either daily or weekly) of the proportion of hassles causing upset.

Figure 7.4 - Mallow's C_p for supervisory styles vs. role conflict

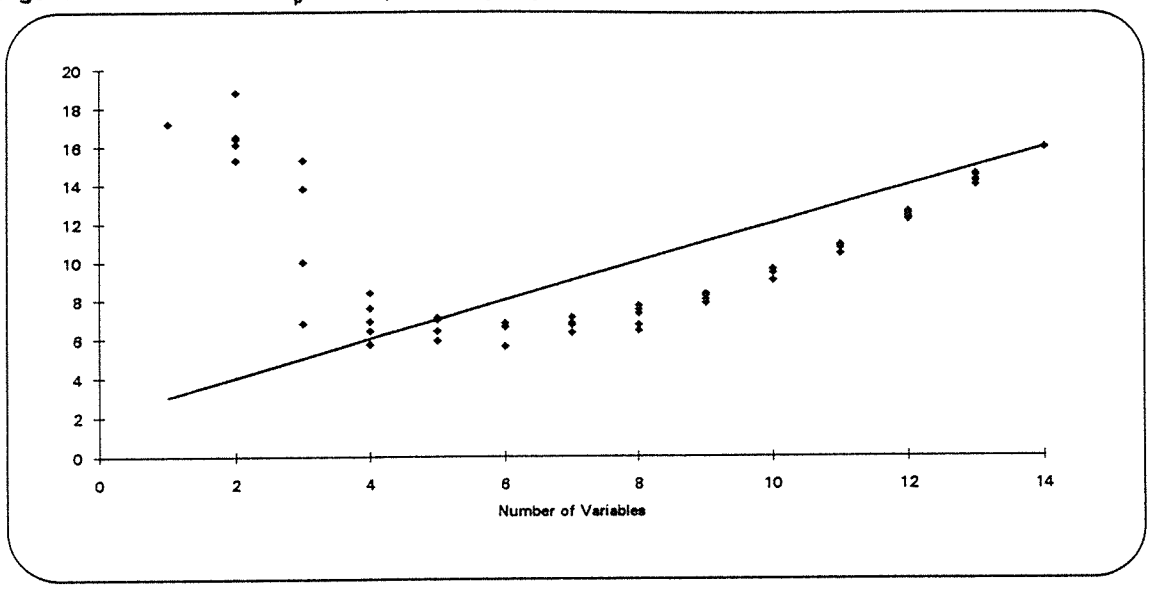


Table 7.32 shows the preferred model for role conflict. As relationship (LMX) or the subject's perception of delegation style decreased, role conflict increased. The quadratic form of the delegation style measure, however, caused the effect to level out in the top quartile of the range. As the proportion of hassles that were appraised as stressful increased, so did role conflict.

Table 7.31 - Best regressions for role conflict

# of Variables	R^2	C_p	Variables
1	17.5	17.2	LMX
1	8.5	34.3	DelA
1	7.1	36.9	Hasn
1	6.6	37.9	$DelA^2$
1	6.1	38.7	Hahi
2	19.6	15.3	LMX, Hahi
2	19.1	16.1	LMX, Hhiw
2	19	16.4	LMX, DelS
2	18.9	16.5	LMX, Hasn
2	17.7	18.8	LMX, DelA
3	25.1	6.8	LMX, DelA, $DelA^2$
3	23.4	10	LMX, DelD, $DelD^2$
3	21.4	13.8	LMX, Hasn, Hasw
3	20.6	15.3	LMX, Hasn, Hahi
3	20.6	15.3	LMX, Hahi, DelS
4	26.8	5.7	LMX, DelA, $DelA^2$, Hahi
4	26.4	6.4	LMX, DelA, $DelA^2$, Hhiw
4	26.1	6.9	LMX, DelA, $DelA^2$, Hasn
4	25.7	7.6	LMX, DelA, $DelA^2$, DelS
4	25.3	8.4	LMX, DelA, $DelA^2$, $DirA^2$

Note: Base includes 2 variables so C_p should be near #var + 2

Table 7.32 - Selected model for role conflict

Predictor	Coefficient	t-ratio	Significance
Constant	7.448	8.15	0.000
ROCE	0.016	1.54	0.126
LMX	-0.641	-4.17	0.000
DelA	-1.481	-2.61	0.010
$DelA^2$	0.213	2.54	0.012
Hahi	0.442	1.80	0.074

R^2 = 23.7% F-Ratio = 9.86 Significance = 0.000

7.5 Predictors of Role Ambiguity

The coding of the role ambiguity measure corresponded to decreasing ambiguity at higher values. Regression coefficients reflect this coding, so this directional issue needs to be recalled during the interpretation of the analysis.

When the demographic data and the job variables were analysed with role ambiguity as the dependent measure, no variables were significant. Role ambiguity was independent of all available job characteristics.

Role ambiguity was significantly related to the subject's perception of direction style in a quadratic form. Ambiguity increased at both ends of the range, whether direction was perceived as very low or very high. This factor was, however, only significant as perceived by the subject. Neither objective measure, the supervisor's or the manager's, was significant in linear or quadratic forms.

Table 7.33 - Direction style measures added to base equation for role ambiguity

Type of measure	Coefficient	Significance	R^2
Base Model			0.0%
Subject - Linear only	0.1371	0.126	1.3%
- Linear plus Quadratic	1.3876 -0.2296	0.003 0.007	5.1%
Desired - Linear only	0.0222	0.833	0.0%
- Linear plus Quadratic	0.2705 -0.0445	0.692 0.713	0.1%
Gap - Subject	-0.1796	0.100	1.5%
Supervisor	-0.1379	0.306	0.6%
Manager	0.1742	0.148	1.1%

Perceived delegation style measures were significantly related to role ambiguity (Table 7.34). The subject's perceived measure of delegation was related in a quadratic manner to role ambiguity, with ambiguity increasing at both extremes of delegation. The desired level of delegation was also significant, although the linear form appeared to be sufficient to fit the model. Once again, the objective measures were not significant.

Table 7.34 - Delegation style measures added to base equation for role ambiguity

Type of measure	Coefficient	Significance	R^2
Base Model			0.0%
Subject - Linear only	0.2495	0.001	5.4%
- Linear plus Quadratic	-0.9165 0.1788	0.041 0.009	8.9%
Desired - Linear only	0.2863	0.001	6.3%
- Linear plus Quadratic	-0.5091 0.1123	0.318 0.115	7.6%
Gap - Subject	0.0064	0.941	0.0%
Supervisor	0.0537	0.661	0.1%
Manager	-0.0233	0.857	0.0%

The subject's perceived measure of Leader Member Exchange (Table 7.35) was significantly related to role ambiguity, but the manager's objective measure was not. Increases in LMX resulted in decreased role ambiguity.

Table 7.35 - Leader Member Exchange measures added to base equation for role ambiguity

Type of measure	Coefficient	Significance	R^2
Base Model			0.0%
Subject	0.3195	0.004	4.4%
Manager	0.0045	0.975	0.0%

In Table 7.36 and 7.37, the analyses of the number of hassles and the appraisal of hassles are shown, but none of the variables produced a significant relationship.

Table 7.36 - Number of hassles measures added to base equation for role ambiguity

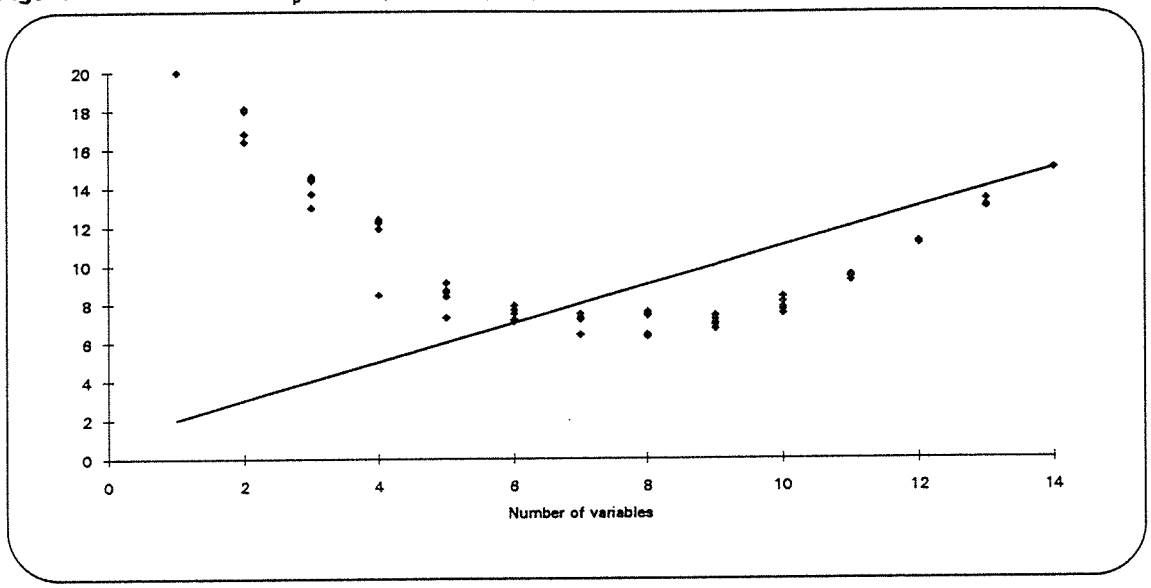
Type of measure	Coefficient	Significance	R^2
Base Model*			0.0%
Daily	-0.0056	0.152	1.3%
Weekly	-0.0006	0.663	0.1%
* Note different base because of missing data.			

Table 7.37 - Appraisal of hassles measures added to base equation for role ambiguity

Type of measure	Coefficient	Significance	R^2
Base Model*			0.0%
Daily	-0.0868	0.679	0.1%
Weekly	-0.1138	0.581	0.2%
* Note different base because of missing data.			

As a result of the limited contribution to the model by any of the supervisory or hassle variables, a large number of variables were required to identify an unbiased model. Even so, the model only explained 17.6% of the variation. From Figure 7.5, one can see that at least six variables were required to produce an acceptable model.

Figure 7.5 - Mallow's C_p for supervisory styles vs. role ambiguity



The primary variables required (shown in Table 7.38) included the quadratic forms of the subject's perception of both direction style and delegation style. Additional information was provided to the model from the manager's objective measure of direction style and the subject's perceived measure of LMX. Regardless, the amount of variation of role ambiguity explained by the model remained low. The selected model (Table 7.39) shows the relationships. As direction style increased, role ambiguity decreased. The quadratic component of the subject's perception, however, resulted in a lower rate of decrease at the high end of direction style. Increased delegation corresponded to increased ambiguity, although at the top of the delegation range, ambiguity began to decrease. Decreases in relationship were related to increased ambiguity.

Table 7.38 - Best regressions for role ambiguity

# of Variables	R^2	C_p	Variables
4	15.1	8.5	DirA, DelA, $DirA^2$, $DelA^2$
4	13.5	11.9	DirA, $DirA^2$, $DelA^2$, $DelD^2$
4	13.4	12.2	DirA, $DirA^2$, $DelA^2$, DirM
4	13.3	12.3	DelA, $DelA^2$, DirM, LMX
4	13.3	12.4	DirA, DelA, $DelA^2$, DirM
5	16.5	7.3	DirA, $DirA^2$, DelA, $DelA^2$, DirM
5	16	8.4	DirA, $DirA^2$, DelA, $DelA^2$, $DelD^2$
5	15.9	8.6	DirA, $DirA^2$, DelA, $DelA^2$, DelD
5	15.9	8.7	DirA, $DirA^2$, DelA, $DelA^2$, DirD
5	15.7	9.1	DirA, $DirA^2$, DelA, $DelA^2$, LMX
6	17.6	7.1	DirA, $DirA^2$, DelA, $DelA^2$, DirM, LMX
6	17.5	7.2	DirA, $DirA^2$, DelA, $DelA^2$, DirM, $DelD^2$
6	17.4	7.5	DirA, $DirA^2$, DelA, $DelA^2$, DirM, DelD
6	17.3	7.7	DirA, $DirA^2$, DelA, $DelA^2$, DirD, $DelD^2$
6	17.2	7.9	DirA, $DirA^2$, DelA, $DelA^2$, DirM, DelM
7	18.8	6.4	DirA, $DirA^2$, DelA, $DelA^2$, DirM, LMX, LMXM
7	18.4	7.2	DirA, $DirA^2$, DelA, $DelA^2$, DirM, DirD, $DelD^2$
7	18.4	7.3	DirA, $DirA^2$, DelA, $DelA^2$, DirM, LMXM, $DelD^2$
7	18.3	7.5	DirA, $DirA^2$, DelA, $DelA^2$, DirM, LMX, $DelD^2$
7	18.3	7.5	DirA, $DirA^2$, DelA, $DelA^2$, DirM, LMXM, DelD

Note: Base includes only the constant, so C_p should be near #var + 1

Table 7.39 - Selected model for role ambiguity

Predictor	Coefficient.	t-ratio	Significance
Constant	4.095	4.74	0.000
DirA	1.273	2.74	0.126
$DirA^2$	-0.211	-2.51	0.013
DelA	-1.283	-2.81	0.006
$DelA^2$	0.230	3.42	0.001
DirM	0.207	1.77	0.079
LMX	0.146	1.16	0.247

R^2 = 17.6% F-Ratio = 6.21 Significance = 0.000

7.6 Summary and Discussion

The identification of specific job and demographic variables that were predictive of the previously studied chronic stressors, although not the primary focus of the APSS study, nonetheless provided some interesting insights, and identified avenues for further research. The most interesting finding was the significant relationship of branch financial performance as measured by Return on Capital Employed (ROCE) on each of job demand, decision latitude, the demand / latitude interaction and role conflict. Only role ambiguity was not related to ROCE. This introduces an interesting question of cause and effect. Does increased branch performance cause increased chronic stressors, or does an increase in perceived chronic stressors result in improved branch performance? Although the cross-sectional nature of the APSS study precludes identification of the causal direction, intuition and experience favour the latter explanation. This would hypothesize that as the organization puts stress on the individual, organizational profitability increases. A number of other directions for

research are thus suggested. Does the relationship seen between organizational performance and chronic stressors also hold true between organizational performance and the outcomes of the stress process? Is the relationship linear, or is there a point where increased stress lowers organizational financial performance? For an organization to act responsibly to both its shareholders and its employees, it becomes critical to know that turning point as well as have a better understanding of the levels of stress that produce undesirable physical and psychological outcomes.

The job of the subject was significantly related to job demand and decision latitude, but not to the interaction of the two, or to role conflict or role ambiguity. Differing perceptions of demand and latitude between job functions is consistent with other work in the demand / latitude area that suggests that jobs are inherently different along these dimensions, and that objective measures of these factors are predictive of stressful outcomes. Although all the jobs included in the APSS study are not specifically identified in published evaluations of the demand / latitude levels of specific occupations, an examination of comparable functions in the occupational graphs in Karasek and Theorell (1989) suggest that the three jobs included in the APSS study are objectively positioned along an iso-strain line. Thus, no job effect on the demand / latitude interaction would be expected.

The subject's perception of decision latitude was related to the individual difference measured by affect intensity, and to job characteristics as measured by the work group size and the number of layers between the subject and the branch manager. The significance of these variables was not, however, apparent with the interaction term.

Analysis of the APSS data showed that perceived job demand was predicted by a large number of the study variables. It was significantly related to the subject's perception of direction style (positively), delegation style (negatively), and Leader

Member Exchange (negatively). In contrast, the supervisor's objective measure of the ideal delegation style was positively related to job demand. Although perceived demand decreased as the subject perceived increasing delegation, it increased as the supervisor's ideal delegation increased. It is apparent that the two measures of delegation are evaluating different factors. The number of and appraisal of hassles also were identified as significantly related to job demand with job demand increasing with increasing number and appraisal of hassles. As a result of the correlation of the independent variables, there was some overlap in the information they provided to predict job demand. Nonetheless, four perceived variables covering a number of the supervisory and hassle variables were required to produce an unbiased model. The supervisor's measure of delegation, the proportion of weekly hassles that were upsetting, the subject's measure of LMX and the subject's perception of direction style all provided information for the best model. Thus, there was evidence that perceived job demand was related to a number of perceived supervisory factors.

The APSS study provided evidence that decision latitude was related to the subject's perception of direction style (quadratically), delegation style (positively) and LMX (positively). There was no evidence that either the number of hassles or the appraisal of hassles were related to decision latitude. Delegation style measures, however, could be considered to be trivially related to decision latitude. As delegation increases, so does perceived decision latitude. Although the low level of variation in decision latitude explained by delegation style and the relatively low correlations of the two factors ($r = 0.388$) somewhat alleviates the concern that the two constructs are identical, the calculation of a best fitting model excluded delegation measures to follow a conservative approach. All the remaining data required to model the measure of decision latitude was contained in the subject's measure of LMX. The subject's perception of the relationship between the supervisor and the employee provided the best model of decision latitude.

In the analysis of the predictors of the demand / latitude interaction, the measures of delegation style were again excluded as described above. The interaction was significantly related to the subject's perception of direction style (quadratically) and the supervisor's objective measure of direction style. Both objective and perceived measures of LMX were significant, although the subject's perception provided much stronger evidence. None of the measures related to hassles was significant. The development of the best models showed that both the subject's and the manager's measure of LMX were contributing independently to the model fit. Although the contribution of the subject's measure was larger, the manager's measure was required, and thus appeared to be measuring a different dimension of the environment. In addition, the subject's perception of direction style added significantly to the model. Although a quadratic model for this term originally appeared to provide a better fit when modelled separately, in the multivariate model the linear term was sufficient. Thus, there was evidence that the perceived demand / latitude interaction was predictable by supervisory style measures.

Although there was no evidence of a relationship between direction style and role conflict, there was evidence of a relationship between perceived role conflict and other perceived measures: the subject's perception of delegation style (quadratically), the subject's desired delegation style (quadratically), the subject's measure of LMX (negatively) and the daily measures of the number and appraisal of hassles (positively). Because the desired delegation level was correlated with the perceived level, both were not required in the best fitting models and the desired level became redundant. The information provided by the subject's LMX, the subject's perception of delegation style, and the proportion of hassles rated as upsetting all contribute to the development of an unbiased model. Thus, a poor relationship with a supervisor, too much or too little delegation, and a high level of appraised upsetting hassles all contributed to high role conflict. Although the first two factors are intuitively causal (although there is no

proof because of the nature of the study), the latter could readily be attributed to causality in either direction. High role conflict could cause someone to react to hassles negatively, or reacting to hassles could cause someone to perceive high levels of role conflict. Alternately, the relationship could be recursive. Further study would be required to identify the appropriate directional relationships.

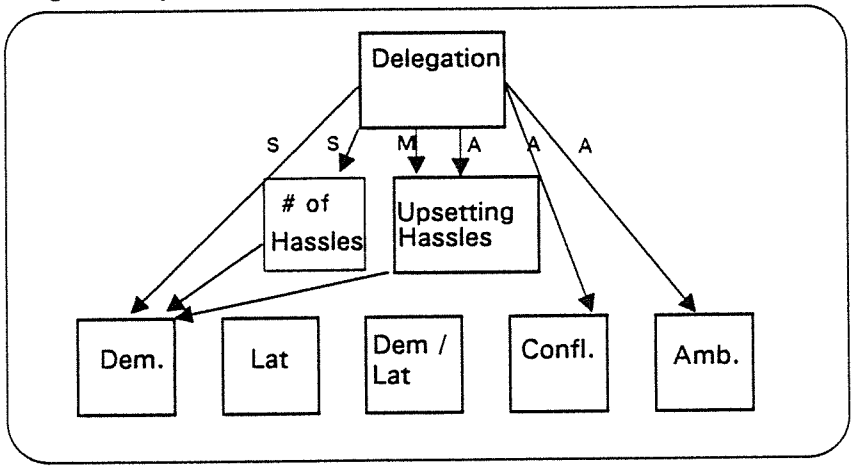
Role ambiguity was the chronic stressor least amenable to modelling with supervisory and hassle variables. Although quadratic factors for the subject's perception of direction and delegation and the linear measure of Leader Member Exchange all contributed significantly to the model, the amount of variation explained remained low. To produce an unbiased model, all the identified factors were required. The effect of the direction and delegation variables was consistent with intuitive judgement. Increases in direction decreased ambiguity, while increases in delegation increased ambiguity. The quadratic form of the direction measure simply slowed the rate of decrease of role ambiguity at the top of the range. Conversely, the quadratic form of the delegation measure created a U-shaped trend. Providing too much delegation, or not enough, both were related to an increase in a subject's role ambiguity.

To provide further understanding of the importance of the various supervisory style measures in predicting perceived chronic stressors, one can examine the identified relationships from a transposed point of view, showing which of the dependent variables were linked with each independent variable.

Figure 7.6 visually summarizes the identified effects of delegation styles on the chronic stressors. The objective supervisory measure of delegation was significantly related to job demand directly, and through the number of hassles. The subject's perception of delegation style (A on the figures) was related to the appraised hassles (as identified in Chapter 6), and although related to demand in the absence of any other measure, was not significant once the appraised hassles and supervisory measure were

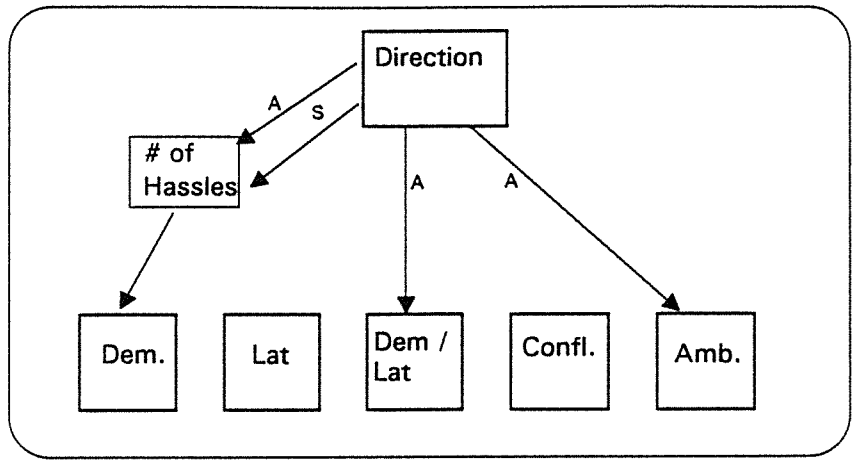
included. This suggests that this component may be mediated by the hassles variable, but did not have a sizeable independent effect beyond that. The manager's objective measure is related to appraised hassles, but there was no evidence that it played a role with job demand either directly or indirectly. Although delegation was related to latitude and the interaction term, they are not identified on this diagram because of the concern that the measures are not unique. The subject's perceived measure of delegation was also related to both role conflict and role ambiguity.

Figure 7.6 - Effect of delegation styles on chronic stressors.



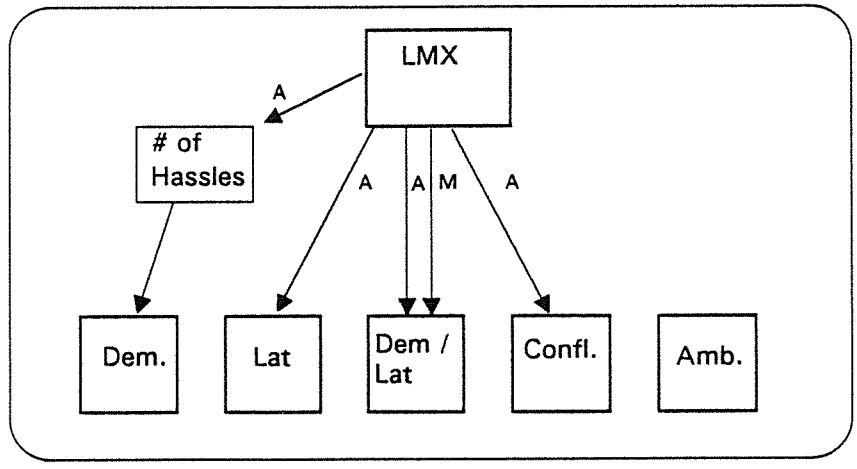
The direction style variable (Figure 7.7) appeared to be mediated by the number of daily hassles only in its relationship with job demands. The subject's perception of direction style was significantly related to role ambiguity and the demand / latitude interaction.

Figure 7.7 - Effect of direction styles on chronic stressors.



The Leader Member Exchange measure (shown in Figure 7.8) was related to almost all the chronic stressors and thus appears to have a very strong role in the stress process. Only the relationship with job demand appeared to be mediated by the number of hassles.

Figure 7.8 - Effect of Leader Member Exchange measures on chronic stressors.



In summary, all the perceived chronic stressors were at least partially predicted by various measures of supervisory style and hassles. In particular, the subject's perceptions of the different supervisory styles were significant across the full spectrum of chronic stressors. Although the amount of variation explained by the supervisory

style measures was relatively low (see Table 7.40) , it was significant. At this point in the analysis, I have not investigated whether the variation explained is, in fact, relevant to the prediction of stress outcomes. Chapter 8, which examines predictors of job satisfaction, addresses this key issue.

Table 7.40 - Variation in chronic stressors explained by demographic and supervisory variables

Stressor	Variation explained
Demand	24.7%
Latitude	33.4%
Demand / Latitude	29.6%
Role conflict	26.8%
Role Ambiguity	17.6%

Chapter 8
Predictors of Job Satisfaction

Job satisfaction has been widely used by researchers as a measure of strain when investigating the stress process. Although evidence of relationships between the perceived chronic stressors of role ambiguity, role conflict, and the interaction of job demand and decision latitude on the one hand, and the strain of job satisfaction on the other hand has been found (see Chapter 3 for a summary of the relevant literature), significant variation in job satisfaction remains unexplained.

The model outlined in Figure 3.1 suggests that not only do the historically studied perceived chronic stressors effect the strain measures, but also that the supervisory and hassle variables effect strain directly. Chapter 7 provided evidence that supervisory and hassle variables had a significant relationship with the other perceived chronic stressors. In this chapter, the data are analyzed to address the issue of whether the supervisory and hassle variables work exclusively through the historic perceived chronic stressors, or whether they explain additional variation in job satisfaction.

As an initial step, the historic chronic stressors measured by the APSS study were analyzed with the aim of replicating the findings of other researchers. After these relationships were verified in the existing data, the APSS hypotheses were investigated.

8.1 Demand / latitude as a Predictor of Job Satisfaction

The demand / latitude model (job strain) has been used to predict a broad range of mental strain and cardiovascular outcomes. In Karasek's work (1979, 1981) one of the strains analyzed was job dissatisfaction. In this work, he found that perceived demand, latitude and the interaction were all significantly related to a dichotomous job

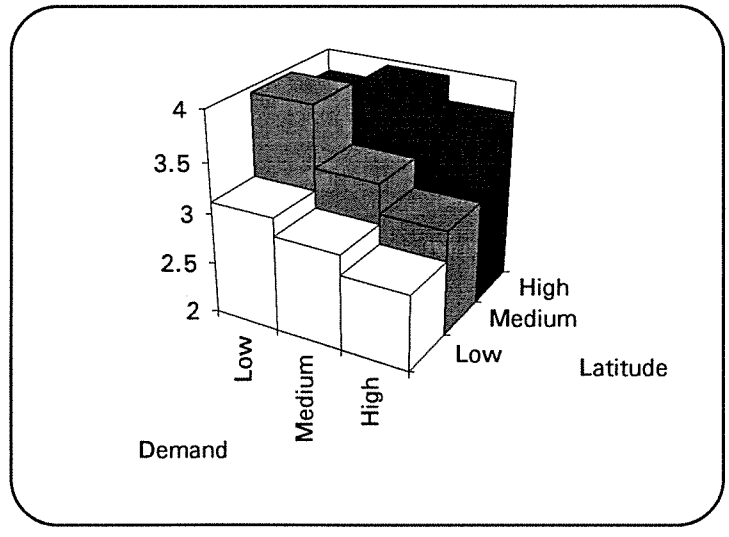
dissatisfaction variable at the 1% level. (No indication of the amount of variation explained by these factors is given.)

In the APSS study, job satisfaction, job demand and decision latitude were measured along an approximately continuous scale between 1 and 5. For presentation purposes, and to allow comparison to other work, I defined discrete categories for job demand and decision latitude by dividing the range into three equal sections. Table 8.1 and Figure 8.1 show the average reported job satisfaction classified by the discrete categories of demand and latitude.

Table 8.1 - Job Satisfaction categorized by job demand and decision latitude

		Demand		
		Low	Medium	High
Latitude	High	3.78	3.94	3.69
	Medium	3.95	3.34	3.04
	Low	3.12	2.94	2.74

Figure 8.1 - Job Satisfaction by demand / latitude



The shape of Figure 8.1 is consistent with Karasek's work (1979, 1981). Job satisfaction increases with job latitude, with job demand, and with the interaction of the

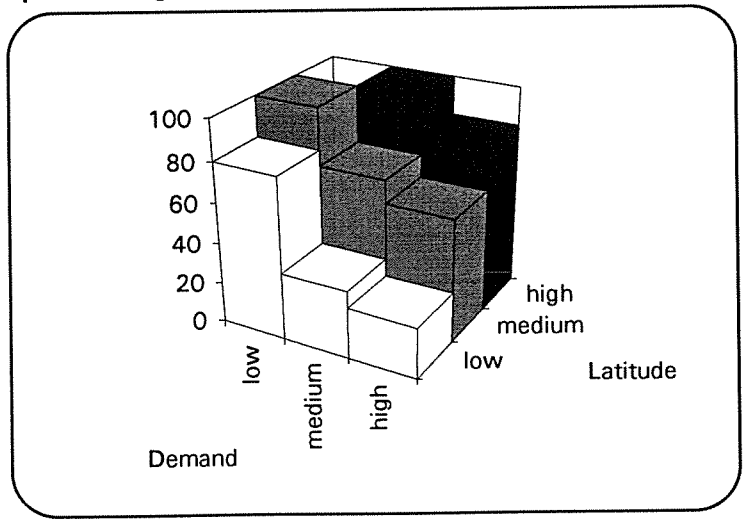
two. Furthermore, Karasek (1981, page 85) noted that "also observable is a secondary upturn in dissatisfaction at very low strain, which we did not predict." This same feature is observable in these data.

Because the previous work used a dichotomous, rather than continuous variate for job satisfaction, a transformation of the data was required to allow some comparison of the magnitude of effect between the two studies. By dichotomizing the job satisfaction variable in the APSS research to responses of "satisfied" versus "not satisfied" (using the mid-point of the range), I produced another table comparing the proportion of people in each demand / latitude category that were satisfied (see Table 8.2 and Figure 8.2)

Table 8.2 - Proportion with high job satisfaction by job demand and decision latitude

		Demand		
		Low	Medium	High
Latitude	High	75.0	100.0	81.1
	Medium	100.0	72.2	60.9
	Low	80.0	33.3	25.0

Figure 8.2 - Proportion of sample with high satisfaction by demand / latitude



Once again, the pattern was consistent with previous work. Furthermore, comparison of the magnitude of effect with previous work was now feasible. Because different measures of satisfaction were used, absolute values were different, but comparisons of the relative magnitudes of high versus low strain were informative. In Karasek's work, the highest proportion of job satisfaction was approximately six times that of the lowest. In this work, a factor of four was identified. The overall pattern of results, and the relative magnitudes suggest a reasonable degree of consistency between the two studies. For these comparisons, neither the previous work nor this study considered variance estimates for the data, and thus although the form of results was similar, conclusions were limited.

8.2 Role Conflict and Role Ambiguity as Predictors of Job Satisfaction

Perceived role conflict and role ambiguity have been identified as predictors of a number of stress outcomes, including job satisfaction. Although the measure used for job satisfaction has varied among different researchers, the results of the APSS research were generally consistent with those of previous studies. In the APSS study job satisfaction is positively correlated with decreasing ambiguity ($r = 0.315$, $p < 0.0001$), and negatively with increasing role conflict ($r = -0.398$, $p < 0.0001$). In comparison, Stout and Pasner (1984) found significant correlations between job satisfaction and role conflict ($r = -0.26$) and role ambiguity ($r = -0.39$) (note the ambiguity skill is inverted from the current work). Leigh, Lucas and Woodman (1988) used the same measures as the APSS study for role conflict, and role ambiguity, but a different measure for job satisfaction, and found similar correlations for role conflict ($r = -0.39$) and role ambiguity ($r = -0.45$). In Schuler et al. (1977) a variety of samples were used and correlations for job satisfaction and role conflict were between -0.2 and -0.36, and correlations for job satisfaction and role ambiguity were between -0.18 and

-0.47. Thus, the role conflict and role ambiguity measures used in the APSS study appeared to be operating in a manner consistent with previous research.

8.3 Supervisory Style and Hassles as Predictors of Job Satisfaction

In the previous chapters, I have shown that supervisory style and hassles were related in varying degrees to the perceived chronic stressors that have been shown to be predictive of job satisfaction. This section examines the relationship of supervisory style and hassles to job satisfaction, both with and without the presence of these other perceived stressors.

As outlined in the analysis strategy, the variables were entered into the model in stages, with demographic variables representing the first step. The only demographic variable with a significant effect on job satisfaction was age. Table 8.3 shows the regression equation, but, as can be seen, very little variation was explained by the demographic variables

Table 8.3 - Base regression of demographic variables for job satisfaction

Predictor	Coefficient	t-ratio	Significance
Constant	2.989	14.82	0.000
Age	0.014	2.55	0.012

R^2 = 4.0% F-Ratio = 6.50 Significance = 0.012

When the job and branch environment characteristics were introduced into the model, none was significant. Specifically, the independently and objectively measured characteristics such as branch profitability, productivity, organization structure or union status were not related to job satisfaction. When the indicator variables for branch and job were then included, a single branch (branch 5) appeared to have a significantly higher level of job satisfaction than other branches. The combined test for all branch indicator variables, however, was marginally significant ($0.05 < p < 0.10$). Nonetheless, to follow a conservative approach the indicator variables were included in the base regression as shown in Table 8.4.

Table 8.4 - Base regression equation for job satisfaction

Predictor	Coefficient	t-ratio	Significance
Constant	2.863	9.57	0.000
Age	0.013	2.46	0.015
Branch 2	0.084	0.32	0.747
Branch 3	0.174	0.64	0.522
Branch 4	0.179	0.74	0.458
Branch 5	0.699	2.37	0.019
Branch 6	0.051	0.20	0.841
Branch 7	-0.016	-0.06	0.955

$R^2 = 10.8\%$ F-Ratio = 2.57 Significance = 0.016

Using this base regression to remove variation that was explained by age and branch, the supervisory variables were included one at a time to identify sources of additional variation in job satisfaction. The results in Table 8.5 show that most of the linear measures of direction style did not contribute significantly to the regression

equation. The coefficients of the variables were not significant, and little additional variation is explained above the 10.8% explained by age and branch. The one exception was the identified highly significant effect of the supervisor's measure. The examination in Chapter 5 of the data, and evaluation of the items that form the direction measure, suggested that the relationship between direction and job satisfaction might be quadratic in nature. When the quadratic model was tested for each measure, both the subject's perception and the desired levels of direction style were significant. For the other measures, no quadratic effect was observed. The quadratic form indicated that job satisfaction was highest for intermediary levels of the subject's perception of supervisory direction. On the other hand, satisfaction appeared to be negatively and linearly related to the more objective supervisor's measure of direction style. When a supervisor felt that more direction was appropriate, subjects were less satisfied.

Table 8.5 - Direction style measures added to base equation for job satisfaction.

Type of measure	Coefficient	Significance	R^2
Base Model			10.8%
Subject - Linear only	0.0930	0.152	12.0%
- Linear plus	1.6718	0.000	
Quadratic	-0.2748	0.000	25.8%
Desired - Linear only	0.0996	0.151	12.0%
- Linear plus	1.4089	0.002	
Quadratic	-0.2316	0.004	16.8%
Gap - Subject	-0.0091	0.910	10.8%
Supervisor	-0.3585	0.000	19.4%
Manager	-0.1421	0.163	12.0%

The addition of the delegation style variables to the base equation (with age and branch already included) is shown in Table 8.6. Although neither of the objective measures of delegation reported by the supervisor or manager showed a significant

relationship, the perceived measures reported by the subject were significant. Once again, a potential quadratic effect was indicated and was examined. The subject's appraisal of delegation style was highly significant with a quadratic model providing a slightly better fit than a linear one. The proportion of variance explained increased from 10.8% in the base equation to 26.8%. Although explaining less of the total variation than the subject's perceived measure, both the subject's desired delegation level, and the gap between actual and desired were also significant.

Table 8.6 - Delegation style measures added to base equation for job satisfaction.

Type of measure	Coefficient	Significance	R^2
Base Model			10.8%
Subject - Linear only	0.2509	0.000	23.3%
- Linear plus	1.0564	0.001	
Quadratic	-0.1213	0.008	26.8%
Desired - Linear only	0.1204	0.037	13.4%
- Linear plus	0.9225	0.018	
Quadratic	-0.1106	0.037	15.9%
Gap - Subject	-0.1689	0.004	15.5%
Supervisor	-0.06864	0.421	11.2%
Manager	0.1412	0.187	11.8%

The results for adding the Leader-Member Exchange (LMX) measures of supervisory style are shown in Table 8.7. Both objective and perceived measures were significant, with the subject's perception of LMX shown to be an extremely important factor in the equation. The total variation explained jumped from 10.8% to 49.5%. The better the perceived relationship (as measured by LMX) between the supervisor and the individual, the higher the job satisfaction.

Table 8.7 - Leader Member Exchange measures added to base equation for job satisfaction

Type of measure	Coefficient	Significance	R^2
Base Model			10.8%
Subject	0.6090	0.000	49.5%
Manager	0.4625	0.003	16.0%

The number of hassles and the appraised impact of hassles were also added to the base equation to see if there was a significant effect on job satisfaction. Table 8.8 shows the results for the number of hassles. Both the daily and weekly measures of the number of hassles were significantly related to job satisfaction. An increase in the number of hassles corresponded to decreased job satisfaction. From Table 8.9, one can see that no effect from the proportion of hassles appraised as stressful was apparent.

Table 8.8 - Number of hassles measures added to base equation for job satisfaction

Type of measure	Coefficient	Significance	R^2
Base Model*			12.4%
Daily	-0.0086	0.004	17.1%
Weekly	-0.0031	0.002	19.0%

* Note different base because of missing data.

Table 8.9 - Appraisal of hassles measures added to base regression equation

Type of measure	Coefficient	Significance	R^2
Base Model*			12.4%
Daily	-0.0751	0.629	12.5%
Weekly	-0.0806	0.583	12.6%

* Note different base because of missing data

It is apparent from this separate analysis of each of the supervisory style and hassles measures that a number of the aspects of supervisory style and the number of hassles were related to job satisfaction. Conversely, there was no evidence that the appraised impact of hassles was related to job satisfaction.

As described in Chapter 5, the different measures were highly correlated and thus a comparison of all possible regression equations was completed using Mallow's C_p statistic to identify the set of variables which best contained the information to predict job satisfaction, while maintaining a parsimonious model.

The graph of the C_p statistic versus the number of variables for the regressions of all supervisory measures (plus the identified variables of age and branch) shown in Figure 8.3 indicates that no single supervisory measure produced a regression equation free of bias. With two variables, the C_p statistic for one subset was close to the $C_p = p$ line, while the other "best" four are higher. With three or more variables, one model is significantly better than the rest, although the other four equations were close to the target line. With more than three variables, all the best five models were acceptable. Parsimony suggested, therefore, that I only needed to look at the models with 2, 3 or 4 supervisory or hassle measures included.

Figure 8.3 - Mallow's Cp for supervisory styles vs. job satisfaction

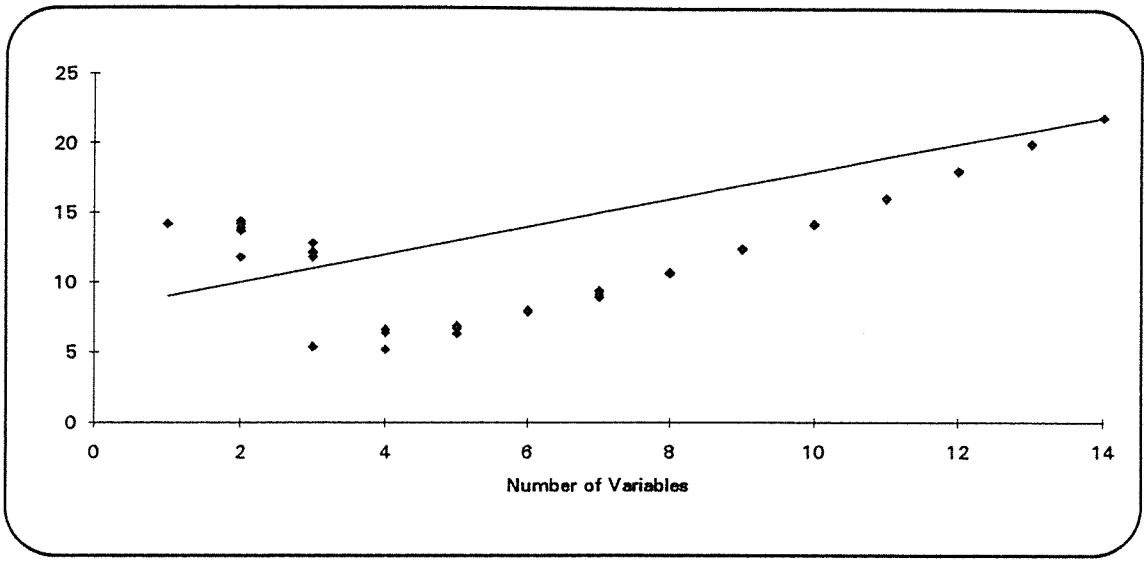


Table 8.10 shows the variables included at the first four subset levels as well as the R^2 and C_p values for each regression. Although the subject's perceived delegation (DelA) was the second most significant single variable, it does not reappear in the variable list once the LMX variable was included because of its correlation with the LMX variable. With two variables, the model including the LMX measure plus the subject's perceived direction style measure was close to the target line. Although the two variable model was marginally acceptable, the significant improvement in fit in the three variable model that added the quadratic form of the subject's perceived direction suggested this model as the most appropriate. Thus, the model with the quadratic factors of the subject's perceived measure of direction style (DirA) combined with LMX provided the best fit. Examination of the four factor models shows all contained LMX, DirA and $DirA^2$, plus another factor. The small level of increase in the variation explained when moving to a four factor model, and the consistent presence of LMX , DirA and $DirA^2$ in all four factor models suggest that I use the three factor model with these variables added to the base model as the best model.

Table 8.10 - Best regressions of supervisory variables for job satisfaction

# of Variables	R^2	C_p	Variables
1	48.8	14.2	LMX
1	21.7	87.8	DelA
1	19.8	92.9	$DelA^2$
1	16.9	100.9	DirS
1	15.1	105.6	LMXM
2	50.4	11.8	LMX, DirA
2	49.7	13.7	LMX, DirD
2	49.6	13.9	LMX, $DirA^2$
2	49.5	14.2	LMX, $DirD^2$
2	49.4	14.4	LMX, $DelD^2$
3	53.5	5.4	LMX, DirA, $DirA^2$
3	51.1	11.8	LMX, DirA, $DirD^2$
3	51	12.1	LMX, DirA, DelD
3	51	12.2	LMX, DirA, HasD
3	50.8	12.8	LMX, DelD, $DelD^2$
4	54.3	5.2	LMX, DirA, $DirA^2$, HasD
4	53.9	6.4	LMX, DirA, $DirA^2$, LMXM
4	53.9	6.4	LMX, DirA, $DirA^2$, $DirD^2$
4	53.8	6.6	LMX, DirA, $DirA^2$, DirS
4	53.8	6.6	LMX, DirA, $DirA^2$, DelD

Note: Base includes 8 variables so C_p should be near #var + 8

In Table 8.11, the results of the selected model for job satisfaction are shown. Job satisfaction increased with increasing level of relationship between supervisor and employee as measured by LMX. In addition, the subject's perception of the supervisor's direction style was significantly related in a quadratic form, with the highest satisfaction in the middle range of direction style.

Table 8.11 - Selected model for job satisfaction with supervisory variables

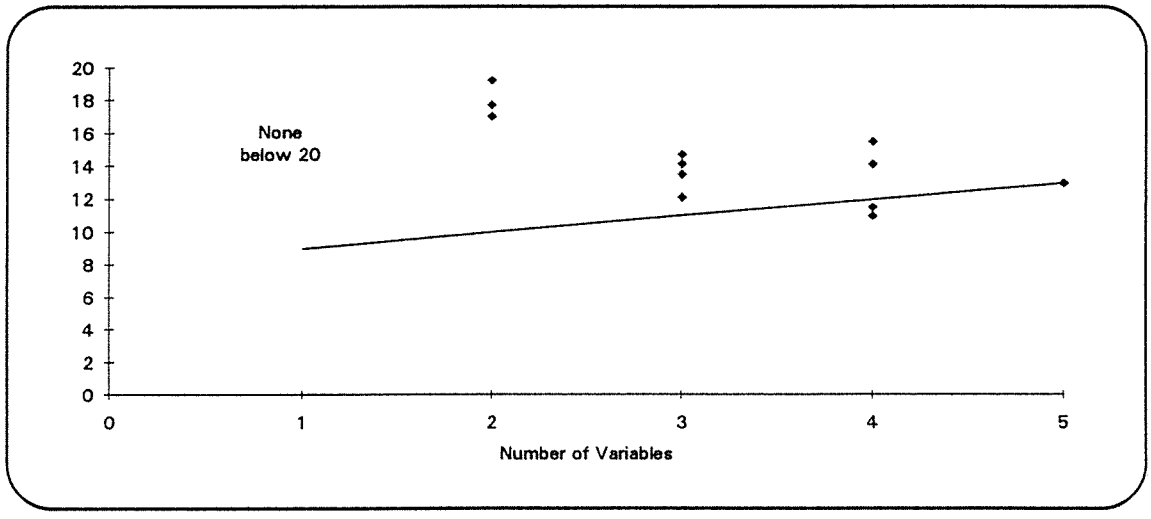
Predictor	Coefficient	t-ratio	Significance
Constant	0.293	0.76	0.446
Age	0.009	2.18	0.031
Branch 2	0.080	0.43	0.667
Branch 3	0.046	0.23	0.815
Branch 4	-0.025	-0.14	0.886
Branch 5	0.250	1.15	0.252
Branch 6	-0.111	-0.61	0.544
Branch 7	-0.037	-0.19	0.853
LMX	0.547	9.71	0.000
DirA	0.998	4.13	0.000
$DirA^2$	-0.168	-3.94	0.000

R^2 = 54.9% F-Ratio = 17.77 Significance = 0.000

Although this analysis showed a significant relationship between job satisfaction and supervisory style measures, in particular as evaluated by the Leader-Member Exchange measure and the subject's perception of their supervisor's direction style, the analysis did not evaluate the role of the supervisory variables relative to the previously identified perceived chronic stressors. Was the stress-relevant information contained in the supervisory variables effectively a subset of the information contained in already identified measures of demand-latitude, role conflict and role ambiguity, or did they provide an additional contribution to the model of job satisfaction? To assess this question, I repeated the analysis with demand-latitude, role conflict, and role ambiguity added to the base model. Through the inclusion of these historically defined perceived stressors in the model, variation that could be explained by these factors became part of the base model, and only incremental variation explainable by the supervisory and hassle variables was identified.

To identify which of the historical chronic stressors was required in a base equation, Mallow's procedure was used including all subsets of the five historical variables. Starting with the base regression including the identified demographics and business factors, the historically identified chronic stressors were examined using the C_p procedure. Figure 8.4 shows that an unbiased prediction equation was not identified until at least three, and preferably four or five, of the chronic stressors were included.

Figure 8.4 - Mallow's C_p for chronic stressors vs. job satisfaction



An examination of Table 8.12 which shows the detail of the C_p analysis reveals that two of the equations with four variables that produced acceptable equations both included role ambiguity, role conflict and decision latitude. The models differed in the inclusion of job demand or the demand-latitude interaction. Because of the high level of significance of the demand - latitude interaction when entered singly, because of the historical research focus on the demand-latitude interaction and because of its identification in other studies as a significant factor in a range of outcomes, this factor should be included along with its direct effects, even though with the APSS data, the inclusion of all variables was not required. This analysis did imply, however, that the

role variables and the demand-latitude variables were addressing different components of the job satisfaction variation.

Table 8.12 - Best regressions with chronic stressors

# of Variables	R^2	C_p	Variables
1	35.2	24.5	D-L
1	29.7	38.4	Lat
1	22.9	55.6	Con
1	21.8	58.2	Amb
1	16.4	72	Dem
2	38.9	17	Dem, Lat
2	38.7	17.7	Con, Lat
2	38.7	17.7	Amb, D-L
2	38.1	19.2	Lat, D-L
2	36.8	22.5	Dem, D-L
3	41.7	12.1	Amb, Dem, Lat
3	41.2	13.5	Amb, Lat, D-L
3	41.2	13.5	Con, Dem, Lat
3	40.9	14.1	Conf, Lat, D-L
3	40.7	14.7	Amb, Conf, Lat
4	42.9	11	Amb, Con, Dem, Lat
4	42.7	11.5	Amb, Con, Lat, D-L
4	41.7	14.1	Amb, Dem, Lat, D-L
4	41.7	14.1	Amb, Con, Dem, D-L
4	41.2	15.5	Con, Dem, Lat, D-L
5	42.9	13	Amb, Con, Dem, Lat, D-L

Note: Base includes 8 variables so C_p should be near #var + 8

The base equation for the next step in the analysis of supervisory and hassle impact (shown in Table 8.13) was chosen to include all of role ambiguity, role conflict, decision latitude, job demand and the demand-latitude interaction. (Note that because I have forced the inclusion of some variables, and because of the correlation of the independent variables, individual t-tests were not always significant, even though the overall regression is highly significant.)

Table 8.13 - Base equation for job satisfaction including historic chronic stressors

Predictor	Coefficient	t-ratio	Significance
Constant	4.353	5.63	0.000
Age	0.008	1.86	0.065
Branch 2	-0.033	-0.15	0.877
Branch 3	0.199	0.74	0.372
Branch 4	0.145	0.74	0.462
Branch 5	0.309	1.26	0.209
Branch 6	-0.029	-0.14	0.885
Branch 7	-0.034	0.15	0.881
Ambiguity	0.100	2.11	0.037
Conflict	-0.073	-1.76	0.081
Demand	-0.158	-0.70	0.485
Latitude	-0.504	-1.76	0.081
Dem-Lat	-0.007	-0.07	0.941

R^2 = 42.9% F-Ratio = 9.02 Significance. = 0.000

With this new base equation which accounted for variation from previously identified perceived chronic stressors, the analysis of supervisory styles and hassles was repeated. This new analysis addressed the issue of whether supervisory style worked through the existing measures, or encompassed an additional effect that had not yet been explained.

Table 8.14 outlines the results of adding each of the direction style variables one at a time. In the previous analysis, the subject's perception of direction style and his desired direction style were quadratically related to job satisfaction, and the supervisor's measure of direction style was negatively related. In the current analysis, these measures all remained significant, and improved the fit of the model compared to

the base. The incremental amount of variation explained by these measures, however, was not as great. This suggested that although some component of the direction measures effect on job satisfaction may already by explained by the historic perceived chronic stressors, there remained a significant effect for direction beyond these other measures.

Table 8.14 - Direction style measures added to base equation for job satisfaction

Type of measure	Coefficient	Significance	R^2
Base Model			42.9%
Subject - Linear only	0.1491	0.007	45.8%
- Linear plus	1.1963	0.000	
Quadratic	-0.1880	0.000	51.7%
Desired - Linear only	0.0910	0.121	43.9%
- Linear plus	1.1184	0.004	
Quadratic	-0.1811	0.007	46.7%
Gap - Subject	-0.1029	0.134	43.8%
Supervisor	-0.2288	0.003	46.2%
Manager	-0.1073	0.203	43.6%

Table 8.15 summarizes the regression results from the inclusion of the delegation measures. Whereas the subject's delegation style measures all contributed significantly to the model without the inclusion of the historical stressors, they did not improve the model fit after the historical variables were included, with the marginal exception of the subject's perception of delegation style when included in quadratic form. This would suggest that variation in job satisfaction that could be explained by the delegation style measures was also being explained by the historical stressors. Delegation style did not provide any additional information to model job satisfaction. Given the concerns expressed earlier regarding the relationship of delegation and decision latitude, it was not surprising that delegation did not contribute significantly.

Table 8.15 - Delegation style measures added to base equation for job satisfaction

Type of measure	Coefficient	Significance	R^2
Base Model			42.9%
Subject - Linear only	0.0796	0.118	43.9%
- Linear plus	0.5836	0.048	
Quadratic	-0.0748	0.082	45.1%
Desired -Linear only	0.0274	0.592	43.0%
- Linear plus	0.3463	0.321	
Quadratic	-0.0441	0.355	43.4%
Gap - Subject	-0.0550	0.294	43.4%
Supervisor	-0.0152	0.838	42.9%
Manager	0.0742	0.404	43.2%

In table 8.16, the results of including the measures of Leader Member Exchange (LMX) are shown. Even after the variation from the chronic stressors was accounted for, the subject's perception of LMX was highly significantly related to job satisfaction. The amount of variation explained increased from 42.9% to 56.7%. LMX was identified in Chapter 7 as being related to almost all of the chronic stressors, but this analysis suggests that it not only was related to job satisfaction through these stressors, but also provided additional explanatory power to the model. The objective measure provided by the manager, however, no longer had a significant effect.

Table 8.16 - LMX measures added to base equation for job satisfaction

Type of measure	Coefficient	Significance	R^2
Base Model			42.9%
Subject	0.4487	0.000	56.7%
Manager	0.2122	0.113	43.9%

In Table 8.17 and Table 8.18, the results of adding the number of hassles and the appraised impact of hassles are shown. As in the equation without the chronic stressors, the number of hassles, measured by either daily or weekly measures, was significantly related to job satisfaction. The appraised impact of hassles, was, as in the previous analysis, not related to job satisfaction.

Table 8.17 - Number of hassles measures added to base equation for job satisfaction

Type of measure	Coefficient	Significance	R^2
Base Model*			38.7%
Daily	-0.0062	0.022	40.2%
Weekly	-0.0025	0.006	42.7%

* Note different base because of missing data.

Table 8.18 - Appraisal of hassles measures added to base equation for job satisfaction.

Type of measure	Coefficient	Significance	R^2
Base Model*			38.7%
Daily	0.0218	0.875	38.7%
Weekly	-0.0413	0.756	38.8%

* Note different base because of missing data.

To identify the best model to take into consideration the correlations of the various supervisory style and hassles measures, the C_p procedure was again used. The graph in Figure 8.5 shows that with two variables added, a single unbiased model existed, with a second that was close. With three or more variables, there were a number of acceptable models.

Figure 8.5 - Mallow's C_p for supervisory styles vs. job satisfaction with chronic stressors in.

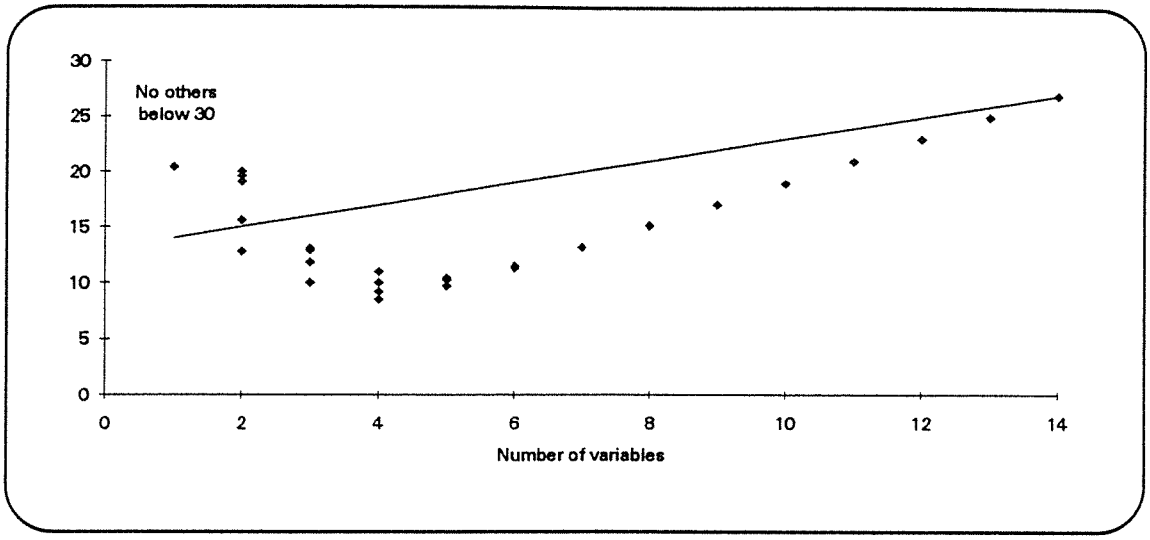


Table 8.19 shows the results of the C_p procedure. It was apparent that the measure of Leader-Member Exchange (LMX) and the subject's measure of direction style (DirA) needed to be in the chosen model. The model with these two added to the base explained 55.9% of the variation. By adding the quadratic form for direction style, or adding one of the measures of hassles (HasW or HasD), the model improved to explain 57.8% of the variation. Models including four or more variables did not contribute significantly to an improved fit of the model. Although inclusion of both the linear and quadratic terms was not strictly required to produce an unbiased model, the previously identified non-linear effect from direction style, and the notable increase in variation explained suggested that both linear and quadratic components should be included.

Table 8.19 - Best regressions for job satisfaction with chronic stressors in.

# of Variables	R^2	C_p	Variables
1	51.9	20.4	LMX
1	43.9	39.7	DirA
1	41.6	45.2	$DirA^2$
1	40.9	46.9	HasW
1	40.8	47.3	DirS
2	55.9	12.8	LMX, DirA
2	54.7	15.6	LMX, $DirA^2$
2	53.3	19.1	LMX, DirD
2	53	19.6	LMX, $DirD^2$
2	52.9	20	LMX, $DelA^2$
3	57.8	10	LMX, DirA, $DirA^2$
3	57.1	11.8	LMX, DirA, HasD
3	57.1	11.8	LMX, DirA, HasW
3	56.6	12.9	LMX, DirA, DirS
3	56.6	13.1	LMX, DirA, $DelD^2$
4	59.3	8.5	LMX, DirA, $DirA^2$, HasD
4	59	9.2	LMX, DirA, $DirA^2$, HasW
4	58.6	10	LMX, DirA, $DirA^2$, DirS
4	58.3	11	LMX, DirA, $DirA^2$, $DelD^2$
4	58.2	11	LMX, DirA, $DirA^2$, DelD

Note: Base includes 13 variables so C_p should be near #var + 13

Table 8.20 shows the preferred model for job satisfaction when the historic chronic stressors were forced into the base. The three variables that were included in the preferred model without the chronic stressors continued to be highly significant variables in the model, with the coefficients similar in magnitude to the previous model. The important variation appears to be explained by the supervisory variables, and the historic chronic stressors did not appear to contribute significantly to the model.

Table 8.20 - Selected model for job satisfaction with chronic stressors in

Predictor	Coefficient	t-ratio	Significance
Constant	1.794	2.38	0.019
Age	0.009	2.26	0.025
Branch 2	0.037	0.21	0.834
Branch 3	0.110	0.59	0.554
Branch 4	0.001	0.01	0.994
Branch 5	0.142	0.68	0.496
Branch 6	-0.134	-0.77	0.442
Branch 7	-0.020	0.11	0.916
Ambiguity	0.032	0.79	0.432
Conflict	-0.023	-0.64	0.520
Demand	-0.165	-0.85	0.395
Latitude	-0.316	-1.28	0.201
Dem-Lat	-0.006	0.07	0.947
LMX	0.386	5.93	0.000
DirA	0.914	3.88	0.000
$DirA^2$	-0.146	-3.54	0.001

R^2 = 61.3% F-Ratio = 14.9 Significance = 0.000

To further explore the relationship between the supervisory and hassle variables and the previously identified perceived chronic stressors, I repeated the C_p analysis with the chronic stressors being included optionally (rather than forced in the base model). In Figure 8.6, one can see that using three variables, only one model was acceptable. With four or more variables there were various acceptable models. In Table 8.21 (which indicates the variables used in these equations), it is apparent that the subject's measure of LMX was the single most powerful predictor of job satisfaction, well above

any of the historically identified predictors. Although the equation with the three variables (LMX, the subject's perception of direction style, and the demand-latitude interaction) was close to the line indicating an unbiased model, the inclusion of the quadratic factor for direction style increased the variation explained to 56.9% Examination of the other three and four variable equations with the best measures of C_p showed that other acceptable equations included various measures of direction, or a measure of the number of hassles. The measures of role ambiguity and role conflict did not appear other than in the single variable models.

Figure 8.6 - Mallow's C_p for all variables vs. job satisfaction

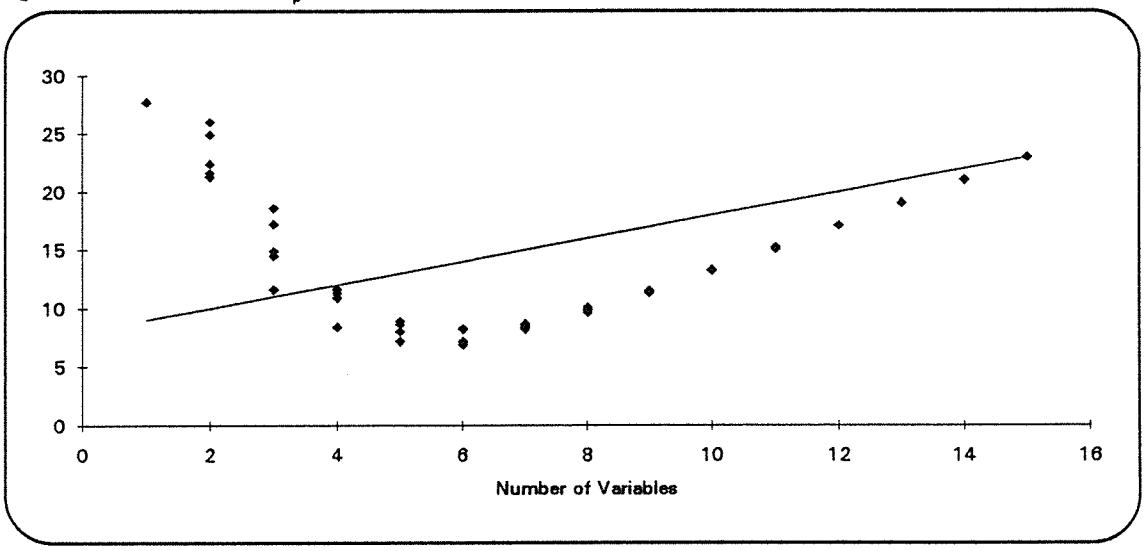


Table 8.21 - Best regressions of all variables

# of Variables	R^2	C_p	Variables
1	46.9	27.7	LMX
1	30.4	69.2	D-L
1	28.7	73.4	Lat
1	20.1	95	Conf
1	19.4	96.7	$DelA^2$
2	50.2	21.3	LMX, D-L
2	50.1	21.6	LMX, Lat
2	49.8	22.4	LMX, DirA
2	48.8	24.9	LMX, $DirA^2$
2	48.3	26	LMX, DirD
3	54.8	11.6	LMX, D-L, DirA
3	53.7	14.5	LMX, DirA, Lat
3	53.5	14.9	LMX, D-L, $DirA^2$
3	52.6	17.2	LMX, Lat, $DirA^2$
3	52.1	18.6	LMX, DirA, $DirA^2$
4	56.9	8.4	LMX, D-L, DirA, $DirA^2$
4	55.9	10.9	LMX, D-L DirA, HasW
4	55.9	10.9	LMX, D-L DirA, HasD
4	55.8	11.3	LMX, DirA, Lat, Dem
4	55.6	11.6	LMX, DirA, $DirA^2$, Lat

Note: Base includes 8 variables so C_p should be near #var + 8

In Table 8.22, the selected model is shown for job satisfaction. Demand - latitude, perceived Leader-Member Exchange, the subject's perception of direction style, and the quadratic form of the subject's perception of direction style were all highly significant. As in previous studies, job satisfaction decreased with increases in the demand-latitude interaction. Furthermore, satisfaction increased with the relationship with the supervisor, and increased in the middle range of the subject's perception of direction style.

From this analysis, it was apparent that the supervisory and hassle measures included all the information on job satisfaction contained in the role variables, plus more. The demand-latitude data contributed significant additional predictive power to the model above the supervisory and hassle data.

Table 8.22 - Selected model for job satisfaction.

Predictor	Coefficient	t-ratio	Significance
Constant	1.072	2.67	0.009
Age	0.009	2.48	0.014
Branch 2	0.071	0.41	0.684
Branch 3	0.090	0.49	0.627
Branch 4	0.001	0.01	0.995
Branch 5	0.177	0.86	0.391
Branch 6	-0.136	-0.79	0.429
Branch 7	0.002	0.01	0.992
Dem-Lat	-0.091	-4.42	0.000
LMX	0.408	6.62	0.000
DirA	1.020	4.48	0.000
$DirA^2$	-0.162	-4.04	0.000

R^2 = 60.3% F-Ratio = 19.99 Significance = 0.000

Some concern could be expressed that the relationships of measures of supervisory style with job satisfaction identified in the analysis above were trivial artifacts of the measures used. Some factors in the 17 element job satisfaction scale related to supervisors, and thus one might suspect that the additional variation explained by supervisory style measures related only to the similarity of content with these supervisory questions. The complete scale was used for the principle analysis because of its historical use in job satisfaction research, but the analysis was also repeated with a subset of the job satisfaction scale to alleviate validity concerns. By removing the five questions relating to job supervision, I developed a second measure of job satisfaction that could not be challenged in the same manner.

As the first step in the analysis of the satisfaction subset data, the supervisory variables were analyzed in combination with the base equation excluding the historical perceived chronic stressors. A comparison of the significance levels and variation explained for direction style shown in Table 8.23 revealed a consistent pattern for both measures of satisfaction: the original and the one excluding the supervisory related questions. Although the proportion of variation explained is notably less, the conclusions remain the same.

Table 8.23 - Direction style - Comparison of effect on full scale and subset of satisfaction scale.

	Satisfaction		Sub-Satisfaction	
Type of measure	Signif.	R^2	Signif.	R^2
Base Model		10.8%		7.6%
Subject - Linear only	0.152	12.0%	0.098	9.5%
- Linear plus Quadratic	0.000 0.000	25.8%	0.000 0.000	18.8%
Desired - Linear only	0.151	12.0%	0.078	9.5%
- Linear plus Quadratic	0.002 0.004	16.8%	0.004 0.007	13.8%
Gap - Subject	0.910	10.8%	0.992	7.6%
Supervisor	0.000	19.4%	0.011	11.6%
Manager	0.163	12.0%	0.285	8.3%

In Table 8.24, it appears that the relationhship between delegation and satisfaction was less when the supervisory related satisfaction questions were excluded. With the complete scale, all the subject's measures were significant, with the subject's perceived measure having a large impact on the variation. When using the sub-scale,

however, some of the significance tests become marginal, and the increase in explained variation declines.

Table 8.24 - Delegation style - Comparison of effect on full scale and subset of satisfaction scale.

	Satisfaction		Sub-Satisfaction	
Type of measure	Signif.	R^2	Signif.	R^2
Base Model		10.8%		7.6%
Subject - Linear only	0.000	23.3%	0.025	10.7%
-Linear plus Quadratic	0.001 0.008	26.8%	0.009 0.023	13.8%
Desired - Linear only	0.037	13.4%	0.365	8.1%
- Linear plus Quadratic	0.018 0.037	15.9%	0.075 0.096	9.8%
Gap - Subject	0.004	15.5%	0.137	9.0%
Supervisor	0.421	11.2%	0.811	7.6%
Manager	0.187	11.8%	0.392	8.0%

For LMX scales, the pattern remained the same with both satisfaction measures. Although the increase in R^2 from the inclusion of the perceived LMX measure remains dramatic, it was lowered significantly when the sub-scale is used.

Table 8.25 - LMX - Comparison of effect on full scale and subset of satisfaction scale.

	Satisfaction		Sub-Satisfaction	
Type of measure	Signif.	R^2	Signif.	R^2
Base Model		10.8%		7.6%
Actual - Subject	0.000	49.5%	0.000	27.2%
Manager	0.037	16.0%	0.018	11.0%

The identification of best models with the satisfaction sub-scale as the dependent variable (Table 8.26) also led to the same conclusions as previously. The two variable model consisting of the subject's perception of Leader Member Exchange and the subject's perception of direction style appeared to be a good model, but the addition of the quadratic form of the direction style improved the model fit. The total variation explained, however, was significantly lower than for the full scale, suggesting a less effective prediction model.

Table 8.26 - Best regressions on satisfaction subset

# of Var.	R^2	C_p	Vars.
1	22.4	11.6	LMX
1	12.6	26.5	DirA
1	10.1	30.4	$DirA^2$
1	9.9	30.7	DirD
1	9.2	31.7	DirS
2	27.7	5.7	LMX, DirA
2	26.4	7.7	LMX, $DirA^2$
2	25.4	9.1	LMX, DirD
2	24.9	9.9	LMX, $DirD^2$
2	24.3	10.8	LMX, $DelA^2$
3	29.5	4.8	LMX, DirA, DirA2
3	28.7	6	LMX, DirA, HasD
3	28.7	6.2	LMX, DirA, $DelD^2$
3	28.6	6.2	LMX, DirA, HasW
3	28.5	6.4	LMX, DirA, DelD
4	30.8	5	LMX, DirA, DirA2, HasD
4	30.4	5.6	LMX, DirA, DirA2, HasW
4	30.2	5.8	LMX, DirA, DirA2, $DelD^2$
4	30.1	5.9	LMX, DirA, DirA2, DirS
4	30.1	6	LMX, DirA, DirA2, DelD

Note: Base includes 8 variables so C_p should be near #var + 8

As in the initial analysis, the second stage of the subset analysis included the chronic stressors in the base equation. In a similar manner to the supervisory variables,

the perceived chronic stressors that had been previously identified in research were also less effective in predicting the sub-scale of satisfaction without the supervisory questions. Whereas, the model with age, branch, role ambiguity, role conflict, job demand, decision latitude and the demand-latitude interaction explained 42.9% of the variation in the full job satisfaction scale, it explained only 30.2% for the satisfaction sub-scale. To ensure that the supervisory variables still contributed significantly to the sub-scale after accounting for the chronic stressor variation, I compared the results of the regressions on the sub-scale to the original analysis.

In Table 8.27, one can see that the effect of the subject's perception of direction style had the same effect on both the full scale of job satisfaction and the sub-scale. On the other hand, the supervisor's objective measure which had a significant impact for the full scale, was no longer identified as a factor.

Table 8.27 - Direction style after chronic stressors - Comparison of effect on full scale and subset of satisfaction scale.

	Satisfaction		Sub-Satisfaction	
Type of measure	Signif.	R^2	Signif.	R^2
Base Model		42.9%		30.2%
Subject - Linear only	0.007	45.8%	0.007	33.7%
- Linear plus Quadratic	0.000 0.000	51.7%	0.000 0.000	38.0%
Desired - Linear only	0.121	43.9%	0.077	31.7%
- Linear plus Quadratic	0.004 0.007	46.7%	0.006 0.012	34.7%
Gap - Subject	0.134	43.8%	0.213	30.9%
Supervisor	0.003	46.2%	0.145	31.2%
Manager	0.203	43.6%	0.380	30.6%

The delegation style was not identified as a significant factor in the analysis on the full job satisfaction scale, and the same conclusion was readily apparent for the sub scale as shown in table 8.28.

Table 8.28 - Delegation style after chronic stressors - Comparison of effect on full scale and subset of satisfaction scale.

	Satisfaction		Sub-Satisfaction	
Type of measure	Signif.	R^2	Signif.	R^2
Base Model		42.9%		30.2%
Subject - Linear only	0.118	43.9%	0.468	30.4%
- Linear plus Quadratic	0.048 0.082	45.1%	0.253 0.198	31.2%
Desired - Linear only	0.592	43.0%	0.644	30.3%
- Linear plus Quadratic	0.321 0.355	43.4%	0.627 0.576	30.4%
Gap - Subject	0.294	43.4%	0.787	30.2%
Supervisor	0.838	42.9%	0.740	30.2%
Manager	0.404	43.2%	0.779	30.2%

The subject's perceived measure of Leader Member Exchange had a significant effect on the explanation of the variation in the full scale. The analysis using the subscale of job satisfaction indicates that the subject's perception was still significantly related to the sub-scale, but the effect was reduced. The objective measure, however, was no longer a significant factor.

Table 8.29 - LMX after chronic stressors - Comparison of effect on full scale and subset of satisfaction scale.

	Satisfaction		Sub-Satisfaction	
Type of measure	Signif.	R^2	Signif.	R^2
Base Model		42.9%		30.2%
Subject	0.000	56.7%	0.002	34.8%
Manager	0.037	43.9%	0.358	30.6%

Table 8.30 presents the results of the best five regressions of the job satisfaction variables and the chronic stressor variables on the job satisfaction sub-scale. The pattern produced was similar to the full satisfaction scale shown in Table 8.21. Leader Member Exchange was again the best single variable, and although the combinations changed slightly, the same set of variables appeared in the models, . Like the previous analysis, a three factor model produced an unbiased model, but the analysis with the subset slightly favored decision latitude combined with Leader Member Exchange and the subject's perception of the supervisor's direction style (DirA), rather than the demand - latitude interaction (D-L) as was the case with the full satisfaction measure. The model with D-L as the third factor was, however, also marginally acceptable in the subset analysis. The importance of the quadratic form of the perceived direction style was diminished in the subset analysis. Although it appeared in a number of areas, the strength of the relationship was not as apparent. The number of hassles appeared to be marginally important in both analyses.

Table 8.30 - Best regressions of all variables on satisfaction sub-scale.

# of Variables	R^2	C_p	Variables
1	22.4	27.3	LMX
1	19.8	31.8	Lat
1	17.9	35.1	D-L
1	12.6	44.2	DirA
1	10.1	48.6	$DirA^2$
2	28.4	19.1	DirA, D-L
2	28.3	19.3	DirA, Lat
2	27.7	20.3	LMX, DirA
2	27.4	20.8	LMX, Lat
2	26.4	22.6	LMX, $DirA^2$
3	33.8	11.7	LMX, DirA, Lat
3	33.3	12.7	LMX, DirA, D-L
3	32.6	13.9	LMX, DirA, HasD
3	32.5	14	LMX, $DirA^2$, Lat
3	31.7	15.4	LMX, $DirA^2$, D-L
4	35.8	10.4	LMX, DirA, Lat, HasD
4	35.7	10.5	LMX, DirA, Lat, DirM
4	35.6	10.8	LMX, DirA, Lat, DelD
4	35.3	11.3	LMX, DirA, Lat, $DirA^2$
4	35.2	11.4	LMX, DirA, Lat, D-L
5	37.5	9.3	LMX, DirA, Lat, DirM, HasD
5	37.5	9.4	LMX, DirA, Lat, DirM, DelD
5	37.5	9.5	DirA, $DirA^2$, DirM, HasD, Lat
5	37.4	9.7	LMX, DirA, $DirA^2$, Lat, HasD
5	37.3	9.7	DirA, $DirA^2$, Dem, HasD, D-L
6	39.3	8.3	D-L, DirA, $DirA^2$, Dem, HasD, DirM
6	39.2	8.5	LMX, DirA, $DirA^2$, Lat, HasD, DirM
6	38.8	9.1	DirA, $DirA^2$, D-L, Lat, HasD, DirM
6	38.7	9.4	LMX, DirA, Lat, HasD, DirM DelD
6	38.6	9.5	LMX, DirA, $DirA^2$, D-L, HasD, Dem

Note: Base includes 8 variables so C_p should be near #var + 8

8.4 Coping Success and Style

The APSS data included information regarding coping style and success with respect to hassles. In Chapter 6, these variables were tested for a significant effect on the appraisal of hassles. Although the data collected were focused on coping with hassles, the coping styles and success for hassles may carry over to the link between chronic stressors and job satisfaction. To test this hypothesis, the variables measuring coping success and coping style were added to the best models to identify any relationship with job satisfaction after other variation was explained. Coping success measured on a five point scale was tested both as a single variable (1 to 5) and to be more general, as a set of four indicator variables indicating which point on the scale was chosen. The coping style was included as a set of 8 indicator variables to indicate which type of coping was used most often. Tables 8.31 shows the results of including these variables in the selected model using supervisory variables, while Table 8.32 show the results of including coping variables in the selected model using both the supervisory and historical stressors.

Table 8.31 - Coping measures in model with best supervisory variables

Type of measure	# of Variables	Significance.	R^2
Base Model			54.0%
Coping Success	1	n.s.	54.5%
Coping Success Ind.	4	n.s.	56.0%
Coping Style Ind.	8	n.s	55.1%

Table 8.32 - Coping measures in model with best of all variables

Type of measure	# of Variables	Significance	R^2
Base Model			59.1%
Coping Success	1	n.s.	59.4%
Coping Success Ind.	4	n.s.	60.4%
Coping Style Ind.	8	n.s	59.5%

There was no evidence that either coping success or coping style had any impact on the subject's perceived job satisfaction.

8.5 Summary and Discussion

Although the analysis attempted to eliminate variation in job satisfaction related to specific personal or work environment characteristics, there was little evidence of significant relationships of these variables with job satisfaction. Only the age variable was significantly related to job satisfaction, with satisfaction increasing with age. The other personal variables of experience and affect intensity were not significantly related to job satisfaction.

The work environment variables relating to productivity, union status, branch profitability and organizational structure that were tested were not significant predictors of job satisfaction. Although some of these factors were identified as predictors of chronic stressors in previous chapters, their effect was either not strong enough to be identifiable with job satisfaction in the current research, or they were related to dimensions of the chronic stressors that were not themselves predictors of satisfaction. There appeared, however, to be some residual variation that could be explained by the

branch the subject was in. The indicator variables for branch produced a significant effect on job satisfaction when no supervisory variables were present. These variables were, however, often not significant in the final models once supervisory style was accounted for.

There was strong evidence that supervisory style was related to job satisfaction. As direct effects, without the mediating role of other chronic stressors, there was evidence that the perceived level of delegation style, and both perceived and objective measures of direction style and leader-member exchange were all related to satisfaction. In particular, the leader-member exchange measure of the relationship between the supervisor and employee was a very effective predictor of job satisfaction.

Although there was no evidence that the appraised reaction to hassles was related to job satisfaction, the number of hassles appeared to be related whether measured daily or weekly. As the number of hassles increased, job satisfaction decreased.

The supervisory variables were correlated, and as such, were not all required simultaneously to model job satisfaction. The two variables, leader member exchange and the subject's perception of the amount of direction given, were sufficient to contain all the supervisory information required to model job satisfaction. As the relationship between individual and supervisor improved, so did job satisfaction. For direction, either too much or too little direction resulted in decreases in job satisfaction. Although both variables were required to provide an effective model, by far the most variation was explained by the perceived LMX measure.

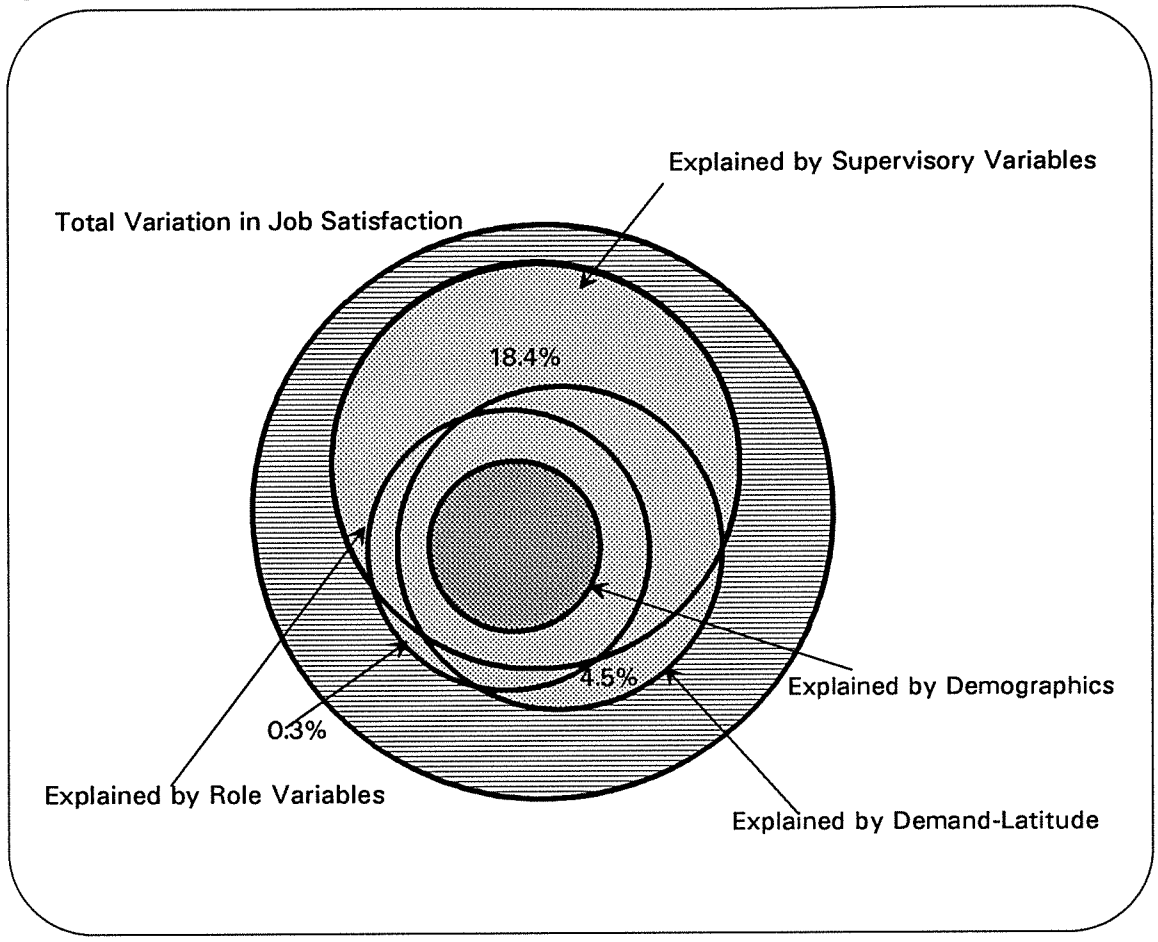
The importance of the individual perception stage in the stress process was reinforced by the analysis. The individual's perception of the supervisory style was, in all cases, more predictive of job satisfaction than objective measures. For the key variables of Leader Member Exchange, and direction style, however, the supervisor's

or manager's measures were also often significantly related to satisfaction. These measures of supervisory style were free of the influence of an individual's perception and independently measured dimensions of the objective environment. The combination of significant objective measures and more significant perceived measures, suggests that not only was supervisory style related to job satisfaction independent of individual perception, but also that the cognitive perception played a significant role in job satisfaction.

After the explanation of variation by age and branch, the role variables and the demand / latitude variables each appeared to explain part of the variation in job satisfaction consistent with previous research. Although there was a high degree of overlap in explanation of variation (i.e. the two sets are correlated, and explain some of the same components of satisfaction), each set contributed significantly to the model above what was explained by the other set.

The research also provided strong evidence that supervisory variables (in particular the combination of Leader Member Exchange and direction style) were more effective predictors of job satisfaction than the previously studied role or demand / latitude variables. When the previously studied variables were forced into the model, the supervisory set still contributed significantly. On the other hand, when I examined the full set of potential regressions without forcing the role or demand / latitude sets, the supervisory variables were clearly the most effective predictors. They explained more variation beyond that explained by the historical stressors. Figure 8.7 graphically demonstrates the relative contribution of the three variables sets.

Figure 8.7 - The role of different variable sets in the explanation of job satisfaction variation.



Not only did the supervisory set of variables explain more of the total variation than either the demand / latitude variables or the role variables, but it also explained more (18.4%) of the variation that could not be accounted for by either other set. Although the demand / latitude set did explain some significant variation (4.5%) above that covered by the supervisory set, the role variables were effectively subsumed by the other two sets providing a unique explanation for only 0.3% of the additional variation.

The difference in variation explained between the full job satisfaction scale and the sub-scale excluding the supervisor elements points to a number of interesting questions that need further research. If the amount of variation explained by the historical perceived chronic stressors had remained approximately constant, while the

amount explained by supervisory style variables had decreased substantially, one could have hypothesized that some of the variation explained by the supervisory style variables was a trivial artifact caused by overlapping questionnaire content. What was observed, however, was significant reduction in variation explained by all independent variables. Examination of the specific questionnaire content for the demand - latitude variables, and the role variables suggested that it was highly unlikely that these measures were also trivially related to the supervisory components of the job satisfaction scale due to item overlap. This suggests that a better understanding of the principal components of job satisfaction is required. What are they? Are the current measures of job satisfaction really measuring a single dimension, or combining multiple ones? Which components of satisfaction are predicted by which chronic stressors? Which ones are related to health outcomes?

The lack of significance of either coping style or coping success on job satisfaction was consistent with the lack of significance of the appraised impact of hassles. Coping success and style were asked as they relate to the impact of job hassles. Since there was no evidence that the appraised impact of hassles was related to satisfaction, it was entirely consistent that an individual's success at dealing with these hassles was also not significantly related.

Chapter 9

Summary, Conclusions and Further Research

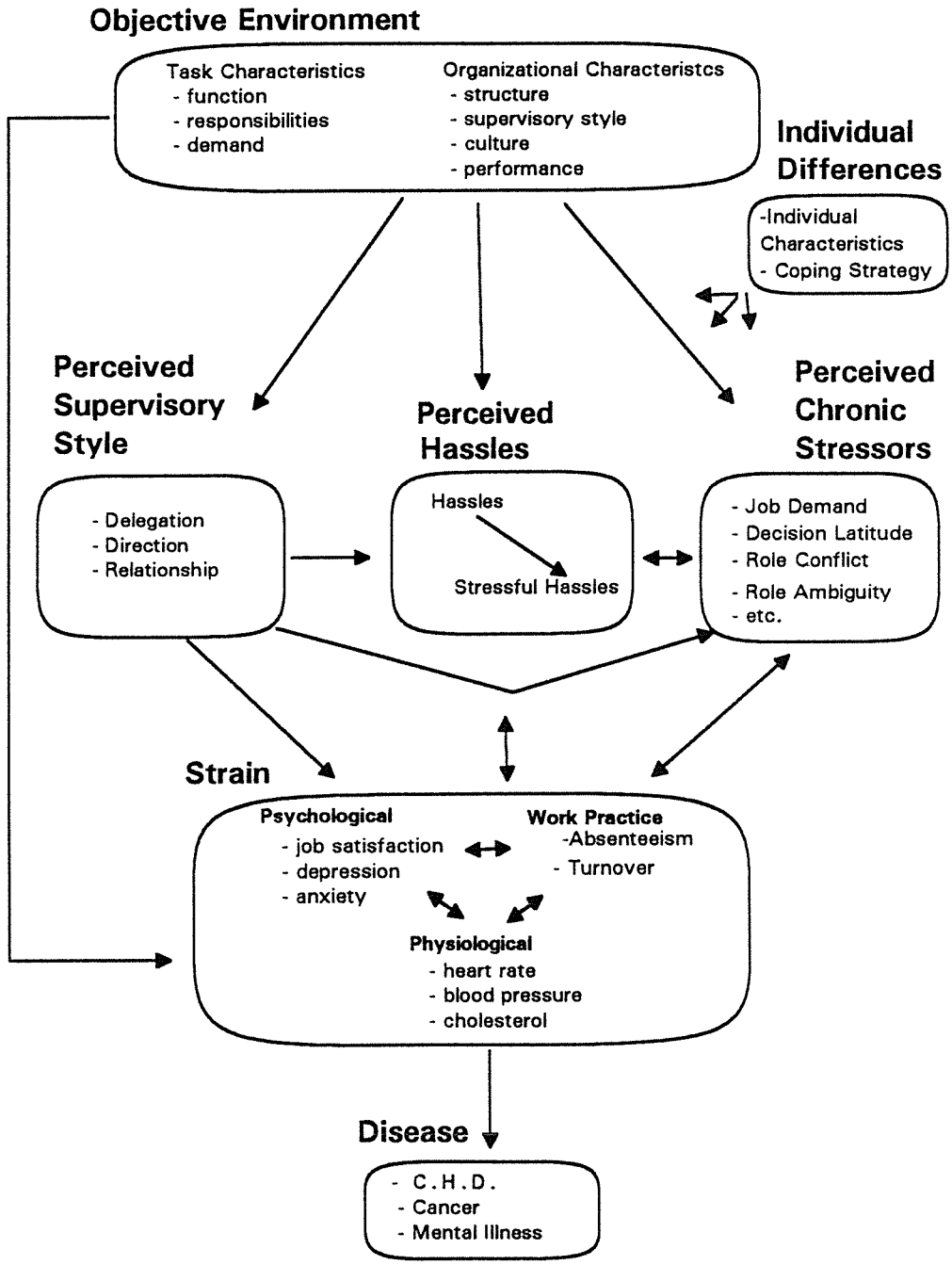
Implicit in the hypotheses specified in Chapter 3 was the goal of this research which was to develop a better understanding of the role of supervisory styles and occupational hassles in the stress process. Although other historically studied perceived chronic stressors have been identified and shown to be related to outcome measures of strain, this research set out to identify other factors related to (and possibly precursors of) these stressors. Furthermore, it was proposed that occupational hassles and supervisory style measures might embody stress-causing dimensions of the environment that were predictive of job strain beyond that identified by the historical stressors. The APSS research provided strong evidence of both of these roles for supervisory style, and more limited evidence of these roles for occupational hassles..

In this chapter, evidence from the APSS study will be summarized as it relates to the relationships hypothesized in the generalized occupational stress model in Figure 9.1. In addition, implications for organizational actions and for future research will be discussed. Although interventions will be discussed, one must remain mindful that cause and effect were not identifiable in this study. Thus the success of proposed interventions will be dependent on the identified correlations being maintained during and after any organizational changes.

9.1 Individual Difference Variables

Specific hypotheses were presented which addressed the role of affect intensity and coping success and styles as moderators of the appraisal stages in the stress

Figure 9.1 - Generalized occupational stress model



process. To account for variation in outcomes that might be attributable to differences in age, years of experience or gender, however, other demographic variables were also included in the model building analyses. As indicated by the direction and significance of effects in Table 9.1, the APSS study identified a significant role for individual differences in the appraisal of daily hassles, but not for the prediction of perceived chronic stressors or job satisfaction.

Table 9.1 - Summary of individual difference effects

	# of hassles		% stressful hassles		Job Demand	Decision Latitude	D - L	Role Conflict	Role Ambig.	Job Satisf.
	Daily	Weekly	Daily	Weekly						
Gender										
Age		- -								+
Exper.			+	+ +						
Affect Intensity			+ +	+		-				
Coping Success			-	-						
Coping Style										

Note: + represents a positive relationship which is significant at the 5% level; + + represents a positive relationship significant at the 1% level or better; - represents a negative relationship significant at the 5% level; and - - represents a negative relationship significant at the 1% level or better.

There was no evidence for a significant effect for gender in any of the models. Examination of the 95% confidence interval for the gender coefficient in the regression on the number of hassles, however, shows a fairly wide interval (-0.124, 0.833) which corresponds to a range of a 12% decrease in hassles to a 130% increase. This implies that a high level of uncertainty remains about the potential effect of gender in the models.

Age and number of years of experience with the company were shown to have a limited role in the modeling of the stress process, with their effect limited to a

relationship with hassles. Although age was strongly negatively associated with the number of hassles measured on a weekly basis, this finding was not replicated in the daily data. Previous work investigating life hassles (Kanner et al., 1981; Lu, 1991) did not find an age effect for either the frequency or intensity of hassles. The recall concerns previously expressed regarding the validity of the weekly data combined with the failure of the daily data to reflect the weekly results weaken the evidence of an age effect. Further research would be required on the role of age in the occupational stress process before significant conclusions could be drawn.

Motowidlo, Packard and Manning (1986) proposed that years of job experience would be related to both occupational hassles and a subjective stress measure. They suggested that stress would decrease with experience because of either selective withdrawal (as people who are more stressed voluntarily withdraw) or because of adaptation (as employees develop improved coping mechanisms). Their research, however, found no evidence of a relationship between experience and the frequency of stressful events, the intensity of stressful events, or overall stress. In the APSS survey the subject's years of experience played a significant role in the appraisal of hassles. Contrary to Motowidlo's hypothesis, however, as employees experience with the company increased, they were more likely to be upset by job hassles. Although the APSS research did not address the underlying rational for this observation, potential explanations could be that long service employees have an increased commitment to the organization and react more strongly to hassles that interfere with organizational performance, or that long term employees have grown tired of dealing with hassles.

Affect intensity was hypothesized to play a role in the stress process primarily through the cognitive appraisal process. Although a number of perceived measures (job demand, decision latitude, etc.) were gathered in the APSS data, appraisal in the pure sense of evaluating threat was only measured twice. In the first case, the proportion of hassles that were appraised by the subject as stressful required a direct and specific

evaluation of threat. As in previous research (Larsen et al., 1986), the APSS data identified a significant positive relationship between affect intensity and the proportion of hassles that were appraised as stressful. Secondly, the evaluation of job satisfaction implicitly included appraisal of the chronic stressors. Although no previous research was found that provided evidence of a relationship between affect intensity and job satisfaction, the APSS study hypothesized that such an effect would be found. There was no evidence in the APSS research to support this hypothesis. Affect intensity also appeared to be related to decision latitude with increases in affect intensity corresponding to increases in perceived decision latitude (note the inverted coding). This finding is difficult to interpret, and the marginal significance in the final model ($p = 0.07$) may suggest a random effect only.

The effect of coping was addressed in the APSS study through the inclusion of a question on coping success and style with regards to occupational hassles. Although the analysis provided some support for a relationship between coping success and the proportion of hassles appraised as stressful, there was no evidence of a differential effect based on type of coping. This is consistent with previous work that identified, at best, a weak role for coping style in the stress process. (Ashford, 1988; Shinn et al., 1984; Puffer and Brakefield, 1989).

The significant effect of years of experience, affect intensity and coping success suggest that there is a subset of employees that are at higher risk of appraising hassles as stressful. This has a number of very diverse implications for organizational action. If it can be shown that stressful occupational hassles play a significant role in the development of strain outcomes, then interventions targeted at a select group may provide the maximum value for reducing strain. Longer term employees who react strongly to stimulus and exhibit poor coping skills might be taught better coping methods. As discussed later in this chapter, however, the APSS study did not provide

evidence of a strong link between stressful occupational hassles and job satisfaction. Thus, targeted organizational action at this point would be premature.

Coping style remains something of an enigma. Despite the extensive theoretical work that has been completed by others defining and categorizing coping styles, the APSS study, like others, failed to identify an effect on perceived stressors or strain from coping style. Until better evidence is available, coping style training interventions remain poorly supported.

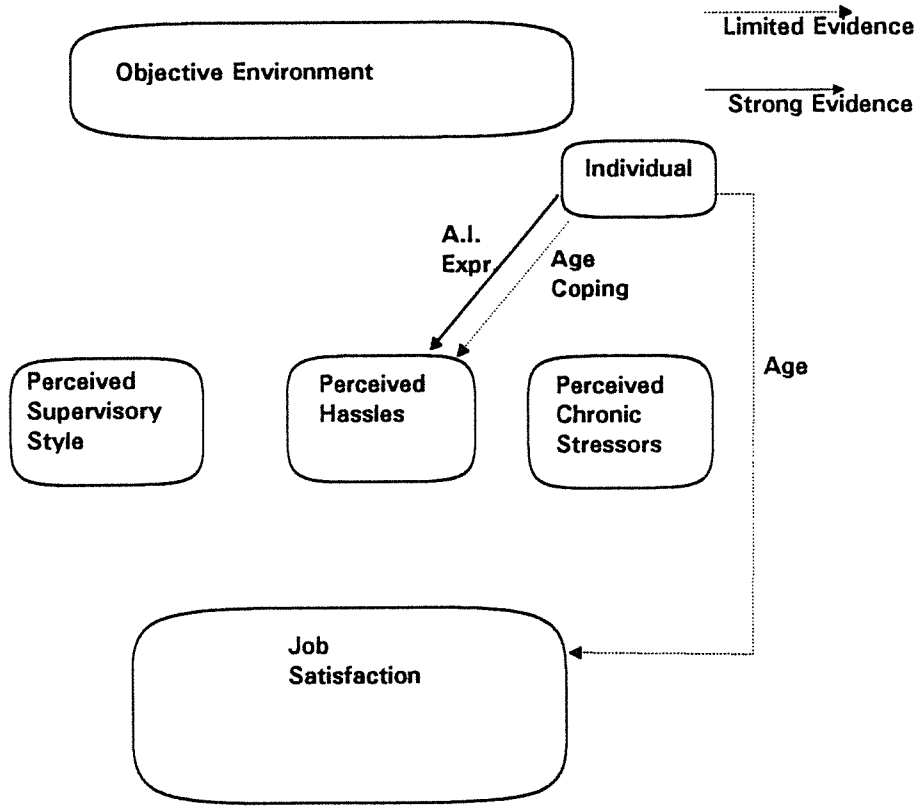
Further research is indicated in the area of individual differences. In particular, the significant effect of years of experience acting in a counter-intuitive manner needs to be replicated. A cross-sectional study similar to the APSS study could verify the presence of a similar relationship in other organizations with other task groups. A longitudinal study would provide stronger evidence of an evolving commitment to the organization or changing attitudes towards hassles, and negate potential concerns that the effect might be related to the organization cohort rather than to the years of experience.

Identified relationships were summarized in figures corresponding to that of the occupational stress model, and were categorized as being supported by either limited or strong evidence This distinction was based on three criteria: the significance level, the consistency of the relationship across multiple measures (for example daily and weekly measures, or multiple stressor measures), and the overall importance as identified by the best fit models. Satisfaction of two of these three criteria was considered strong evidence.

Figure 9.2 summarizes the identified individual difference relationships in terms of the model. The most consistent evidence from the APSS study for an individual difference effect was in the appraisal process for hassles. Both affect intensity and years of experience with the company were related to the appraisal of hassles. No consistent

effect was found between individual differences and the perceived chronic stressors, although age was significantly related to job satisfaction. If the appraised level of stressful occupational hassles can be shown in further research to be related to strain or disease outcomes, then these individual differences may provide avenues for targeted organizational intervention.

Figure 9.2 - Identified individual difference relationships in model



9.2 Job Environment Variables

The specified role of the job environment variables in the APSS study was to ensure that any variation in stressors or job satisfaction that could be attributed to identifiable objective differences in the work environment was accounted for prior to

identification of effects from hassle measures or supervisory styles. In almost all models that were estimated, some objective environmental effect was identified. In Table 9.2 which summarizes the effects of the job environment variables, one can see that although job satisfaction itself does not appear to be related to any of the identified job characteristics, a number of the perceived stressors show significant relationships.

Table 9.2 - Summary of job environment effects

	# of hassles		% stressful hassles		Job Demand	Decision Latitude	D - L	Role Conflict	Role Ambig.	Job Satisf,
	Daily	Weekly	Daily	Weekly						
Mgmt Layers						+ +				
Group Size						--				
Branch Size										
Union Status										
ROCE					+ +	+	+ +	+		
Sales Perform.										
Profit Perform.	+	+ +								
IS Prod.			+	+						
Whse. Prod.										
Driver Prod.										
Job Indicator	✓		✓	✓	✓	✓				
Branch Indicator										✓

Note: + represents a positive relationship which is significant at the 5% level; + + represents a positive relationship significant at the 1% level or better; - represents a negative relationship significant at the 5% level; - - represents a negative relationship significant at the 1% level or better; and ✓ represents the significant relationship at the 5% level when more than one indicator variable is included.

A review of the literature failed to find wide-spread use of similar objective measures in other studies, so comparisons of APSS results for objective job

environment variables with other work was not possible. Although the effect of these objective environmental variables was not included in the initial hypotheses, the results provide some interesting insights into organizational dynamics and provide avenues for further research.

The strongest evidence in the APSS study for a relationship between job environment variables and hassles or perceived chronic stressors is related to branch financial performance. Return on Capital Employed (ROCE), which was well understood and widely known within the organization, showed evidence of a relationship with almost all the perceived chronic stressors. As financial performance improved, the chronic stressors increased. A second measure of performance, branch profitability as compared to budget, was significantly related to the number of hassles, measured either daily or weekly. In addition, some evidence for an effect of employee productivity on hassles was apparent. For inside sales employees, the proportion of hassles appraised as stressful increased as productivity increased. The cause and effect relationship of organizational profitability and productivity with hassles or stressors was not discernible because of the cross-sectional nature of the APSS study, but one might logically hypothesize a causal pathway in either direction. Organizational profitability and productivity may cause stress in an individual, or increased stress in the individual (possibly attributable to elements of organizational culture) may result in increased organizational productivity and profitability.

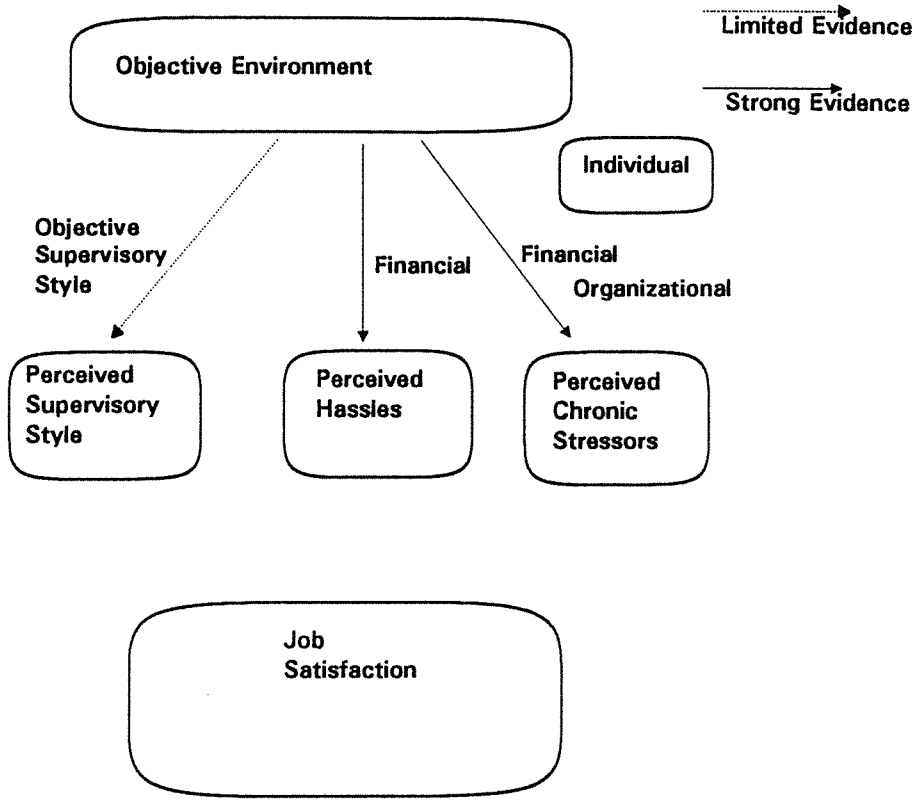
This relationship between hassles and stressors on one hand, versus profitability on the other could leave organizations in something of a quandary. From an organizational point of view, there may be positive aspects of stress. Certain levels of stress may increase profitability through increased productivity. If the cause and effect relationship could be verified by a longitudinal study or intervention study, then the organization will be subject to countervailing forces of increased profitability versus

employee health. The issue will need to be examined carefully to identify clinically significant levels of stress from both a health and profit point of view.

Organizational structure variables of group size and the number of management layers between the subject and the branch manager were shown in the APSS data to be significantly related to the decision latitude measure. Increases in the group size, or decreases in the number of management layers both result in increased decision latitude. Although these variables have not been previously studied in this context, they are consistent with intuitive expectations. If these findings can be replicated in studies specifically designed to test this relationship and ensure generalizability across other populations, then organizations that wished to reduce stress using Karasek's conceptualization of "job strain" as a framework for their involvement, would have concrete and readily definable actions to follow. Flattening the organization and expanding the span of control will result in increased decision latitude.

Thus, as shown in Figure 9.3, the APSS research found a close link between organizational financial performance and the stress process. An understanding of causal direction and critical stress levels for both disease and performance are, however, critical to the interpretation of these findings and the development of organizational interventions. Further study will be required focusing on these issues. An additional APSS finding identified objectively measured organizational structures that appeared to increase the decision latitude measure of Karasek's "job strain" model.

Figure 9.3 - Identified job environment relationships in the model



9.3 Supervisory Style Variables

The primary aim of this thesis, to expand the understanding of the role of supervisory styles on the stress process, was clearly accomplished in the APSS study. The previous chapters, and the summaries shown in Tables 9.3, 9.4, and 9.5 show a significant relationship between a number of objective and perceived measures of supervisory style and previously identified perceived chronic stressors. Furthermore, Chapter 8 suggests that two key measures of supervisory style, Leader Member Exchange and perceived supervisory direction style, include within their constructs all

the relevant dimensions of the organizational environment that are measured by the role variables, and most of the information explained by the demand-latitude characterization of the stress process. Because supervisory style per se has not been studied in great depth, little can be done to compare current results to other findings. Some comparisons are possible, however, between the LMX measure of supervisor-employee relationship in the APSS study and the supervisor support measures in previous work. Although the two measures are not synonymous, the LMX measure does include some component of supervisory support as conceptualized by other authors.

Tables 9.3 and 9.4 show the relationships that were identified when variables were added singly to the models. Although this approach identifies the broadest set of relationships, it does not identify the key variables that best model the relationships. Table 9.5 indicates the "best model" variables from Chapters 6, 7 and 8. These variables contain the maximum amount of information to explain the variation in the dependent variable, and thus are more likely to be direct relationships, rather than secondary relationships resulting from the high level of correlation of the many supervisory measures.

Table 9.3 - Summary of supervisory style effects.

	# of hassles		% stressful hassles		Job Demand	Decision Latitude	D - L	Role Conflict	Role Ambig.	Job Satisf,
	Daily	Weekly	Daily	Weekly						
Direction										
Subject	+				+ +	*	+ + *		*	* *
Desired		+			+					* *
Gap							- -			
Superv.	+ +	+ +				+	+			- -
Manager		+								
Delegation										
Subject	- -		-		-	- -	- - *	- - *	+ + *	+ + * *
Desired					*		*	*	+ +	+ *
Gap	+ +	+ +			+ +	+ +	- -	+		- -
Superv.		+ +			+ +		+ +			
Manager		-	+ +							
LMX										
Subject	- -	- -			- -	- -	- -	- -	+ +	+ +
Manager						-	-			+ +

Note: + represents a positive relationship which is significant at the 5% level; + + represents a positive relationship significant at the 1% level or better; - represents a negative relationship significant at the 5% level; - - represents a negative relationship significant at the 1% level or better; * represents a quadratic relationship which is significant at the 5% level; and * * represents a quadratic relationship which is significant at the 1% level or better.

Table 9.4 - Summary of hassle effects

	Job Demand	Decision Latitude	D - L	Role Conflict	Role Ambig.	Job Satisf,
# of Hassles						
Daily	+			+		- -
Weekly						- -
% of stressful hassles						
Daily	+			+		
Weekly	+ +					

Note: + represents a positive relationship which is significant at the 5% level; + + represents a positive relationship significant at the 1% level or better; - represents a negative relationship significant at the 5% level; - - represents a negative relationship significant at the 1% level or better; * represents a quadratic relationship which is significant at the 5% level; and * * represents a quadratic relationship which is significant at the 1% level or better.

Table 9.5 - Summary of best model effects

	# of hassles		% stressful hassles		Job Demand	Decision Latitude	D - L	Role Conflict	Role Ambig.	Job Satisf,
	Daily	Weekly	Daily	Weekly						
Direction										
Subject	*	+					++		*	**
Desired										
Gap										
Superv.	++	++								
Manager										
Delegation										
Subject			-					*	**	
Desired										
Gap										
Superv.		+			++					
Manager			++							
LMX										
Subject	- -	-				- -	- -	- -		++
Manager										
Hassles										
Daily #					+					
Weekly #										
Daily %										
Weekly %					+					

Note: + represents a positive relationship which is significant at the 5% level; + + represents a positive relationship significant at the 1% level or better; - represents a negative relationship significant at the 5% level; - - represents a negative relationship significant at the 1% level or better; * represents a quadratic relationship which is significant at the 5% level; and * * represents a quadratic relationship which is significant at the 1% level or better.

Direction Style

The APSS data provided significant evidence that both objective and perceived direction style was related to the number of hassles, a number of the perceived chronic

stressors and job satisfaction. Not only was this effect apparent when tested in isolation from other supervisory variables, but direction style was also identified as one of the key variables that best embodied the available information to develop the predictive models.

There was evidence of a significant effect of objectively measured direction style on the number of hassles (Table 9.3). The supervisor's objective measure of direction was significantly related to both daily and weekly counts of hassles at the 1% level. In addition, the manager's measure was significant at the 5% level for the weekly measure, and significant effect at the 10% level for the daily measure. Increases in the amount of direction provided by the supervisor corresponded to an increased number of hassles. The subject's perception of direction style supported this relationship between direction style and the daily count of hassles. Since both objective and perceived measures were required in the model, (Table 9.5), the APSS study indicated that each tap different dimensions of the environment.

Although the number of hassles might have been considered to be a function of only the job, the APSS data provides evidence that this might not be the case. Cause and effect can not be differentiated with the current data, so one cannot choose between the two causal directions. On the one hand, one might suggest that as jobs include more hassles, supervisors are required to provide greater direction to employees. An alternate explanation would suggest that as supervisory direction increases, the perceived number of hassles encountered also increases. To identify whether supervisors are responding to a problem or are the cause of the problem would require some form of longitudinal organizational intervention study. If the second explanation could be proven, then modification to the supervisors behavior may provide organizations with an opportunity, if appropriate, to reduce the number of hassles experienced by employees.

Although the number of hassles was related to direction style, the individual appraisal of hassles as stressful was not related to direction style.

There is strong evidence that direction style measures are related to the perceived components of Karasek's "job strain" model (Karasek, 1979, 1981). The level of direction, as measured by the subject's perception, was positively related to job demand and quadratically to perceived decision latitude (decision latitude is maximized in the middle of the range of direction style). The demand - latitude interaction was strongly positively related, with a slight upturn in demand - latitude at low levels of direction contributing to the significance of a quadratic model. Although one might suggest that the relationship is primarily related to the perception process of both direction and "job-strain" measures, other evidence in the APSS data supports a more significant relationship. The objective supervisor's measure of direction style which was independent of the subject's evaluation, demonstrated a significant relationship with both latitude and the interaction term. In Table 9.5, the absence of a direction effect on job demand and decision latitude for the best models implied that the relationship was partially explained by the correlation of the supervisory style measures. The interaction term, however, shows that the subject's perception of direction was one of the key predictors. In this case, the perceived measure included the information from other supervisory measures.

The positive relationship between Karasek's chronic stressors. and direction style could be rationalized by causal factors in either direction. The use of high levels of direction by the supervisor could result in perceived high levels of job demand and low levels of latitude. On the other hand, high levels of demand and low latitude could cause employees to perceive the supervisor as using excessive direction. Given the support of the objective measures provided by the supervisor, the first explanation is intuitively more plausible. To address this issue, additional research which includes intervention to the supervisor's level of direction style would be appropriate.

While there is significant evidence for a relationship between direction style and the "job strain" stressors, there is very limited evidence for a relationship with role based stressors. The only significant relationship was between perceived direction style and perceived role ambiguity, and this explained only 5% of the variation in role ambiguity.

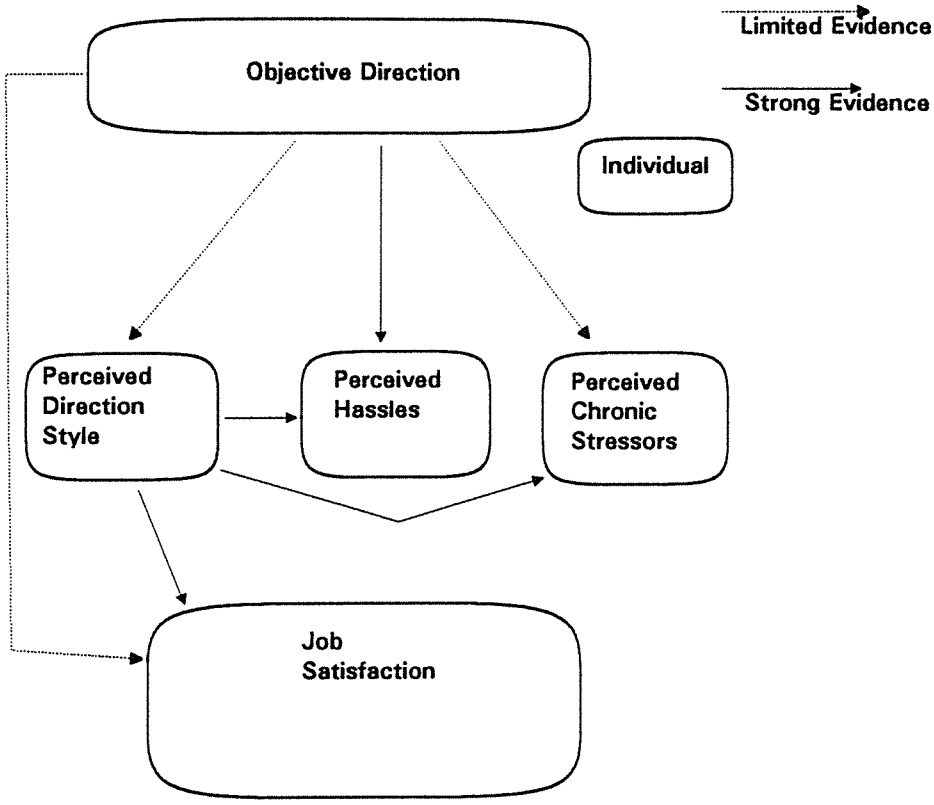
The relationship between direction style and job satisfaction is apparent with or without the presence of the other perceived chronic stressors. The perceived level of direction style is significantly related to satisfaction in a quadratic form with satisfaction reaching its maximum at the centre of the direction scale range. Although the desired level of direction exhibits exactly the same relationship, subsequent analysis (Table 9.5) showed that the desired measure did not contribute to the explanation of the variance beyond the level contributed by the perceived measure. Thus, it appears that the significance of the desired measure is primarily attributable to the high correlation of the perceived and desired measures. The desired measure does not appear to be an independent measure of job satisfaction. The more objective supervisor's measure also supports a strong relationship between direction style and job satisfaction, thus alleviating some of the concerns regarding confounding of the perception of the two measures. For the supervisor's measure, however, the relationship identified was decreasing satisfaction with increasing direction style. The decrease in satisfaction with very low direction that is indicated by the quadratic form of the subject's perceived measure was not identified by the objective supervisor's data. A similar analysis, with the variation accounted for by the other perceived chronic stressors excluded, produced almost identical results.

Thus, although direction style is correlated with Karasek's "job strain", there is evidence that it is also measuring other stress-relevant dimensions of the environment outside the "job strain" paradigm and that the subject's perception of direction style is a key predictor of job satisfaction. Although cause and effect are not proven by the APSS

study and the relationship is potentially reversed or reiterative in nature, the most intuitively plausible relationship is that job satisfaction is being affected by direction style. With this assumption in mind, the results provide value to organizations and indicate directions for further research. To improve job satisfaction, organizations need to ensure that a middle level of direction is provided to employees. Too much or too little direction, as measured by the APSS study, results in lower satisfaction. Further research would be required to validate this finding, some form of longitudinal or intervention study would be required to verify cause and effect, and identification of the optimal level of direction would be needed.

Figure 9.4 summarized the relationships between direction style and the model. The supervisor's level of direction appears to play a significant role in the stress process. The objective environment dimension of direction has a direct impact on the perceived number of hassles and the perceived stressors in the "job strain" paradigm. Furthermore, the perceived dimension of direction contributes additional explanation of the number of hassles, and also plays an important role in the prediction of both role ambiguity and job satisfaction.

Figure 9.4 - Identified direction style relationships in the model



Delegation style

Although in the analysis of direction style, objective and perceived measures of the variables were generally consistent in their identified relationships to chronic stressors, the analysis of delegation style often identified contradictory directions of relationships. Those identified by the subject's perceptions were often at odds with those identified objectively by the supervisor or manager. It was apparent that the delegation style measures reported by the subjects, supervisors and managers were each tapping a slightly different dimension of the environment. Delegation measures were significant in a large number of the models, but often the relationships appeared to be

tied to the correlations with other variables as evidenced by the fact that delegation measures which were often not required in the best fit models.

There was evidence that the number of hassles was related to delegation style, but as described above, the relationship directions varied. The number of hassles increased as the subject's perception of delegation decreased. Subjects felt that when their delegated authority was low, the number of hassles was higher. The manager's measure supported this position with the weekly information. The supervisor's measure for weekly hassles, on the other hand, provided a different view. As the supervisor felt that delegation was higher, the number of hassles increased. The gap measure was consistent across both daily and weekly counts. As the subject felt that delegation levels did not meet his desired levels, the reported number of hassles increased. When one examines the best fit summary in Table 9.5, only the supervisor's measure for weekly counts contains significant information not contained in other variables.

Despite the lack of definitive causal direction information for delegation style, the intuitive direction suggested that delegation style affected the perceived number of hassles. The gap information provided evidence that the employees perception of a lack of fit between his desired level and his perception of actual delegation was an important determinant of how he reported the number of hassles. The difference between the objective measures of the supervisor and the manager, however, makes it difficult to determine a course of action for an organization. Additional study is required to better understand the different dimensions of the environment that were being measured by the subject, the supervisor and the manager before organizations have sufficient understanding to modify their supervisors' behavior.

The proportion of hassles appraised as stressful was not highly related to delegation style. Although the subject's perceived measure of delegation style and the manager's measure were both significantly related to the daily proportion of stressful

hassles, the relationships were in opposite directions. As in the comments regarding the number of hassles, there does not appear to be sufficient reason to intervene in organizational behavior until a better understanding is available for the differing dimensions being measured by the various delegation measures.

All of the historical perceived chronic stressors were related to some measure of delegation style. For the components of Karasek's model, however, the relationships must be interpreted with care. Although the correlation of delegation style and decision latitude was not extraordinarily high ($r = 0.388$) in the APSS data, the two constructs are conceptually very close. In order to follow a conservative course, inclusion of the delegation variables in the prediction of decision latitude and the interaction was avoided and no conclusions were drawn. A significant effect was identified, however, for job demand with all measures of delegation excluding the manager's. Once again, however, the subject's perception and the supervisor's operated in opposite directions. While an increase in the subject's perception of delegation corresponded to a decrease in job demand, an increase in the supervisor's measure was related to increased perceived job demand. This relationship of delegation style to job demand could provide an opportunity for organizations to lower employees perception of job demand. If the employees perception of delegation style can be increased, perceived job demand could decline. As in the previous comments, however, more evidence of a causal effect and better understanding of the difference between perceived and objective measures is required.

The perceived role stressors were related to the subject's perceptions of delegation style in the APSS data. As delegation increased, role conflict and role ambiguity decreased. Both, however, also showed evidence of a quadratic relationship. Both role conflict and role ambiguity increased again at the high of the delegation range. Although the desired measure was significant in both cases when added singly, the best fit models summarized in Table 9.5 show that the variation explained by the

desired measures was not significant in the models after the inclusion of the perceived measures. Their significant relationship when entered singly was thus indicated to be caused by their high correlation with the perceived measure. Beehr and Ghupta (1987) examined the relationship between managerial style (which in their case was conceptually similar to the delegation measure) and role ambiguity, but, unlike the APSS study, found no significant effect.

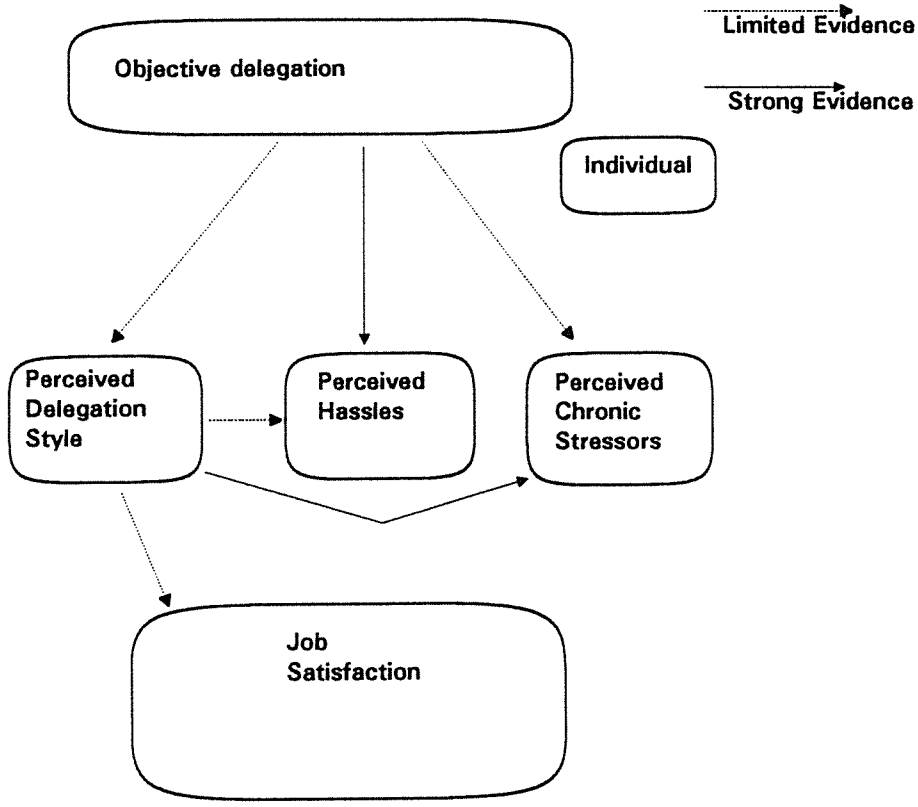
This relationship of delegation style with role variables has valuable implications. The most intuitively attractive causal direction (although not proven in the APSS data because of the nature of the study) is that as subjects are delegated more authority, the perceived role stressors of conflict and ambiguity decrease. Most studies in the area of role stressors (Kemery et al., 1985; Stout and Posner, 1984; Howell et al., 1987) have focused on the role stressors as basic constructs summarizing dimensions of the job environment while attempting to identify their relationship to strains such as job dissatisfaction. The APSS study provided evidence that a specific, modifiable measure in the job environment, i.e. supervisory delegation style, might be linked to role measures in a causal manner. If a causal relationship can be verified in other organizations and with other task groups, then interventions to modify role stressors could be implemented through supervisory skills training.

As with direction style, there was strong evidence that delegation style was related to job satisfaction in a manner similar to Beehr and Gupta (1987). As the subject's perception of delegation style increased, the level of job satisfaction increased. In addition, however, the significant quadratic relationship provided evidence of a decline in job satisfaction at the high end of the delegation scale. Both the subject's desired level, and the gap between desired delegation level and perceived level also supported this relationship. When the analysis was repeated with the other perceived chronic stressors already included in the analysis, however, the variation explained by delegation measures was reduced. Only the perceived measure was

significant, and then only at the 5% level. This suggests that the variation explained by the delegation measure overlapped that explained by the other chronic stressors. Furthermore, when the best fit variables were identified (Table 9.5), delegation measures were not required in the model. Thus, although delegation style appears to be related to job satisfaction when considered independently, it is probably addressing dimensions of the environment that are better covered by other supervisory variables. Changes in delegation style may result in increased job satisfaction, but other variables may be the basis of more effective interventions.

Overall, delegation style as measured in the APSS research appears to be a complicated construct addressing a multitude of dimensions in the environment. The objective component of delegation appeared to influence the hassle process, both in terms of the perception of frequency, and the appraisal of stressfulness. The relationship between perceived chronic stressors and delegation varied depending on who reported information. Although job satisfaction appeared related to perceived delegation style, further information suggested that the relationship might have been a secondary correlation, rather than a direct effect.

Figure 9.5 - Identified delegation style relationships in the model



Leader Member Exchange

Supervisor - employee relationship as measured by the Leader Member Exchange scale appeared, in the APSS data, to be the most consistent and effective predictor of other perceived chronic stressors and job satisfaction. In Table 9.3, one can see that the subject's perception of the supervisor - employee relationship was significantly related to the number of hassles, all of the historic perceived chronic stressors, and job satisfaction. As the perceived level of relationship increased, the number of hassles decreased, the level of all perceived stressors decreased, and job satisfaction increased. Of even greater import, Table 9.5 shows that the LMX was one

of the required factors in all the best fit models except those for role ambiguity and job demand.

The objective measure by the manager, although not as strongly related, did provide supportive evidence. A significant objective effect was identified for decision latitude, the demand - latitude interaction, and job satisfaction. In addition, the number of weekly hassles was significantly related to the manager's objective measure of LMX at the 10% level. The weakness of the objective measure in supporting an otherwise strong relationship could be explained by the nature of the measure. The Leader Member Exchange concept is conceptualized as measuring the relationship in a supervisor - employee dyad. As such, a distinct measure should be taken for each pairing. Although the subject's perceived measure provided individual evaluations, the APSS study limited the information from the manager to a generalization of the Leader Member Exchange across all employees reporting to a given supervisor. This averaging would result in a reduction in identified relationships.

Chapter 8 identified the role for LMX in job satisfaction as a dominant one. The subject's perceived measure of LMX combined with the perceived measure of direction style contained almost all available information from the other perceived chronic stressors required to predict job satisfaction.

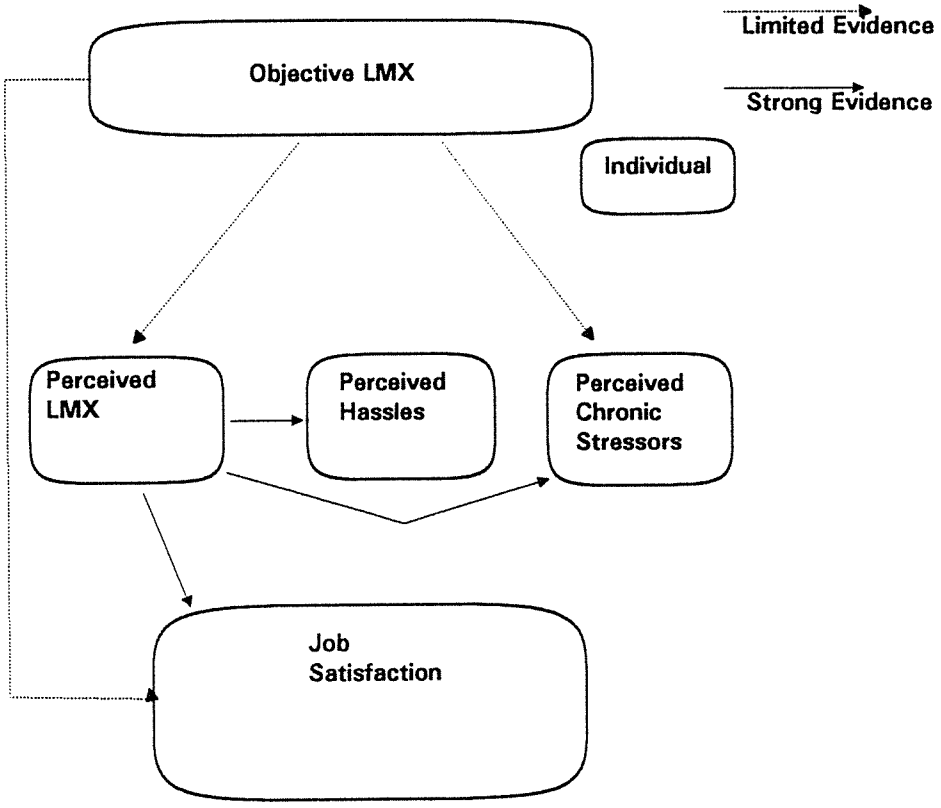
Some previous studies have evaluated various dimensions of supervisory actions that are similar in nature to the Leader Member Exchange. In Revicki and May (1989), supervisory behavior was evaluated with high scores representing a positive evaluation of the supervisor. The identified relationship of this measure with role ambiguity and job satisfaction is consistent with the APSS results. On the other hand, when Kirmeyer and Dougherty (1988) used a measure of supervisory support similar in conception to the LMX , they found no significant direct effect on strain as measured by tension-anxiety.

As mentioned previously, the cause and effect relationship between LMX and the perceived chronic stressors in the APSS study cannot be strictly defined. On the one hand, a strong employee - supervisor relationship may result in employees perceiving chronic stressors at a lower level, and more importantly, increasing their level of job satisfaction. Contrarily, one might suggest that as the chronic stressors increase, subjects are more liable to look on their relationship with their supervisor in a negative manner. The support from the objective measure of LMX by the manager suggests that the first alternative is more likely, but the evidence could not be considered conclusive. To provide more conclusive evidence, longitudinal or intervention studies will be required in other industries and organizations to verify cause and effect relationships for broader populations. In addition, objective measures of dyad linkages will be required on an individual basis, rather than averaged over a number of subjects.

If a causal LMX role can be verified, potential organizational interventions to reduce work stress are indicated. Choosing supervisors that match the employee group and are supportive of their needs could reduce stress. Relationship training for supervisors may be appropriate. Once again, however, shareholder requirements may have to be balanced. Not only is it not yet clear what level of stress is appropriate to maximize profitability while minimizing health risks, but also supervisors have a role beyond ensuring low job stress. The choice and training of supervisors will need to ensure that they can also perform their other responsibilities appropriately.

Figure 9.6 summarizes the LMX role in the stress model. The LMX measure of relationship played a key role in the stress process analyzed by the APSS research. The subject's perception of LMX was negatively related to the number of hassles and all perceived chronic stressors. The perceived LMX measure was positively related to job satisfaction. The objective measure of LMX was also related to some components of the stress process. Most importantly, the perceived LMX measure appeared to embody much of the stress-relevant information available from the other chronic stressors.

Figure 9.6 - Identified LMX relationships in the model



9.4 Hassles

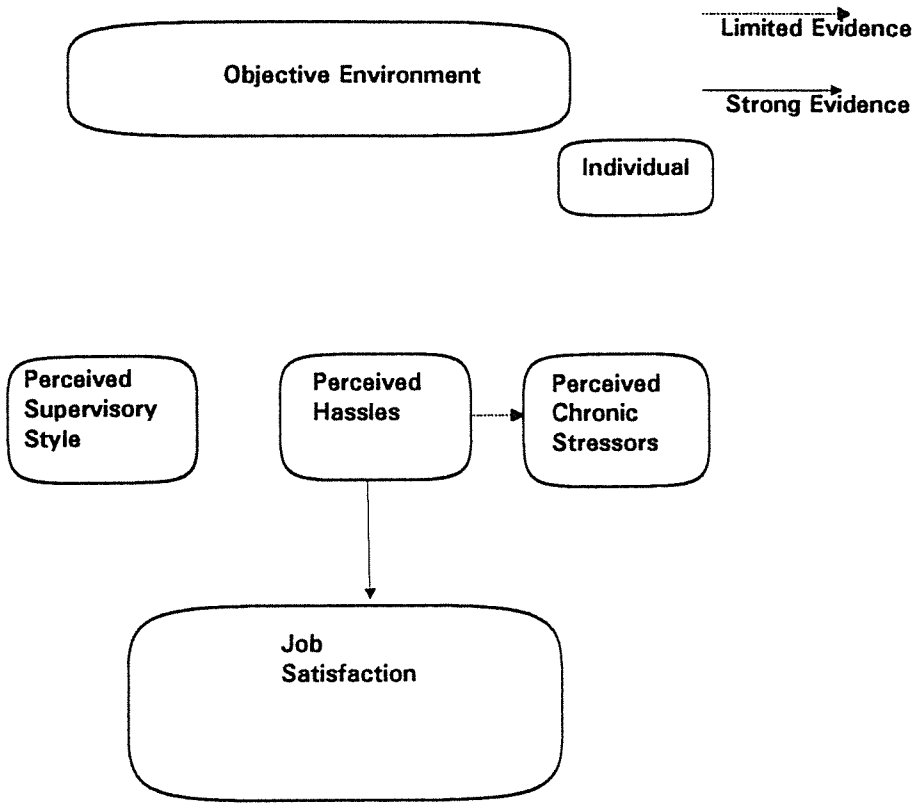
Another area of investigation in the APSS study involved the role of occupational hassles in the stress process. In this area, results were less dramatic, but still significant.

The number of daily hassles, and both daily and weekly measures of appraised hassles were positively related to perceived job demand. It appears that as the number of hassles, and the appraised stressfulness of hassles increased, the perception of chronic job demand increased. The causal pathway, however, can not be proven, and more complex study designs would be required to verify cause and effect.

There was also some evidence that perceived chronic role conflict was being influenced by hassles. For the daily data in the APSS study, conflict increased with both the number of hassles and the proportion of hassles appraised as stressful. In this instance, cause and effect could readily be hypothesized in either direction. A chronic condition of role conflict could lead to higher levels of perceived hassles and appraised stressful hassles, or the high number of hassles could cause increases in role conflict.

Although no relationship between the appraisal of stressful hassles and job satisfaction was observed, the number of hassles was strongly and negatively related to job satisfaction. Table 9.5 shows no effect for hassles in the best fit equations, but the consideration of the best five models that was followed in the analysis did show that the inclusion of hassle counts produced a model almost as good as the one indicated in the table. Thus, there is some evidence for an effect of the number of occupational hassles on an individual's evaluation of occupational stress. Further research may provide stronger results.

Figure 9.7 - Identified hassle relationships in the model



9.5 Conclusion

As hypothesized, the APSS study provided significant evidence of a relationship between supervisory style and perceived chronic stressors and job satisfaction. Some evidence existed for a relationship between objective measures of supervisory style and the perceived stressors, but the stronger relationship indicated for perceived measures of style supports a role for cognitive perception and appraisal in the stress process. The role of daily hassles and coping styles in the stress process were supported, but less strongly. The observed dominant role of the perceived relationship between supervisor

and employee, and the perceived level of direction provided by the supervisor in measuring the dimensions of the environment that engender job satisfaction provide valuable insights for future investigation and potential modifications to organizational behavior to lower occupational stress.

Appendix A

List of Hassle Types by Job Function

Driver Hassles

1. Incorrect addressing on an order caused you a delay.
2. Traffic problems caused a delay.
3. An inconsiderate or poor driver caused you to take needless driving actions (e.g. hitting the brakes, swerving)
4. You find that the wrong product or wrong quantities of product have been picked.
5. You saw a customer's rush order from a previous day that was still not being used.
6. A salesman made promises that couldn't be kept.
7. A customer slowed you down by asking you to move stock or by not having pickup ready.
8. Your supervisor did not react quickly enough to problems.
9. Product was substituted without notifying the customer.
10. Your supervisor had unrealistic expectations about the amount of time required for you to do something.
11. Skids were not shrunk wrapped.
12. A cancelled order was still delivered.
13. Your truck broke down.

Warehouse Hassles

1. A co-worker was not working as hard as he should, and you had to pick up the load.
2. You are asked to perform some task that is not really part of your job (ex. moving furniture).
3. You had to break a carton and count individual items (ex. sheets of paper).
4. A co-worker did something that interfered with you doing your job. (ex. leaving a lift truck blocking an aisle).
5. Your supervisor did not react quickly enough to problems.
6. Normal workplace or union procedures were ignored.
7. Rush orders were in receiving and difficult to get to.
8. Items were not located in proper bins.
9. There was insufficient stock in a bin to satisfy a picking slip.
10. Visitors to the warehouse ignored safety rules.
11. Rush requests caused you to re-arrange work.
12. Equipment was not in good shape (e.g. uncharged batteries, dull knives)

Inside Sales Hassles

1. A customer called with unrealistic expectations (ex. calling late in the day and expecting immediate delivery).
2. Warehouse employees were not co-operative when asked to check delivery, etc.
3. A salesman gave you an unreasonable request.
4. Other people in the office did not share the load and had an "it's not part of my job" attitude.
5. The volume of paperwork that you were required to do interfered with customer contact.
6. The computer system was slow to respond or not flexible enough.
7. You were not able to fill a customer's need because of factors beyond your control.
8. Your supervisor did not react quickly enough to problems.
9. Your supervisor criticized or contradicted you unfairly.
10. You were asked to do things that are not part of your job.
11. You had a personality conflict with a co-worker.
12. A salesman or a customer became angry with you.
13. A customer called multiple people in the branch on the same problem.
14. You did not receive co-operation on an inter-branch request.
15. Meetings interrupted your work.
16. You had to take unprofitable orders.

Appendix B

Questionnaire Forms

Framed notes on the following questionnaire pages are for thesis explanation purposes only, and were not included in the handout to subjects.

CONFIDENTIAL

WORK ENVIRONMENT STUDY

Drivers

This package contains a series of questionnaires that will be used in the Work Environment Study.

Please answer **all** the questions honestly. We want responses that show how you actually feel or react, not how you think a person should react. Your responses are confidential. No individual data will be shown to anyone.

Many of the questions ask you to put a number beside a question showing how strongly you feel. The scales used vary from page to page, so make sure you use the right one.

There are no right or wrong answers, and there is no time limit.

Note: Alternate Introductory Page

CONFIDENTIAL

WORK ENVIRONMENT STUDY

Customer Contact

This package contains a series of questionnaires that will be used in the Work Environment Study.

Please answer **all** the questions honestly. We want responses that show how you actually feel or react, not how you think a person should react. Your responses are confidential. No individual data will be shown to anyone.

Many of the questions ask you to put a number beside a question showing how strongly you feel. The scales used vary from page to page, so make sure you use the right one.

There are no right or wrong answers, and there is no time limit.

Note: Alternate Introductory Page

CONFIDENTIAL

WORK ENVIRONMENT STUDY

Warehouse

This package contains a series of questionnaires that will be used in the Work Environment Study.

Please answer **all** the questions honestly. We want responses that show how you actually feel or react, not how you think a person should react. Your responses are confidential. No individual data will be shown to anyone.

Many of the questions ask you to put a number beside a question showing how strongly you feel. The scales used vary from page to page, so make sure you use the right one.

There are no right or wrong answers, and there is no time limit.

Note: Alternate Introductory Page

DIRECTIONS:

Note: Affect Intensity Measure

The following questions refer to emotional reactions to typical life-events. Please indicate how YOU react to these events by placing a number from the following scale in the blank space preceding each item. Please base your answers on how YOU react, not on how you think others react, or how you think a person should react.

Never	Almost Never	Occasion-ally	Usually	Almost Always	Always
1	2	3	4	5	6

1. _____ When I accomplish something difficult I feel delighted or elated.

2. _____ When I feel happy it is a strong type of exuberance.

3. _____ I enjoy being with other people very much.

4. _____ When I solve a small personal problem, I feel euphoric.

5. _____ My emotions tend to be more intense than those of most people.

6. _____ I feel pretty bad when I tell a lie.

7. _____ My happy moods are so strong that I feel like I'm in heaven.

8. _____ I get overly enthusiastic.

9. _____ If I complete a task I though was impossible, I am ecstatic.

10. _____ My heart races at the anticipation of some exciting event.

11. _____ Sad movies deeply touch me.

12. _____ When I'm happy it's a feeling of being untroubled and content rather than being zestful and aroused.

13. _____ When I talk in front of a group for the first time, my voice gets shaky and my heart races.

(Continued)

Never	Almost Never	Occasion-ally	Usually	Almost Always	Always
1	2	3	4	5	6

14. _____ When something good happens, I am usually much more jubilant than others.

15. _____ My friends might say I'm emotional.

16. _____ The memories I like the most are of those times when I felt content and peaceful rather than zestful and enthusiastic.

17. _____ The sight of someone who is hurt badly affects me strongly.

18. _____ When I'm feeling well it's easy for me to go from being in a good mood to being really joyful.

19. _____ "Calm and cool" could easily describe me.

20. _____ When I'm happy I feel like I'm bursting with joy.

21. _____ Seeing a picture of some violent car accident in a newspaper makes me feel sick to my stomach.

22. _____ When I'm happy I feel very energetic.

23. _____ When I receive an award I become overjoyed.

24. _____ When I succeed at something, my reaction is calm contentment.

25. _____ When I do something wrong, I have strong feelings of shame and guilt.

26. _____ I can remain calm even on the most trying days.

27. _____ When things are going good, I feel "on top of the world".

(Continued)

Never	Almost Never	Occasion-ally	Usually	Almost Always	Always
1	2	3	4	5	6

28. _____ When I get angry it's easy for me to still be rational and not overreact.

29. _____ When I know I have done something very well, I feel relaxed and content rather than excited and elated.

30. _____ When I do feel anxiety, it is normally very strong.

31. _____ My negative moods are mild in intensity.

32. _____ When I am excited over something I want to share my feelings with everyone.

33. _____ When I feel happiness, it is a quiet type of contentment.

34. _____ My friends would probably say I'm a tense or "high strung" person.

35. _____ When I'm happy I bubble over with energy.

36. _____ When I feel guilty, this emotion is quite strong.

37. _____ I would characterize my happy moods as closer to contentment than to joy.

38. _____ When someone compliments me, I get so happy I could "burst".

39. _____ When I am nervous I get shaky all over.

40. _____ When I am happy the feeling is more like contentment and inner calm than one of exhilaration and excitement.

DIRECTIONS

Note: Direction / Delegation measure

Listed below are a number of behaviours that your supervisor may engage in from time to time. Using the scale below, write the number from the scale beside each answer that best describes how often *your* supervisor acts this way.

Never	Occasionally	Often	Almost Always	Always
1	2	3	4	5

1. _____ My supervisor tells me what is expected of me.
2. _____ My supervisor ensures that I work as fast as I can.
3. _____ My supervisor emphasizes meeting deadlines.
4. _____ My supervisor exhibits confidence in me.
5. _____ My supervisor sets standards for performance.
6. _____ My supervisor rules with an iron hand.
7. _____ My supervisor encourages uniformity in his area of responsibility.
8. _____ My supervisor leaves me free to follow my own course.
9. _____ My supervisor schedules my tasks.
10. _____ My supervisor ensures that I follow rules and regulations.
11. _____ My supervisor changes my duties without first discussing them with me.
12. _____ My supervisor permits me to make my own decisions.

DIRECTIONS

Note: Direction / Delegation measure - Desired

Listed below are a number of behaviours that a supervisor may engage in from time to time. They are the same ones used on the previous page. Using the scale below, write the number from the scale beside each answer that best describes

the way you would like your supervisor to act.

Never	Occasionally	Often	Almost Always	Always
1	2	3	4	5

1. _____ My supervisor tells me what is expected of me.
2. _____ My supervisor ensures that I work as fast as I can.
3. _____ My supervisor emphasizes meeting deadlines.
4. _____ My supervisor exhibits confidence in me.
5. _____ My supervisor sets standards for performance.
6. _____ My supervisor rules with an iron hand.
7. _____ My supervisor encourages uniformity in his area of responsibility.
8. _____ My supervisor leaves me free to follow my own course.
9. _____ My supervisor schedules my tasks.
10. _____ My supervisor ensures that I follow rules and regulations.
11. _____ My supervisor changes my duties without first discussing them with me.
12. _____ My supervisor permits me to make my own decisions.

DIRECTIONS

Note: Leader Member Exchange measure

For each of the following statements, please indicate which response best describes your relationship with your supervisor. (check only one)

1. Do you usually feel that you know where you stand ... do you usually know how satisfied your immediate supervisor is with what you do?

_____ Always know where I stand.
_____ Usually know where I stand.
_____ Seldom know where I stand.
_____ Never know where I stand.

2. How well do you feel that your immediate supervisor understands your problems and needs?

_____ Completely
_____ Well enough
_____ Some, but not enough
_____ Not at all

3. How well do you feel that your supervisor recognizes your potential?

_____ Fully
_____ As much as the next person
_____ Some, but not enough
_____ Not at all

4. Regardless of how much formal authority your immediate supervisor has built into his or her position, what are the chances that he or she would be personally inclined to use power to help you solve problems in your work?

_____ Certainly would
_____ Probably would
_____ Might or might not
_____ No chance

5. Again, regardless of the amount of formal authority your immediate supervisor has, to what extent can you count on him or her to "bail you out" at his or her expense when you really need it?

_____ Certainly would
_____ Probably would
_____ Might or might not
_____ No chance

6. I have enough confidence in my immediate supervisor that I would defend and justify his or her decisions if he or she were not present to do so.

_____ Certainly would
_____ Probably would
_____ Maybe
_____ Probably not

7. How would you characterize your working relationship with your immediate supervisor?

_____ Extremely effective
_____ Better than average
_____ About average
_____ Less than average

DIRECTIONS

Note: Role conflict / ambiguity measures

Rate each of the following statements showing how much they apply to you. If the statement is very descriptive of the way you feel or work, indicate that it is very true. If the statement is not at all descriptive, indicate that it is very false. The answers in between should be used to show varying degrees of agreement.

Very False						Very True
1	2	3	4	5	6	7

1. _____ I feel certain about how much authority I have.
2. _____ There are clear planned goals and objectives for my job.
3. _____ I have to do things that should be done differently.
4. _____ I know that I have divided my time properly.
5. _____ I receive an assignment without the manpower or time to complete it.
6. _____ I know what my responsibilities are.
7. _____ I have to buck a rule or policy in order to carry out an assignment.
8. _____ I know exactly what is expected of me.
9. _____ I receive incompatible requests from two or more people.
10. _____ I do things that are apt to be accepted by one person, and not accepted by others.
11. _____ I receive an assignment without adequate resources and materials to execute it.
12. _____ The explanation of what has to be done is clear.
13. _____ I work on unnecessary things.

DIRECTIONS

Note: Demand / latitude measures

Rate each of the following statements showing how much they apply to you. If the statement is very descriptive of the way you feel or work, indicate that it is very true. If the statement is not at all descriptive, indicate that it is very false. The answers in between should be used to show varying degrees of agreement.

Very False			Very True
1	2	3	4

1. _____ In my job, I keep learning new things.
2. _____ In my job, I can develop new skills.
3. _____ I have conflicting demands at work.
4. _____ My job requires definite skills.
5. _____ There are a variety of tasks in my job.
6. _____ I have excessive work.
7. _____ My job is repetitious.
8. _____ My job requires creativity.
9. _____ I have insufficient time to do work.
10. _____ I have the freedom to make decisions.
11. _____ I have to work fast.
12. _____ I can choose how to perform my job.
13. _____ I have a lot to say on the job.
14. _____ I have to work hard.

DIRECTIONS

Note: Job satisfaction measure

Rate each of the following statements showing how much they apply to you. If the statement is very descriptive of the way you feel or work, indicate that it is very true. If the statement is not at all descriptive, indicate that it is very false. The answers in between should be used to show varying degrees of agreement.

Very False				Very True
1	2	3	4	5

1. _____ I am very satisfied with my job.
2. _____ Management make a strong effort to understand the opinions of the employees.
3. _____ My supervisor is respected.
4. _____ I am paid adequately for what I do.
5. _____ We have a good team relationship in my department.
6. _____ There are too many rules and regulations in this company.
7. _____ I think my work performance is judged fairly by my supervisor.
8. _____ There is little room for career advancement.
9. _____ I enjoy my work.
10. _____ My job is becoming dull.
11. _____ I feel enthusiastic about my job.
12. _____ My supervisor is supportive of my work.
13. _____ I feel that my work environment is stimulating.
14. _____ When I have a problem, I can go to my supervisor about my concerns.

(Continued)

Very False				Very True
1	2	3	4	5

15. _____ I want to work here as long as I can.

16. _____ My family life has become more enjoyable since I started working here.

17. _____ Co-workers extend help when needed.

DIRECTIONS

Note: Hassle measures

The following two tables show a number of incidents that some people have suggested can occur during a work day and get people upset.

In the column for "Number of Times", please write approximately how many times these incidents occurred. Then, put a check mark in the column that best describes your average "Degree of Upset" for each type of incident that you experienced.

At the bottom, are a number of blank sections. If there were other incidents that occurred that were upsetting, please describe them briefly, indicate the frequency, and your reaction.

Note that both pages are almost identical.

On the first page, think back only to your last working day. Record the "Number of Times" and the "Degree of Upset" **for that day only.**

On the second page, think back to your last 5 working days in total. Record the "Number of Times" and the average "Degree of Upset" **for the total of the five days.**

LATEST WORKING DAY

Note: Alternate for Drivers

TYPE OF INCIDENT	Number of Times	Degree of Upset			
		None	A little	Some	A lot
Incorrect addressing on an order caused you a delay.					
Traffic problems caused a delay.					
An inconsiderate or poor driver caused you to take needless driving actions (e.g. hitting the brakes, swerving)					
You find that the wrong product or wrong quantities of product have been picked.					
You saw a customer's rush order from a previous day that was still not being used.					
A salesman made promises that couldn't be kept.					
A customer slowed you down by asking you to move stock or by not having pickup ready.					
Your supervisor did not react quickly enough to problems.					
Product was substituted without notifying the customer.					
Your supervisor had unrealistic expectations about the amount of time required for you to do something.					
Skids were not shrunk wrapped.					
A cancelled order was still delivered.					
Your truck broke down.					

LAST FIVE WORKING DAYS IN TOTAL

TYPE OF INCIDENT	Number of Times	Degree of Upset			
		None	A little	Some	A lot
Incorrect addressing on an order caused you a delay.					
Traffic problems caused a delay.					
An inconsiderate or poor driver caused you to take needless driving actions (e.g. hitting the brakes, swerving)					
You find that the wrong product or wrong quantities of product have been picked.					
You saw a customer's rush order from a previous day that was still not being used.					
A salesman made promises that couldn't be kept.					
A customer slowed you down by asking you to move stock or by not having pickup ready.					
Your supervisor did not react quickly enough to problems.					
Product was substituted without notifying the customer.					
Your supervisor had unrealistic expectations about the amount of time required for you to do something.					
Skids were not shrunk wrapped.					
A cancelled order was still delivered.					
Your truck broke down.					

LATEST WORKING DAY

Note: Alternate for Inside Sales

TYPE OF INCIDENT	Number of Times	Degree of Upset			
		None	A little	Some	A lot
A customer called with unrealistic expectations (ex. calling late in the day and expecting immediate delivery).					
Warehouse employees were not co-operative when asked to check delivery, etc.					
A salesman gave you an unreasonable request.					
Other people in the office did not share the load and had an "it's not part of my job" attitude.					
The volume of paperwork that you were required to do interfered with customer contact.					
The computer system was slow to respond or not flexible enough.					
You were not able to fill a customer's need because of factors beyond your control.					
Your supervisor did not react quickly enough to problems.					
Your supervisor criticized or contradicted you unfairly.					
You were asked to do things that are not part of your job.					
You had a personality conflict with a co-worker.					
A salesman or a customer became angry with you.					
A customer called multiple people in the branch on the same problem.					
You did not receive co-operation on an inter-branch request.					
Meetings interrupted your work.					
You had to take unprofitable orders.					

LAST FIVE WORKING DAYS IN TOTAL

TYPE OF INCIDENT	Number of Times	Degree of Upset			
		None	A little	Some	A lot
A customer called with unrealistic expectations (ex. calling late in the day and expecting immediate delivery).					
Warehouse employees were not co-operative when asked to check delivery, etc.					
A salesman gave you an unreasonable request.					
Other people in the office did not share the load and had an "it's not part of my job" attitude.					
The volume of paperwork that you were required to do interfered with customer contact.					
The computer system was slow to respond or not flexible enough.					
You were not able to fill a customer's need because of factors beyond your control.					
Your supervisor did not react quickly enough to problems.					
Your supervisor criticized or contradicted you unfairly.					
You were asked to do things that are not part of your job.					
You had a personality conflict with a co-worker.					
A salesman or a customer became angry with you.					
A customer called multiple people in the branch on the same problem.					
You did not receive co-operation on an inter-branch request.					
Meetings interrupted your work.					
You had to take unprofitable orders.					

Note: Alternate for Warehouse

LATEST WORKING DAY

TYPE OF INCIDENT	Number of Times	Degree of Upset			
		None	A little	Some	A lot
A co-worker was not working as hard as he should, and you had to pick up the load.					
You are asked to perform some task that is not really part of your job (ex. moving furniture).					
You had to break a carton and count individual items (ex. sheets of paper).					
A co-worker did something that interfered with you doing your job. (ex. leaving a lift truck blocking an aisle).					
Your supervisor did not react quickly enough to problems.					
Normal workplace or union procedures were ignored.					
Rush orders were in receiving and difficult to get to.					
Items were not located in proper bins.					
There was insufficient stock in a bin to satisfy a picking slip.					
Visitors to the warehouse ignored safety rules.					
Rush requests caused you to re-arrange work.					
Equipment was not in good shape (e.g. uncharged batteries, dull knives)					

LAST FIVE WORKING DAYS IN TOTAL

TYPE OF INCIDENT	Number of Times	Degree of Upset			
		None	A little	Some	A lot
A co-worker was not working as hard as he should, and you had to pick up the load.					
You are asked to perform some task that is not really part of your job (ex. moving furniture).					
You had to break a carton and count individual items (ex. sheets of paper).					
A co-worker did something that interfered with you doing your job. (ex. leaving a lift truck blocking an aisle).					
Your supervisor did not react quickly enough to problems.					
Normal workplace or union procedures were ignored.					
Rush orders were in receiving and difficult to get to.					
Items were not located in proper bins.					
There was insufficient stock in a bin to satisfy a picking slip.					
Visitors to the warehouse ignored safety rules.					
Rush requests caused you to re-arrange work.					
Equipment was not in good shape (e.g. uncharged batteries, dull knives)					

Note: Coping measures

DIRECTIONS

Think of the times today that situations like those on the previous page happened at work.

Please read each of the following descriptions of how you may have handled the situations, and place a check in the left column if you did or thought anything that fits the description. There is no limit to the number of items that you check. For each item that you check, please briefly describe your thoughts or actions in the space provided.

_____ a. Diverted attention away from the problem by thinking about other things or engaging in some activity.
The thoughts or actions were:

_____ b. Tried to see the problem in a different light that made it seem more bearable.
The thoughts or actions were:

_____ c. Thought about solutions to the problem, gathered information about it, or actually did something to try to solve it.
The thoughts or actions were:

_____ d. Expressed emotions in response to the problem to reduce tension, anxiety or frustration.
The thoughts or actions were:

_____ e. Accepted that the problem had occurred, but that nothing could be done about it.
The thoughts or actions were:

_____ f. Sought or found emotional support from co-workers, friends, loved ones or professionals.
The thoughts or actions were:

_____ g. Did something with the implicit intention of relaxing.
The thoughts or actions were:

_____ h. Sought or found spiritual comfort and support.
The thoughts or actions were:

_____ i. Other response that you used to handle the situation.
The thoughts or actions were:

Which of the nine categories (a through i) was most important for you in handling the situation?

Most important _____

How successful were these strategies in total, in reducing the degree of upset that you felt about these types of incidents? Circle one number on the scale of 1 (very unsuccessful in reducing the degree of upset) to 5 (very successful).

Very Unsuccessful				Very Successful
1	2	3	4	5

General Information:

Your title/position: _____

Your supervisor's name:_____

Your year of birth: _____

The year you were hired here: _____

Sex:(circle one) Male Female

Thank you for your help.

Please return this package to the researcher.

Appendix C

Detailed Participation Rates

Sample Size

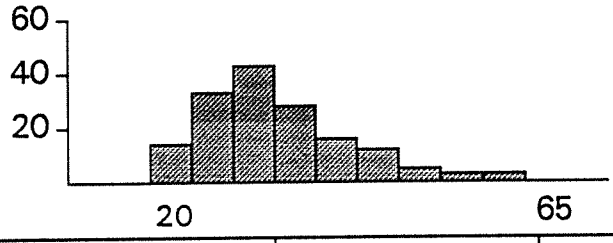
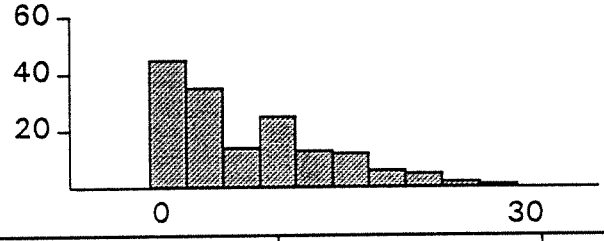
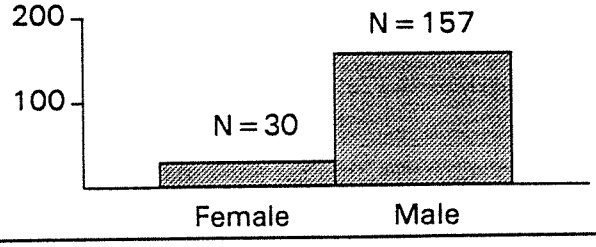
	Population	At Meeting	Opted Out	Complete	Mailed	Returned	Total Sample	Percent
Branch 1								
I.S.	16	14		14			14	88%
Day Warehouse	16	12		12	4		12	75%
Drivers	19	9	1	8	10	2	10	53%
Night Warehouse	3	0		0	3	1	1	33%
Total	54	35	1	34	17	3	37	69%
Branch 2								
IS	5	5		5			5	100%
Warehouse	8	7		7			7	88%
Drivers	8	7		7			7	88%
Total	21	19	0	19	0	0	19	90%
Branch 3								
IS	14	10		10			10	71%
Whse	39	35		35			35	90%
Drivers	30	15		15	15	1	16	53%
Total	83	60	0	60	15	1	61	73%
Branch 4								
IS	4	4		4			4	100%
Whse	8	5	1	4			4	50%
Drivers	6	3	1	2			2	33%
Total	18	12	2	10	0	0	10	56%

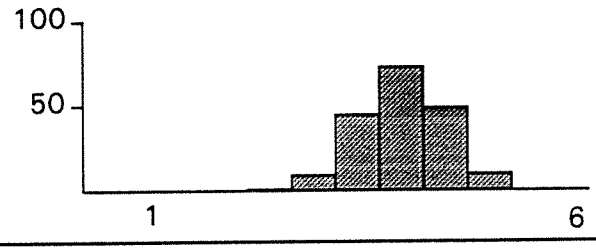
	Population	At Meeting	Opted Out	Complete	Mailed	Returned	Total Sample	Percent
Branch 5								
IS	11	10		10			10	91%
Day Whse	15	3		3	11		3	20%
Night Whse	5	4		4			4	80%
Drivers	19	13		13	7	2	15	79%
Total	50	30	0	30	18	2	32	64%
Branch 6								
IS	3	3		3			3	100%
Whse	3	3		3			3	100%
Driver	4	4		4			4	100%
Total	10	10		10			10	100%
Branch 7								
IS	5	5		5			5	100%
Whse	5	5		5			5	100%
Driver	9	8		8			8	89%
Total	19	18		18			18	95%
Grand Total								
IS	58	51	0	51	0	0	51	88%
Whse	102	74	1	73	18	1	74	73%
Driver	95	59	2	57	32	5	62	65%
Total	255	184	3	181	50	6	187	73%

Appendix D

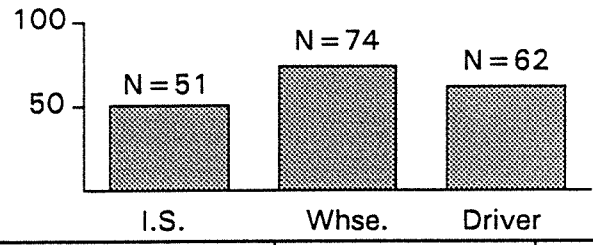
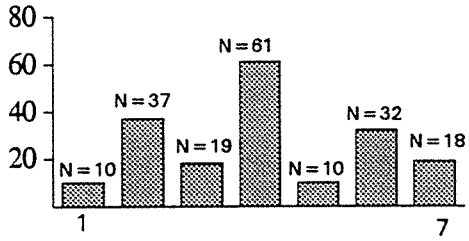
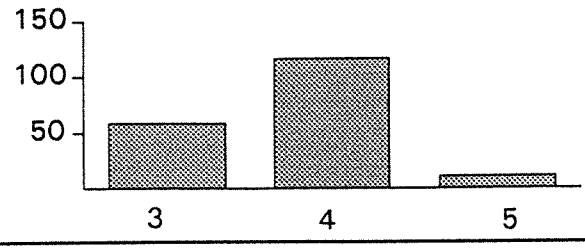
Summary of Variables

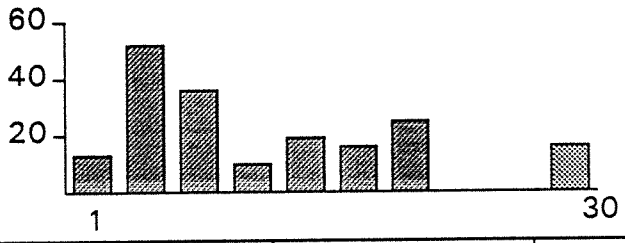
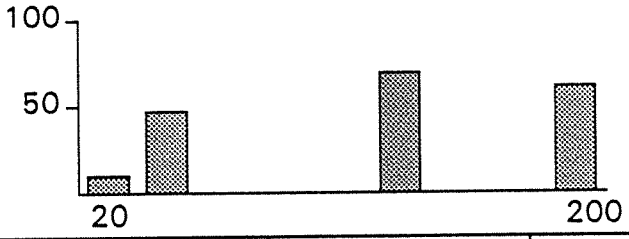
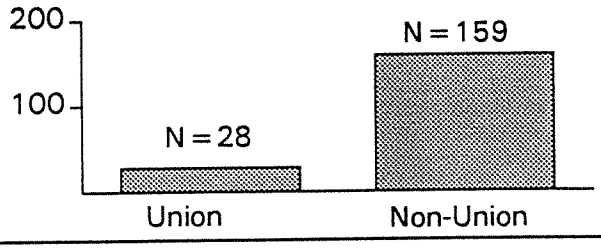
Summary of Demographic Variables

Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Age (Age)	92 - year of birth	Year of birth from questionnaire	35.74	8.9	0.71
					
Experience (Expr)	92 - year joined company	The year the subject joined the company from the questionnaire	8.56	6.47	0.52
					
Gender (Sex)		From questionnaire Coded - 0 - female, 1 - male	0.84	0.37	0.03
					

Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Affect Intensity (AI)	Individual differences in response intensity to a given level of emotion-provoking stimulation	From questionnaire - 40 item instrument by Larsen - scale 1 to 6	3.76	0.46	0.03
					

Summary of Job Environment Variables

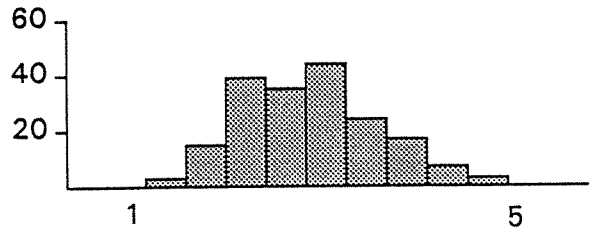
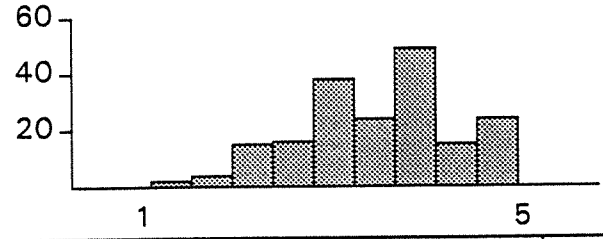
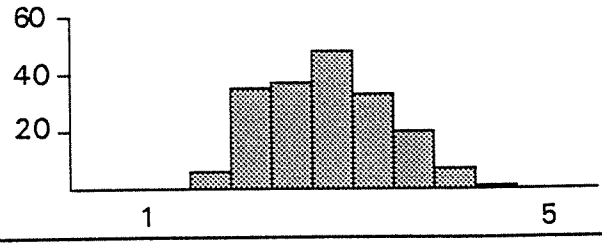
Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Type of job (Job2, Job3)		From questionnaire coded: 1 - Inside sales 2 - Warehouse 3 - Driver			
					
Branch (Br2, Br3, Br4, Br5, Br6, Br7)	Independent operating location	From questionnaire Coding confidential to company.			
					
Management Layers (Layr)	Number of management layers above person in branch to branch manager	From company records	2.74	0.56	0.09
					

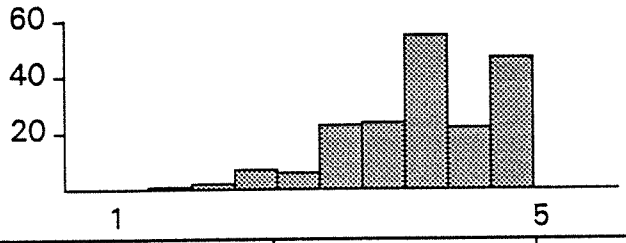
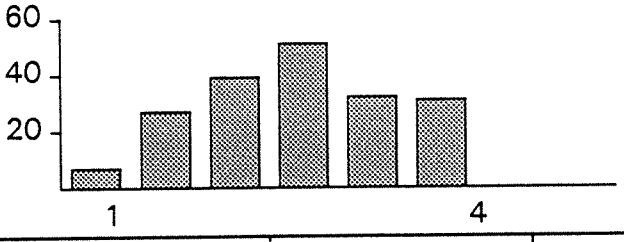
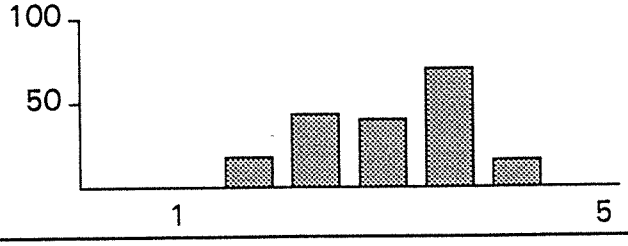
Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Group size (Grp)	Number of employees in working group	From company records	11.7	7.71	1.27
					
Branch size (Br)	Number of employees in branch	From company records	104.72	56.94	21.52
					
Union Status (Union)		From company records 1 for Unionized employee, else 0			
					

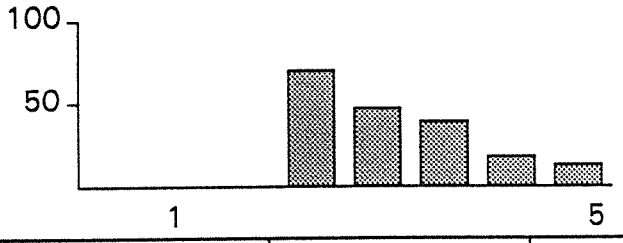
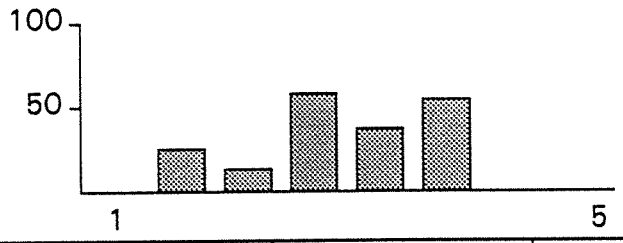
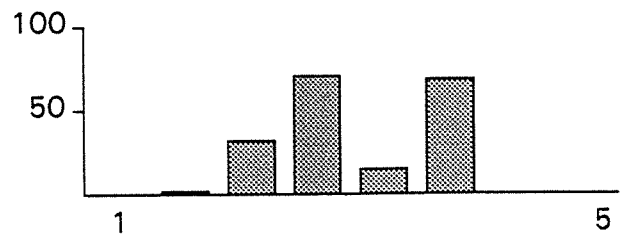
Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Return on Capital Employed (ROCE)	Branch earnings divided by value of capital employed for branch - 1st quarter 1992	From company records			
	Company Confidential				
Branch sales performance (Sls)	% branch above/below sales budget	From company records			
	Company Confidential				
Branch profitability performance (Prf)	% branch above/below Operating profit budget	From company records			
	Company Confidential				

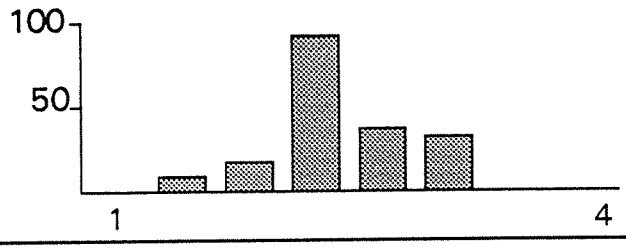
Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Inside sales productivity (Prid-Is)	# of calls per inside sales (branch ave.)	From company records			
	Company Confidential				
Warehouse-person productivity (Prod-Wh)	# of picks per warehouseperson	From company records			
	Company Confidential				
Driver productivity (Prod-Dr)	# of stops per driver	From company records			
	Company Confidential				

Summary of Supervisory Variables

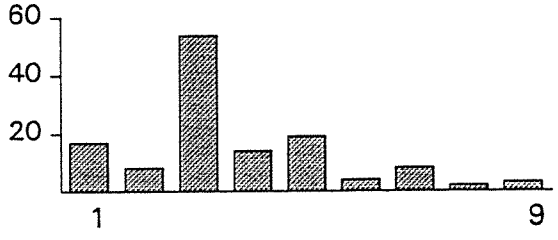
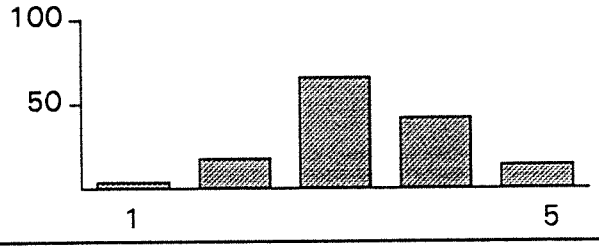
Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Subjects perception of supervisors directing style (DirA)	Shows perceived increasing direction/ control by supervisor	From questionnaire using Bass and Valexi scale	2.57	0.84	0.06
					
Subjects perception of supervisors delegating style (DelA)	Shows perceived increasing delegation by supervisor	From questionnaire using Bass and Valenzi scale	3.36	0.96	0.07
					
Subjects desired supervisors directing style (DirD)	Shows perceived increase in subject's desired direction/ control by supervisor	From questionnaire using Bass and Valenzi scale	2.71	0.72	0.05
					

Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Subjects desired supervisors delegating style (DelD)	Shows perceived increase in subject's desired delegation supervisor	From questionnaire using Bass and Valenzi scale	3.81	0.9	0.07
					
Subjects perception of Leader Member Exchange with supervisor (LMX)	Measures increasing relationship with supervisor.	From questionnaire using Graen and Chashman scale	2.26	0.68	0.05
					
Supervisor's perception of ideal directing style (DirS)	Shows supervisor's perception of the appropriate level of direction/control that should be employed.	From superviosr's questionnaire using Bass and Valenzi scale	3.3	0.56	0.04
					

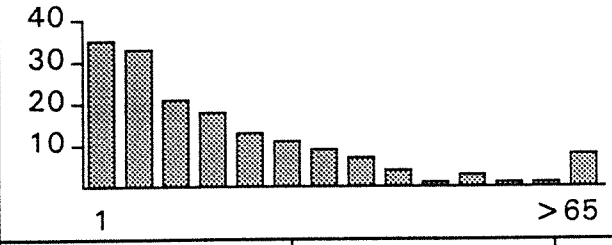
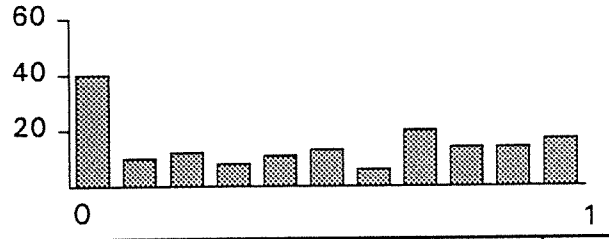
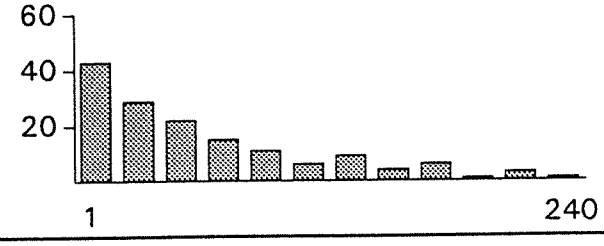
Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Supervisor's perception of ideal delegating style (DelS)	Shows supervisor's perception of the appropriate level of delegation that should be employed	From supervisor's questionnaire using Bass and Valenzi	3.47	0.62	0.05
					
Manager's perception of supervisor's directing style (DirM)	Shows manager's perception of the level of direction/ control that is employed by the subject's supervisor	From branch manager's questionnaire using Bass and Valenzi scale	2.96	0.63	0.05
					
Manager's perception of supervisor's delegating style (DelM)	Shows manager's perception of the level of delegation that is employed by the subject's supervisor	From branch manager's questionnaire using Bass and Valenzi scale	3.12	0.58	0.04
					

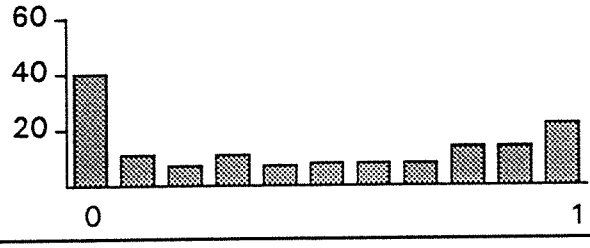
Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Manager's perception of supervisor-employee LMX (LMXM)	Shows manager's perception of the increasing level of communication / relationship between the supervisor and his work group	From branch manager's questionnaire using Graen and Cashman scale	2.09	0.52	0.04
					

Summary of Coping Variables

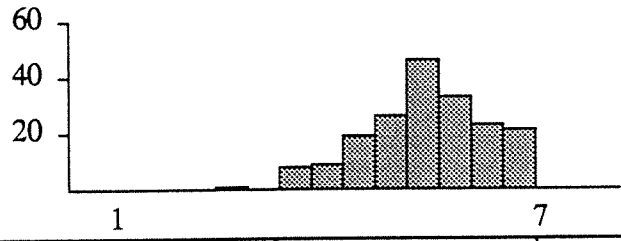
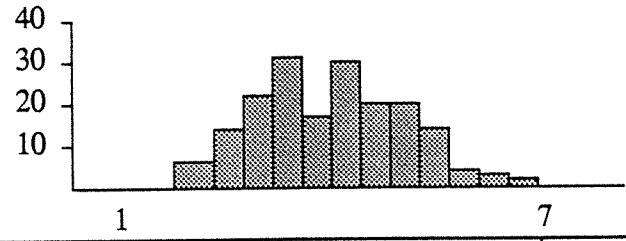
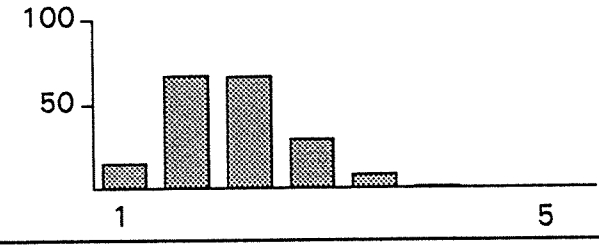
Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Coping style (cop2, cop3, cop4, cop5, cop6, cop7, cop8, cop9)	Indicator variables for most important coping style.	From questionnaire using scale by Stone & Neale Coded: 1 - diversion	0.07	0.26	0.02
		2 - different light 3 - did something about it	0.42	0.5	0.04
		4 - expressed emotions	0.12	0.33	0.03
		5 - acceptance	0.16	0.36	0.03
		6 - emotional support	0.04	0.21	0.02
		7 - relaxing	0.07	0.26	0.02
		8 - spiritual	0.03	0.17	0.01
		9 - other	0.04	0.19	0.02
					
Coping success (Csuc)	Increasing success of coping.	From questionnaire by Stone & Neale on 1-5 scale	3.31	0.91	0.08
					

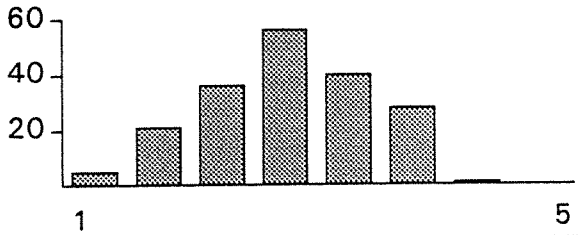
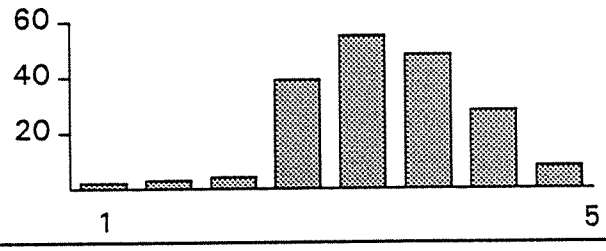
Summary of Hassle Variables

Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Daily hassles (Hasn)	Number of hassles in latest working day	From questionnaire	19.89	18.71	1.46
					
Stressful daily hassles (Hahi)	Proportion of hassles rated "some" or "a lot"	From questionnaire	0.43	0.35	0.03
					
Weekly hassles (Hasw)	Number of hassles in last week	From questionnaire	59.69	53.27	4.35
					

Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Stressful weekly hassles (Hhiw)	Proportion of weekly hassles rated "some" or "a lot"	From questionnaire	0.43	0.37	0.03
					

Summary of Historical Chronic Stressor Variables

Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Role ambiguity (Ambg)	Job responsibilities and tasks are not clearly defined	From questionnaire using instrument by Rizzo, House and Lirtzman. Scale of 1 - 7 with decreasing Ambiguity	5.33	1.03	0.08
					
Role Conflict (Conf)	Incongruency between role demands and personal needs, or inconsistent expectations of various parties.	From questionnaire using instrument by Rizzo, House and Lirtzman. Scale of 1 - 7 with Increasing Conflict	3.5	1.3	0.09
					
Latitude (Lat)	Skill latitude and decision authority	From questionnaire using scale by Karasek. Range 1 - 5 with decreasing latitude	2.87	0.49	0.04
					

Variable (Abbr. in Analysis)	Explanation	Source / Coding	Mean	Standard Deviation	S.E. of mean
Job demand (Demd)	Psychological demand on the job	From questionnaire using scale by Karasek. Range 1 - 5 with Increasing demand	2.8	0.68	0.05
					
Job satisfaction (Sats)		From questionnaire using scale by . Range 1 - 6 with Increasing Satisfaction	3.42	0.63	0.05
					

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