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An Integration Model of Work and Family Stress:
Comparison of Models

by

Marie Josette Rita Durup

Submitted in partial fulfillment of the requirements for the degree of
Doctor of Philosophy

at

Dalhousie University
Halifax, Nova Scotia
July, 1993

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To my father

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ABSTRACT

The interdependence between work and family calls for a more systemic paradigm underlying the study of the linkage between them. Much of the stress research has proceeded as though these two spheres were separate and non-interactive domains leaving a fragmented view of a person's work and family life. Attempts at reconciliation have been tentative. In this research, a fully integrative and comprehensive model of work and family stress was proposed and tested on a large sample ($N = 205$) of health care providers. The proposed stress paradigm incorporated both positive and negative antecedents and consequences. The model comprised of parallel measures of stress and resources in the two domains, and assessed both domain-specific experiences and more global outcomes, such as physiological and affective symptomatology. The hypothesized comprehensive model, and alternative and contrasting models were tested using various multivariate statistical techniques, including multiple regression and path analysis. There was overwhelming support for the main (versus moderating) effect of resources. There was evidence of the mediating effects of domain-specific, subjective experiences in the path between both demands and resources and global outcomes. The proposed Integration Model provided a good fit of the data, and depicted processes of segmentation and spill-over. The analysis indicated some spill-over relationships diminished when considered simultaneously with domain-specific relationships, and vice versa. This model also differed significantly from competing alternative models. The discussion argues that inclusion of family variables in occupational stress models has significance in developing policies to counter stress in the workplace.

ABBREVIATIONS AND SYMBOLS USED

AGFI	Adjusted Goodness-of-Fit Index
CFI	Comperative Fit-Index
CON	Control Coping Style
CSACT ⁴	Active Marital Coping
CSPAS	Passive Marital Coping
CSS	Coping Strategies Scale
CWK	Co-Worker Support
DAS	Dyadic Adjustment Scale
df	degrees of freedom
DP	Depersonalization at Work
EE	Emotional Exhaustion at Work
ESC	Escape Coping Style
FI	Fit-Index
FIW	Family Interference with Work
FMS	Family Support
FS	Friend Support
GFI	Goodness-of-Fit Index
HDL	Health and Daily Living Form
HIC	Interpersonal Conflict at Home
HWL	Workload at Home
LISREL	Linear Structural Relationships
MBI	Maslach Burnout Inventory
MCI	Marital Coping Inventory
NFI	Normed-Fit Index
PA	Personal Accomplishment at Work
POMS	Profile of Moods States
PS	Psychosomatic Symptoms
PSS	Perceived Social Support
PSYC	Affective Symptoms
RMSR	Root Mean Square residual
SAT	Marital Satisfaction
SUP	Supervisor Support
WIC	Interpersonal Conflict at Work

WIF	Work Interference with Family
WPSI	Wahler Physical Symptoms Inventory
WWL	Workload at Work
χ^2	chi-square

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Chapter 1

Conceptualizing Work and Family Interaction

Work and family are the two central arenas of life. They shape peoples' roles and define their identity. Disruptive events in either arena can have serious consequences for the individual. Stressors specific to each setting have distinct implications for the strain experienced by individuals while they are in that setting. However, the interdependency between the two spheres implies that strains experienced in one setting will also have an impact on experiences in the other setting. This process has been conceptualized in terms of "spill-over" in which stress in one setting accumulates within a person and contributes to strain in the other setting, and "cross-over" in which a person experiencing stress in one setting contributes to the strains experienced by other people in the second setting.

While considerable research attention has been devoted to the understanding of family dynamics and organizational behaviour, the reciprocal relationships between these two domains remain tangled. The impetus for the current research interest in this field came from Kanter (1977) who contended that work and family domains cannot be considered as separate, independent entities, and hence launched work and family as a new research frontier. The aim of the present research was to develop a model of work and family stress, by investigating the extent to which the interdependence between the two settings can be predicted on the basis of the various types of stressors, and the resources available to deal with them, including a person's characteristic style of coping.

Research on the relation between work and family is relatively new. In a review of the field, Voydanoff (1988) found that in the past decade the

research on work and family had expanded in diverse directions. While the initial focus has been on men's unemployment, women's employment, and two-career couples, current interests span broader areas, including specific characteristics of work, issues of multiple roles, economics, and organizational policy issues. In this line of research, work is defined as paid employment. This restriction of the definition of work to remunerative employment is an important distinction, as it recognizes that paid work, which generally takes place outside the home, differs meaningfully from unpaid work. *Family*, refers to spouse and children. It is also recognized that family of origin and extended families are important components of the family network, however, the nuclear family unit is considered a more common home environment in this society.

The purpose of this chapter is to review current theories explaining the relation between work and family, and to advance a new approach to the study of these two domains. Two main directions have been developed to investigate work and family, namely, to consider them as separate entities, or to look at the influence of one on the other. In the discussion of each of the proposed theories, attempts are made to review some of the major research findings, and the utility of these approaches. The relation of work and family will be considered and also theories will be examined which explain processes underlying links between work and family. This will lead directly into the proposed research, and new outlooks on work and family.

Work and Family as Separate Worlds - Same Domain Influence

There has been an assumption that work and family were separate domains, and research in these areas have tended to ignore any possible relation between the two (Burke & Greenglass, 1987; Nieva, 1984). It is

submitted by some researchers (e.g., Quick, Murphy, Hurrell, & Orman, 1992) that the split between work and family identities dates back to the Industrial Revolution, when it became necessary for individuals to separate themselves from their families and take on outside employment that was unrelated to the family experiences.

As a result of this viewpoint, researchers have tended to focus on the impact of factors in one setting on outcomes in the same setting. For example, specialists in the area of work, coming primarily from the field of organizational psychology, industrial sociology and industrial relations, looked at the influence of work conditions on worker's efficiency and performance, or the role of supervisor support on job burnout. These findings have advanced knowledge regarding how organizational productivity can be improved, along with identifying some of the harmful and distressing aspects of a worker's job conditions (Fletcher, 1988; Quick, Murphy, Hurrell, & Orman, 1992). Specialists in the area of the family, who have come primarily from the fields of family sociology, human development, and marital counseling, looked at issues, such as chronic illness in a child or the effects of separation and divorce, on outcomes, such as family stress and emotional development of the child.

Burke and Greenglass (1987) argued that the lack of research integrating both fields through studying the interface of work and family is a result of a limited number of scholars whose expertise encompasses both spheres of work and family. Other researchers (e.g., Kanter, 1977) disputed that maintaining the perspective of work and family as two separate worlds fits the interest of the modern corporation. Regardless of whether the separation of work and family research resulted from procedural convenience or from a

political or philosophical position, research has produced a fragmented view of work and family life.

Mutual Influence of Work and Family - Reverse Influence Model

Sarason (1977) believes that following World War II, a new age of self-development and fulfillment was reached and individuals started to evaluate themselves not only from the perspective of their family life but also from their careers. It became obvious that two very important areas of life, work and family, were not totally independent of each other. Some other forces, which may have accented the work/family connection, are the changes in the gender composition of the work force, increases in single-parent families, increases in dual career couples, and changes in rigid sex-role divisions. The general working model became one of mutual influence between occupational and family settings.

According to this approach, stressors in either setting could produce stress reactions in the other. It proposed that role ambiguity at work, for example, could add to arguments at home, or work overload at home could contribute to absenteeism at work. Similarly, supports and uplifts in one setting could be seen as enhancing performance in the other (e.g., spousal support contributing to job satisfaction). Researchers on the interaction of work and family (e.g., Burke, 1980; Greenglass, 1982; Gutek, Nakamura & Nieva, 1981; Gutek, Repetti & Silver, 1988) have demonstrated some of the distinct influence of work and family stressors, and role conflict between settings. However, the concentration on unidirectional causal paths from one domain to the other limits this approach.

Generally, the effects of the family on the worker have been investigated in the context of management/employment studies (e.g., Gutek,

Repetti, & Silver, 1988). These investigators were interested in how family life could positively or negatively influence the worker in his/her career efficiency and advancement. In contrast, the effect of work on the family has been investigated by developmental psychologists and work-family sociologists (e.g., Piotrkowski, Rapaport, & Rapaport, 1987) interested in the fate of the family in the age of working mothers. Whereas the impetus of research on the effects of family influence on work was to generally improve the worker's career, the research on the effects of work influence on family was sparked by concerns that working mothers could adversely affect the children and the family.

While the former research trend (of career enhancement through family influence) appears to have subsided, present research in work and family continues to look primarily at the negative influence of work on the family. The focus of this research has generally been to search out the negative effects of maternal employment and alternative child care, a direction that continues to receive criticism from some researchers (e.g., Silverstein, 1991). It should be noted that these concerns have not been totally ignored, and there is currently a tendency to investigate the influence of both maternal and paternal work characteristics. This trend likely reflects social developments, such as males advocating more direct involvement in family life, or a requirement for men to participate more fully in family life considering the increasing number of dual career families. Although the large majority of this research continues to have a negative focus, there have been hints of possible positive influence.

Relationship Between Work and Family

The mutual influence approach to work and family life suggests that

there is a fundamental relationship between the two domains (Burke & Greenglass, 1987). Past research has attempted to demonstrate the relationship between work and family, identifying what characteristic of these two domains may influence the other. A brief review of these findings will clarify some of the more interesting ways in which work and home lives are linked.

Influence of Work on Family

The influence of work on family has been illustrated by considerable research findings. These effects have been examined from the perspective of the worker, the spouse, and to a lesser extent, the child(ren). Features of work that have received attention have been both structural and psychological characteristics of the workplace. For example, Kanter (1977) identified five aspects of work life that influence the family, namely, absorption, time and timing, rewards and resources, occupational culture, and emotional climate. Outcome measures have generally been the quality of family life, and work/family conflict.

The structural characteristics of the work setting that have the most significant impact on family life include spatial location of work, and timing and scheduling. Spatial location of work pertains to geographic mobility and travel which are particular to several employment. Timing and scheduling involve the amount of time required by the job, and potential incompatibility in work-family schedules. Voydanoff (1987) suggested that work-related moves and travel negatively affect family life, although the effect can vary depending on their extent, timing, family characteristics, and availability of resources such as support. In their review, Gupta and Jenkins (1985) found that pressures for mobility and travel were some of the variables related to

role conflicts. Individuals working non-day shifts and weekends (Burke, 1988), and those working long hours (Small & Riley, 1990; Keith & Schaffer, 1980) experience higher levels of work/family conflict and strain. However, working a non-day shift shows only a weak non-significant relationship to marital and family satisfaction (Weiss & Liss, 1988). In conclusion, it appears that the number and scheduling of work hours seem to have a stronger connection with work/family conflict and strain than to overall satisfaction with marriage and family. The effects of non-standard work schedules on family life can be moderated by flexibility of schedules (Staines & Pleck 1986; Sund & Ostwald, 1985). Specifically, non-standard work schedules had a less negative association with quality of family life when accompanied by a high level of schedule flexibility. This buffering effect of flexibility was found to be more pronounced among working women than working men.

Psychological characteristics of work have both positive and negative associations with family life. Absorption or job involvement, for instance, is related to work/family conflict and low marital satisfaction among male professionals and managers (Greenhaus & Beutell, 1985). In addition, men in personnel whose work involves deep involvement with others were seen by their wives as distant and insensitive at home (Kanter, 1977). Certain job demands, for example, conflict (Piotrkowski & Katz, 1983), rapid work environment changes (Greenhaus & Beutell, 1985), and heavy work load (Bolger et al., 1989; Galambos & Sears, 1990), have been identified as relating to work/family conflict. In a review, Voydanoff (1988) also identified role ambiguity, intellectual and physical effort, pressure for quality work, and pressure to work hard and fast, as psychological factors that translate into work/family conflict. In a recent study, Higgins (1992) found that the most

important predictor of conflict at home was work conflict. The negative impact of work has been found to be more pronounced in some areas such as marital and life satisfaction, psychosomatic symptoms, and emotional upsets, and less pronounced in other areas such as social participation, and social support (Caplan, Cobb, French, van Harrison, & Pinneau 1975).

Although the concentration of research attention tends to be on negative outcomes, some psychological aspects of the work environment can have positive consequences. Job satisfaction, for example, can be shown to be positively related to family life. In the execution of certain jobs, opportunities for self-expression and self-actualization, referred to as intrinsic work role characteristics, exist; these have also been found to be positively related to quality of family life (Zedeck, Maslach, Mosier, & Skitka, 1988).

Some research has focussed specifically on the relation between parental employment and child functioning. As noted earlier, the main focus of this research has been on the negative influence of maternal employment. However, previous findings are currently being challenged by new research that either show that maternal employment is not a major factor in the child's development (Scarr, Phillips, & McCartney, 1989), or the benefits of having a working mother on family life (Baruch, 1987) and children (Bronfenbrenner, 1984). Baruch (1987) found that autonomy, and support from co-workers and supervisor enhanced child functioning. However, in a study of exo-system influences on child functioning, Daniels and Moos (1988) found that mothers' work environments had no connection with child functioning, whereas fathers' positive work relationships were associated with fewer child adjustment problems.

In summary, the research on the connection of work and family has

provided some general insights on the influence of the workplace. It has also demonstrated that these influences are not limited to the work environment. In addition, research has identified some of the characteristics of the workplace that relate positively and those that have negative associations with family life.

Influence of Family on Work

Kanter (1977) suggested that "family situations can define work orientations, motivations, abilities, emotional energy and the demands people bring to the work place" (p. 54). However, much less attention has been devoted to this side of the work-family connection. Available research suggests that characteristics of an individual's personal life help determine their response to their work. As with work characteristics, family can have both positive and negative influences on work.

Demands originating from the family such as, child care needs (Schultz, Chung, & Henderson, 1988), home conflict (Bolger et al., 1989), overload (Gutek, Repetti, & Silver, 1988), have been shown to be negatively related to the individual's work role performance. Crouter (1984) noted that family responsibilities can intrude in the work domain and increase lateness, absenteeism, and preoccupation with family matters. Parasuman (see Greenhaus, 1988) found that family variables were associated with job dissatisfaction. Bartolome and Evans (1980) acknowledged that family experiences can have an impact on work, but proposed that work experiences are more likely to influence family. Essentially, these researchers suggested that while work intrudes on family on a daily basis, family affects work only in extreme circumstances such as career change and life decision. Using daily diaries and time series analysis, Bolger et al. (1989) were able to corroborate

that the daily influence of work on family was more pronounced than the reverse.

On the other hand, factors originating within the family have been shown to have a strong positive association with job commitment and satisfaction. Crouter (1984) conducted semi-structured interviews and found that some of the characteristics of family that were positively associated with work were family support, and the opportunity to use skills and attitudes acquired at home. Caplan (1976) reported similar alliance with family support. Crosby (1984) found that the best predictor of job satisfaction was a full life outside, and speculated that multiple roles may provide psychological protection to individuals.

Although important contributions have been made to our knowledge of factors that intrude upon the work and family domains, this area is still underdeveloped. One important direction of research, which warrants further investigation, is the identification of the actual processes through which these two spheres have an impact on one another.

Types of Work and Family Relationships

This section reviews current theories of how work and family are linked. Researchers have proposed several relations identifying the effect of work on the family, and the family on work (Bailyn, 1970; Evans & Bartolome, 1980, 1984; Kabanoff, 1980). Overall, four general categories of relationships are recognized; the lack of a relationship, an enmeshed relationship, a positive relationship, and a negative relationship. When there is a lack of relationship, work and family domains are said to be *independent or segmented*. This is similar to the "separate world" concept (advanced earlier) where the two domains exist side by side but are divorced

from each other. Sometimes the relation is so closely fused that it is almost impossible to consider the domains separately as in the situation of a family business; this enmeshed linkage between work and family is referred to as *integrative*.

Two positive relations are noted, instrumental and reciprocal relations. When one domain serves as a means of getting things desired from life in the other, the relation is described as *instrumental*. Family status and support, for example, may be instrumental in achieving political ambitions. Another example would be occupational success contributing to family well-being. In the *reciprocal* process, positive and negative characteristics of one domain similarly affect the other. The processes by which reciprocal relationships operate are described as "spill-over" and "cross-over". A spill-over happens when the influence of one environment on the individual extends beyond the generating domain to the other domain. The term cross-over is applied when the influences of characteristics of one domain extend to other individuals in the opposite sphere.

Two types of negative associations between work and family are noted, compensatory and conflictual relationships. *Compensation* occurs when one domain makes up for what is missing from the other. The two domains are said to be in *conflict or incompatible* when the two cannot be easily reconciled, such that satisfaction or success in one will entail sacrifices in the other. In this situation, an individual can be satisfied in one or the other, but not both domains.

Current research in the field has concentrated on three of these hypothetical relations to characterize the link between work and family. This consists of compensation and spill-over, advanced by Wilensky (1960), and

segmentation, suggested by Dubin (1973).

The most popular view of the relations between work and family is that their strains spill-over from one to the other. According to the spill-over hypothesis, work and family experiences should be positively related, such that the quality of a person's work or home life is considered to affect the quality of experiences away from that environment. If, for example, work is dull and uninvolving, family experiences will reflect this quality. Similarly, workers with jobs that are satisfying and engaging are expected to embrace equally satisfying and involving home activities (Champoux, 1980; Meissner, 1971).

The compensation hypothesis, on the other hand, predicts that work and home experiences are negatively related. Individuals in dull and uninvolving jobs attempt to compensate for these deficiencies by engaging in satisfying and involving family activities. Conversely, people whose jobs provide sufficient satisfaction and involvement need not seek additional satisfaction and involvement away from work (Faunce & Dubin, 1975). The compensation hypothesis generally views people as actively seeking greater satisfaction from their work or home as a result of being dissatisfied with the other sphere.

The earliest view of the relationship between work and home is that they are segmented and independent. The segmentation hypothesis purports that work and family experiences are unrelated. Each social domain is lived out more or less independently of the other. Segmentation was seen as a naturally occurring process, especially in its application to blue-color occupations, which are often uninvolving and unsatisfying. Research has repudiated the view that segmentation occurs naturally, contending that

workers "actively attempt to separate work and family life in order to deal with work-related stresses" (Piotrkowski, 1979, p. 98).

All three processes, namely, compensation, spill-over, and segmentation, have face validity, especially when viewed separately. In the analysis of how work and family come to affect each other, it seems that compensation, spill-over, and segmentation are viewed as competing notions. Research has attempted to establish which of the three proposed hypotheses best characterizes the link between work and family, and studies are reviewed to see which theory is supported by the findings. Rather than indicating that one process links work and family, the existing evidence suggests that all three --compensation, spill-over, and segmentation-- operate to link work and family. The current research question concerns the condition under which each process dominates.

The research on the work and family connection has been useful in illustrating that the rewards and problems of one sphere can extend beyond the immediate sphere, in addition to identifying which of the many characteristics of a domain have far reaching influences. However, this research is problematic for two important reasons: it lacks sophistication in both its methodology and in its statistical analyses. Generally, research has relied heavily on survey and questionnaire data, and analyses have been limited to correlational and regression analyses. It should be noted that recently some attempts have been made to incorporate longitudinal data and employ time series analyses. Where the latter has been used, it is encouraging that longitudinal analyses have been found to corroborate earlier correlational findings. These issues, including the benefits and limitations of various methodologies, will be dealt with further in a later chapter. Instead,

attention will now be directed to a new conceptualization of work and family.

An Integration Model of Work and Family Interaction

While models of mutual influence have brought to light the interdependence of work and family and represent a major development from treating work and family as completely separate spheres of life, these models still fall short of looking at home and work as fully interactive domains of an individual's life. Instead, most studies have relied on the traditional independent-dependent variable model (Burke & Greenglass, 1987; Greenhaus & Parasuraman, 1986), where the predictor variable is in one domain and the outcome variable is in the opposite domain. A major shortcoming of this approach is that it continues to view work and family as somewhat distinct entities, whose individual influences can extend to the other sphere. Essentially, it fails to acknowledge the absolute convergence of work and family.

In this thesis, I pursue a more thorough association of work and family, which I shall refer to as, the 'Integration Model'. This model conceptualizes outcomes in one sphere as resulting from stressors and situational variables in all spheres of life, not only the opposite sphere but also in the originating sphere. This leads to a combination of both the segmentation (same-domain) and the mutual influence (reverse-influence) approaches. This model also recognizes that characteristics in these two environments can interact, giving rise to domain specific outcomes (such as job satisfaction) and general outcomes (such as psychosomatic symptoms). Hence, the Integration Model suggests that characteristics of work and family should be investigated simultaneously, so that a comprehensive overview of the relationship can be obtained.

The push for a more integrated model that goes beyond the approach of mutual influence has been articulated by a number of researchers in work and family. Renshaw (1976), recognizing the interdependence between the two domains, pronounced that stress in one is not caused by events in the other. Kline and Cowan (1988) have suggested that “the place of employment and the home are environments that jointly affect the development of” (p. 64) factors such as job satisfaction and general well-being. Burke and Greenglass (1987) recommended a research agenda that looks at the joint effects of work and family.

The most significant attempt at incorporating work and family stressors simultaneously has been in the investigation of antecedents of work/family conflict (e.g., Burke, 1988), and then looking at the outcomes of this conflict (e.g., Bedeian, Burke, & Moffett, 1988; Burke, 1988). However, most recently, a couple of studies have surfaced that have closely approximated the integrated model, looking at the antecedents of physical health from the perspective of the interaction of work and family quality (Barnett, Davidson, & Marshall, 1991) and roles (Barnett, & Marshall, 1993). While this is encouraging, these studies are limited in their lack of a comprehensive overview of work and family.

The proposed stress model integrates variables at home (e.g., spousal support) and at work (e.g., job demands) and looks at their association with outcome factors at home (e.g., family satisfaction) and at work (e.g., job burnout). In the development of this model, some of the processes by which work and family are linked will be exposed. In particular, it will be possible to identify and determine which of the work and family characteristics under investigation undergo processes of spill-over, segmentation and

compensation. In investigating the work and family linkages, it is likely that they overlap. Looking at these processes in the integration model will provide a more thorough understanding of their complexities.

This approach leads to conceptual and statistical challenges. To capture the complexity of this model, a wide variety of antecedent variables must be incorporated. Also, statistical techniques employed must be sophisticated enough to test such a comprehensive model. In the following chapters these issues are discussed and suggestions put forward to guide the development and testing of such a model.

Given the salience of stress and coping in the understanding of the bridge between work and home, the next chapter is devoted to the investigation of work and family within a stress perspective. It reviews widely accepted stress theories and discusses their salience and application to work and family research. This literature is incorporated into the realm of the present research area such that stressors and resources in the two domains are investigated jointly. Also, both context specific and more generalized outcomes of stress are discussed.

Chapter three reviews some of the methodological and statistical issues central to research in work and family. The more frequently employed research methods and statistical techniques are described. A critical analysis of the current strategies and some proposed ideas to capture the complexities of this field are advanced.

In chapter four, I describe my research to explore a predictive model of work and family stress. Special attention is paid to outline the proposed hypotheses, and investigate alternative and contrasting models. The results of this investigation are also included in this section, while the final chapter

concentrates on the explanation and implications of the results. Particular attention is also paid to the validity and generalizability of these findings.

Chapter 2

Work and Family Interaction within a Stress Perspective

The concept of stress continues to generate great interest in psychological, social, and health research. There have been long standing misgivings about its usefulness; nevertheless the growing volume of research in this area suggests that stress is a causal factor in physical and mental illness. This research supports the utility of stress as providing a unitary construct that summarizes a diverse range of psychological and physical reactions to demands. The interest in stress has not been limited to the academic community but has also caught the attention of the popular press, reflecting the lay public's concern with stress.

In the last fifteen years, academics have developed a broad interest in occupational stress (Beehr & Bhagat, 1985; Brief, Schuler, & Van Sell, 1981; Ivancevich & Matteson, 1988). Although researchers like French (French & Caplan, 1972; French, Kahn, & Mann, 1962) and McLean (1966) were involved in such research programs thirty years ago, the number of published materials was insufficient to warrant a heading of Occupational Stress in Psychological Abstracts. In a review, Newman and Beehr (1979) noted that occupational stress first appeared as a key word in this index in 1973. Academic interest in occupational stress research continues to grow, and is currently being undertaken in various countries.

In a review of family research, Nye (1988) noted that research on stress focusing upon marital interactions, conflicts, satisfaction, and failure were well under way in 1937. The initial focus of these investigations was limited to correlations between personal characteristics and family functioning and adjustment. However, more recent stress research has looked at antecedents

beyond the individual —such as, stressful life events and participation in multiple roles— on well-being.

Greenhaus and Parasuraman (1986) proposed a model of the interplay of stressors and stress reactions between work and family, that included three connections between stressors and strain at the intersection of these two domains. They suggest that stressors in these two domains can produce strain in an additive sense, the effects of strain in one domain can contribute to strain in the other, and strain can arise because of incompatibility between the demands and expectations in the two domains.

There are several benefits to investigating work and family issues within a stress perspective. Greenhaus (1988) submitted some compelling advantages of adopting such an outlook. He proposed that the study of the distinction between structural and psychological characteristics of work (see Chapter 1) can benefit from the literature on personal appraisal. Historically, the stress literature has emphasized the role of personal appraisal (Lazarus, 1981) in explaining individual differences in experienced stress, resulting from similar objective situations. Greenhaus (1988) also advised that the vast knowledge about behavioural, emotional, and physiological consequences of extensive stress can be incorporated into models of work and family relations, to generate testable hypotheses. In addition, he recommended that the models and findings in the stress literature pertaining to the roles of personal resources, social support, and coping responses, can be applied to work and family interaction. He proposed that the most compelling benefit of adopting a stress perspective is the existence of a tested paradigm that has been useful to stress researchers, and which can be effective in providing future insight into the conjunction of work and family roles.

Research interest in stress has been complicated by various conceptualizations of the phenomenon, and limited by the quality of available measures. Also, important constructs, such as demands and well-being, are difficult to measure. One difficulty in measuring stress may lie in the fact that stress is not a simple variable but a system of interdependent processes, which mediate the frequency, intensity and duration of stressful events. In this chapter, I will review the concept of stress, and stress theories that apply well to the occupational and familial context. I will also examine the more significant dimensions of stress, including the role of demands and resources in the creation and buffering of stress. Discussion of the outcomes of stress will centre on both domain-specific and more general consequences.

Selected Stress Theories

Researchers have advanced several theories of stress: The General Adaptation Syndrome based on the Canon-Selye tradition (Canon, 1932; Selye, 1950, 1951-1956), the stimulus definition (Elliot & Eisdorfer, 1982), the event-perception viewpoint (Spielberger, 1966, 1972), the homeostatic and transactional models (Lazarus, 1966; McGrath, 1970), and the conservation of resources model (Hobfoll, 1989). Two theories will be considered here, Hobfoll's (1989) theory of Conservation of Resources, and Lazarus and Folkman's (1984) Cognitive-Transactional stress theory. These two theories are not necessarily in conflict with each other, and in fact have been chosen because each seems to pick up where the other stops.

Lazarus and Folkman (1984) have defined psychological stress as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p. 19). There has been considerable

debate on whether stress should be measured as actual environmental demands or as subjectively experienced demands. As yet, psychology has no satisfactory way of assessing the environment as an objective set of conditions except through subjective consensual judgment. Hence, Lazarus and Folkman (1984) believe that it is quite appropriate to rely on the individual's appraisal of the environment when measuring psychological stress, especially since the consensual judgment may not prove applicable to a particular individual.

In this light, whether an event is psychologically stressful or uplifting is totally subjective, depending on the individual's appraisal of the personal significance of the encounter. Hence, the appraisal reflects both the environmental circumstance and the personal characteristics such as belief about self and world, and factors that result in special vulnerability to stress. This phenomenological aspect of appraisal recognizes that a given event may be stressful to one person and not to another.

In their transactional model of stress, Lazarus and Folkman (1984) emphasized the interaction between the environment and the individual. They do not, however, provide a clear way of measuring the environment, and unquestionably, what they describe pertains to the individual's appraisal of the environment, rather than an objective measure. This has led to criticisms of circularity in their approach (Dohrenwend, Dohrenwend, Dobson, & Shrout, 1984). This circularity appears to be due to an over-emphasis on perception, and a lack of emphasis on the environmental circumstance. Hobfoll (1989) proposed a stress model that attempts to bridge the gap between environmental and cognitive viewpoints by acknowledging the role of both appraisal and objective environmental conditions.

Hobfoll (1989) defined psychological stress as "a reaction to the environment in which there is a) the threat of a net loss of resources, b) the net loss of resources, or c) a lack of resource gain following the investment of resources" (p. 516). In this model, perceived and actual loss or lack of gain are each sufficient conditions for producing stress. Basically, this resource oriented model is founded on the "supposition that people strive to retain, protect, and build resources and what is threatening to them is the potential or actual loss of these valued resources" (p. 513). Hobfoll outlines four different types of resources, object resources (e.g., socioeconomic status), conditions (e.g., the extent to which marriage, tenure, job security, seniority, etc., are valued), personal characteristics (e.g., self-esteem, value of own worth), and energies (e.g., time, money, knowledge). Loss and gain of these resources lead to stress or well-being, respectively.

Although the model of conservation of resources provides an interesting contrast to the much accepted transactional stress model, and also the possibility of an objective way of measuring stress, it appears to be somewhat incomplete. It supports the role of cognitive appraisal without explicitly stating so. The transactional stress model emphasizes the role of appraisal in assessing stress, but does not offer decisive explanations of the actual appraisal process. The combination of these two theories may provide a more complete stress model. For example, the resource conservation model may suggest one way that appraisal might be accomplished: by possibly weighing available resources against the demands of the situation. The fewer resources available to an individual to deal with a particular situation, the higher the likelihood that this situation will be appraised as stressful. Hence, appraisal of stress is inversely proportional to the availability of resources.

The two stress models discussed above are incorporated in the proposed model of work and family stress. Traditionally, the research on workplace stress builds on a model developed by Karasek, Schwartz, and Theorell (1982), which emphasized the role of demand in the creation of job stress. Such demands include work load and conflict (Caplan, Cobb, French, Van Harrison, & Pinneau, 1975). The current research extends this model of demand and outcome to the home environment. According to the Transactional Model of stress, it is not the objective measures of demands that are important, but rather the subjective appraisal of demands in these environments. Consistent with the Conservation of Resources Model, the availability of resources is viewed as having a direct influence on outcome. One of the resources that a person might draw on is his/her coping skills, classified by Hobfoll (1989) as a 'personal characteristics' resource.

It is noted that the proposed stress paradigm marks a significant departure from the popular transactional model which studies stress from the individual's perspective. Lazarus (1991) advocated looking at workplace stress from the individual level, and encouraged researchers in that area of study to do the same. While Barone (1991) cited many examples of work stress research being carried out in the paradigm suggested by Lazarus (e.g., Ashford, 1988; Dewe, 1989), Brief and George (1991) submitted that concentration on this type of research may be limiting. They suggest that many factors in the workplace affect all individuals in a similar way. Policies have to be developed for a large group of people, and identifying factors that are stressful or helpful to most people is an important aspect of this research and in the bridge between science and its usefulness to the field.

Resources

Although Kanter (1977) discussed the positive consequences of work and family relations, there has been limited research that seeks to identify the factors which contribute to this positive relation. It appears that much of the research has sought to emphasize negative consequences of work and family roles (Greenhaus, 1988). Further, the examination of work and family within a stress perspective suggests negative implications.

Researchers in the study of work and family emphasize the need for more empirical research on the characteristics of these two domains that have a positive influence on the other (e.g., Burke & Greenglass, 1987; Greenhaus, 1988). Two of these, which have received considerable research attention, have been *coping style*, which is a personal resource, and *social support*, which is an environmental resource.

Coping and Coping Styles

Lazarus and Folkman (1984) defined coping as "constantly changing cognitive and behavioural efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). This definition depicts coping as process-oriented rather than trait-oriented. It draws a distinction between coping and automatic adaptive behaviour, clarifying that the former refers to situations that are appraised as taxing, whereas the latter does not require effort. It addresses issues of confounding coping with outcome, emphasizing that coping consists of efforts deployed or employed by the individual regardless of outcome. That is, an attempt to reduce one's workload constitutes coping, regardless of the success of the attempt. In this model, coping does not imply mastery, but rather refers to attempts to manage the situation.

When faced with various stressors, individuals initiate coping strategies. However, it would appear that the definition of coping is very closely linked to the interpretation assigned to stress. In line with the cognitive-transactional stress theory, Lazarus and Folkman see coping as attempts to limit stress. According to the conservation of resources stress theory, stress is a threat or actual loss of resources. Consequently, Hobfoll (1989) would predict that when confronted with stress, individuals strive to minimize the net loss of valued conditions. Therefore, while one theory focuses on the production of negative consequences and sees coping as attempts to reduce negative outcomes, the other focuses on retaining the positive *status quo* and views coping as attempts to reduce the loss of resources.

Bandura (1977) proposed that an expectation of self-efficacy is a decisive factor in determining whether people will initiate coping behaviour, and also in the amount of effort expended and how long these efforts will be sustained. Based on such personal factors as self-efficacy, individuals will draw on available resources as they assess to be fitting to their situation. The coping effort deployed by the individual will mediate the effect of commonly accepted stressors on the stress experienced by the individual. Certain styles of coping are more effective in alleviating stress in some situations while other styles are more appropriate in other situations. Vitaliano, Maiuro, Russo, Katon, DeWolfe, and Hall (1990) observed that various groups of individuals (e.g., workers vs. patients) can be differentiated by their coping profiles, and that the coping style employed was not dependent on the level of psychological distress.

Coping style refers to the strategies that a person typically uses when

faced with a situation. Several strategies have been suggested and studied, however, Roth and Cohen (1986) asserted that these boil down to two styles, namely, approach and avoidance. Whereas some researchers propose consistency in style, such as a preference for either approach or avoidance strategies over time and across circumstances, Roth and Cohen (1986) submitted that these formulations are not mutually exclusive. Lazarus and Folkman (1984) expressed similar views in their discussions of trait versus situational approach to coping. Concerning coping effectiveness, both groups of researchers suggest there are potential benefits and costs to each strategy.

The coping formulations of approach and avoidance were first proposed by Canon (1929), and have been adopted in many measures of coping. Latack (1986) employed these ideas in her concept of control versus escape coping styles. In addition, she reinterpreted the concepts of problem-focussed (to manage a situation) and emotion-focussed (to manage emotional distress) coping (Folkman & Lazarus, 1980) into action and cognitive reappraisal, and incorporated these as basic tenets. She integrated action and cognitive reappraisal as inherent aspects of the control and escape coping styles. Hence, Latack (1986) conceptualized control coping as "consisting of both action and cognitive reappraisal that are proactive, take charge in tone" (p. 378) and escape coping as "consisting of both action and cognitive reappraisals that suggest an escapist, avoidance mode" (p. 378).

Using the global dimensions of control and escape coping styles, Latack (1986) developed a scale to measure coping with work stress and tested it out on a sample of managers and professional staff from a manufacturing firm and a hospital. Besides establishing construct validity for this scale, she was able to demonstrate a clear relation between style of coping and job

satisfaction. Use of control coping strategies was found to be positively related to job satisfaction. Leiter (1991) investigated the role of coping styles in burnout using a sample of workers in a psychiatric hospital, and employing the same coping measure. He observed that an individual's coping pattern contributed to the prediction of burnout in the work place. This researcher suggested that a control coping pattern was incompatible with job burnout.

Coping style in the job environment may be distinct from the style of coping in other settings (Billings & Moos, 1981; Pearlin & Schooler, 1978). Marriage, for example, is a specific life experience involving a unique set of stressors and likely a correspondingly unique set of coping strategies (Zborowski & Berman, 1990). Whereas Latack's (1986) coping scale deals specifically with job stress, Zborowski (1990) developed a scale that pertains to coping with home (specifically, marital) stress. This instrument incorporates a theoretical framework of both general coping theory and knowledge of family dynamics. Established dimensions of coping such as emotion/problem focussed, which delineates the target of coping, and also active/passive and cognitive/behavioural, which pertain to the method of coping, were used in setting up this scale. Zborowski and Berman (1990) found that use of active and cognitive strategies was related to good marital adjustment, while use of passive and emotional strategies corresponded to poor marital adjustment.

In the investigation of coping styles at work and at home, active and escape coping are differentiated as two distinct types of strategies, with differing effectiveness. The effectiveness of any coping strategy used by an individual in a particular environment is defined by the degree of stress reduction or well-being in that same setting. Well-being is generally defined

by satisfaction. Kline and Cowan (1988) proposed that "well-being should be investigated in a more differentiated fashion that takes into account the domain in which it is experienced" (p. 63 – 64). They made this suggestion despite acknowledging that measures of well-being in different domains often tend to be correlated (Cowan & Cowan, 1988). A good argument for considering each domain separately is that the connection between antecedents and indices of well-being may have different and possibly opposite effects at home and at work (Kline & Cowan, 1988). It is plausible, for example, that high demands at work may lead to a sense of accomplishment and fulfillment at work, whereas similar demands at home may lead to opposite effects such as dissatisfaction with the marital relationship. Looking at each environment separately provides a clearer picture of the impact of domain specific factors.

Social Support

According to House and Wills (1978), social support consists of frequent interactions, strong and positive feelings, and the availability of emotional and instrumental support when needed. The stress literature suggests that social support is important in protecting people from the negative consequences of stress (Cohen & Wills, 1985; Gore, 1986; House, 1980; House, 1981; Payne, 1980; Wills, 1984). Valued social support is a fundamental coping resource in that it provides people with a greater range of options when attempting to address demands (Hobfoll, 1989).

Supportive relationships are viewed as critical in dealing with work and family issues (Greenhaus & Parasuraman, 1982; Hall & Hall, 1980; Holahan & Gilbert, 1979; Rapaport & Rapaport, 1971; Suchet & Barling, 1986). In a study of employed women, Greenglass, Pantomy, and Burke (1988) found

that the availability of support from the supervisor, family and friends was associated with low levels of role-conflict. There has been increasing evidence (e.g., Greenglass, Fiksenbaum, & Burke, 1993) that social support can help reduce the experience of strain in the workplace.

On a more detailed analysis of the sources of social support, the evidence suggests that supervisor support is more likely to have direct effects on stress, than are co-worker support, and spouse support (Caplan et al., 1975; LaRocco, House, & French, 1980; LaRocco & Jones, 1978). Repetti and Cosmas (1991) corroborated the important role of supervisor support, observing that job satisfaction in a sample of female workers was more closely linked to the quality of supervisor relationship than to the relationship with co-workers. Continued research is needed to examine the relevant sources of social support both at work and in the non-work domain and their influence.

The effects of social support on well-being and as a stress moderator have been extensively examined (see Cohen & Wills, 1985; Hobfoll, 1986; Sarason, Sarason, & Pierce, 1990; Vaux, 1988). Nevertheless, the question remains whether social support functions as a buffering effect or in a direct manner (Burke, 1987). If the mere presence of social support has a positive effect on health in the general population, then it produces a statistical main effect. In the stress-buffering hypothesis, the influence of social support is only apparent when there is stress, and hence an interaction effect is observed. Schwarzer and Leppin (1991) suggested social support is influential in the stress buffering model at two specific stages, when stressful demands are cognitively appraised, and later by dampening health damaging physiological processes.

Although there has been strong argument for, and description of the

process by which a social support system can serve as a buffer (Sarason, 1981), the evidence for the moderating role of social support is mixed and unclear (e.g., Blumenthal, Burg, Barefoot, Williams, Haney, & Zimet, 1987; Cohen & Wills, 1985; LaRocco, House, & French, 1980; Shinn, Rosario, Morch, & Chestnut, 1984). In a recent study, Barling and Kraybill (1990) found that support from supervisor had no moderating influence on the relationship between daily stress and mood. Melamed, Kushmir and Meir (1991) proposed to investigate the interactive effect of social support and job demands on outcomes of work. They found instead, an additive, rather than an interactive, effect of social support. In consideration of the available evidence, which is inconclusive, there is need for more studies on the role of social support. Moreover, stress research could benefit from studies including social support as a variable to make a specific test of this buffering hypothesis since it is an unresolved, and an important issue.

Consequences of Stress

Following the stress paradigm, no discussion of stress is complete without a review of its consequences. The following section investigates context specific outcomes and more general outcomes of stress.

Context Specific Outcomes of Stress

Satisfaction at Home

One measure of well-being in the home domain is marital satisfaction (Kline & Cowan, 1988). Marital satisfaction is defined as satisfaction with the present state of the relationship and commitment to its continuance (Spanier, 1976). There are many factors that have the potential to negatively affect the marriage, some of which originate within the home environment (e.g., role expectancy, lack of reciprocity between the partners) and others that are

outside the home (e.g., unavailability for activities together because of the long hours at work, fatigue resulting from overload at work).

Some trends have been noted in studies of work and home factors on marital satisfaction. Burke, Weir, and Duwors (1980) found that job demands negatively affected marital satisfaction. Jackson and Maslach (1982) reported a study of 142 couples to illustrate the effects of job stress on family life. Police officers who experienced more stress, as observed on the Maslach Burnout Inventory, were more likely to display more anger, spend time away from the family, be uninvolved in family matters, and be less satisfied with their marriage. In a study of teachers, Greenglass, Pantomy, and Burke (1988) found that both males and females experienced greater dissatisfaction with the marriage when role conflict was higher.

Other studies of employment and the family have yielded very inconsistent findings. Attempts have been made to relate factors such as wife's employment (e.g., Almeida & Maggs, 1990), night shift work (Weiss & Liss, 1988), single-earner versus dual-earner family status (e.g., Galambos & Sears, 1990; Sund & Ostwald, 1985) with marital satisfaction. Some studies have demonstrated a trend of increased marital satisfaction with employment, while other studies have either contradicted these findings or failed to show this difference (for review, see Kline & Cowan, 1988). Again, the clear inconsistencies in the findings suggest the need for more investigation looking at the predictor of marital satisfaction. In particular, the joint contribution of work and family stressors to marital satisfaction needs to be addressed and because of its importance begs to be included in the present research.

Satisfaction at Work

Job satisfaction has been defined as the affective response to one's job (Weiss, Dawis, England, & Lofquist, 1964). The operational definition of job satisfaction is not as widely agreed upon as the conceptual definition.

However, researchers (Zedeck et al., 1988) agree that it is dependent on both externally controlled factors (e.g., pay, promotion, supervision, recognition, work conditions, etc.) and on factors intrinsic to the work itself (e.g., ability utilization, opportunity for learning for achievement, difficulty, autonomy, and responsibility).

Locke (1983) explored antecedents of job satisfaction with reference to employee and work related variables (e.g., supportive agents, appropriate work conditions, etc.). Studies of the effects of job satisfaction have concentrated on such work outcomes as performance, job turnover, absenteeism, and organizational commitment. Some studies have found links between job satisfaction and personal outcomes such as self-confidence (Herzberg, Mausner, & Snyderman, 1959), physical and mental health (Burke, 1969/1970) and attitudes toward other areas of life (Iris & Barrett, 1972). Surprisingly, the only outcome listed above that has not been empirically linked to job satisfaction is performance (Locke, 1983).

Finer distinction of the construct of job satisfaction has been made between intrinsic and extrinsic satisfaction since it provides a better assessment of its relation to meaningful variables. Many people working in a hospital setting have devoted several years of training in professions that they believe suit their abilities and interests. Performing the related duties and using the acquired skills are associated with greater meaningfulness of work and job commitment (Leiter, 1988), and hence, to intrinsic satisfaction.

Intrinsic satisfaction is therefore more likely a measure of satisfaction at work for this population group. Moreover, Zedeck, Maslach, Mosier, and Skitka (1988) found that intrinsic satisfaction at work was highly correlated with personal accomplishment, and hence the latter is a good measure of success in professionals working in health care settings.

Job Burnout

Burnout has been defined as a syndrome of emotional exhaustion, depersonalization, and feeling of reduced personal accomplishment, which can occur among individuals who work extensively with other people in a service relationship (Maslach, 1982; Maslach & Jackson, 1986). A key aspect of burnout is increased feelings of emotional exhaustion. It has been suggested that as emotional resources are depleted, workers feel they are no longer able to give of themselves at a psychological level. Another aspect of burnout is the development of depersonalization, that is, negative, cynical attitudes and feelings about people with whom one works. A third aspect of burnout is reduced personal accomplishment, which refers to the tendency to evaluate oneself negatively, particularly regarding one's work with other people. Burnout has special relevance in human service work because it undermines the very factor that is essential for human service, that is, the personal relationship between a caregiver and a recipient.

Burnout has been studied most extensively among employees in the human services sector, such as social workers, nurses, teachers, and mental health workers. It has been proposed that burnout is a product of the personal and environmental factors. However, a large majority of the research evidence to date suggests that environmental factors, such as characteristics of the work place, are more strongly related to burnout than

personal factors such as personality variables (e.g., Burke et al, 1984). Many of the work characteristics related to burnout involve contact with other people, for example clients and coworkers (Leiter & Maslach, 1988; Pines & Maslach, 1978).

Research has shown that burnout, in one or more of its forms, corresponds to a number of negative behavioural outcomes, both for individual employees and for the people with whom they work. For example, burnout has been linked to greater dissatisfaction, either with the job in general or with specific aspects of the job (Burke, Shearer, & Desza, 1984; Jayaratne, Chess, & Kunkel, 1986; Maslach & Florian, 1988). Burnout has also been associated with a number of job withdrawal behaviours, including the intention to quit one's job and actual turnover (Burke et al., 1984; Jackson & Maslach, 1982; Jackson, Schwab, & Schuler, 1986; Lazaro, Shinn, & Robertson, 1984). In addition, burnout has been linked to poor job performance (Nowack & Hanson, 1983).

The impact of burnout can have serious consequences for the individual on a more personal level. Numerous research has shown that it is associated with poor physical health (e.g., Belcastro & Gold, 1972; Burke et al., 1984; Jayaratne et al, 1984). Also, a strong and positive relationship has been observed between burnout and affective state, such as depression (Firth, McIntee, McKeown, & Britton, 1986; Landsbergis, 1988; Meier, 1984).

General Effects of Stress

One reason for the large interest in stress is the assumption that it is a causal factor in emotional and somatic illness. In a study of the influence of daily stress on health, Delongis, Folkman, and Lazarus (1988) found a significant relationship between daily stress and occurrence of both

concurrent and subsequent health problems such as flu, sore throat, headaches, and backaches. These researchers also found that persons low in psycho-social resources tend to be vulnerable to illness when their stress level increases, irrespective of their initial level of stress. In a landmark study Cohen, Tyrrell, and Smith (1991) clinically demonstrated that psychological stress was related, in a dose response manner, to an increased risk of acute infectious respiratory illness.

One stress factor that has received particular attention has been role conflict. People fulfill at least two distinct roles in their work and family domains; these roles have the potential for generating conflicting demands. Greenglass (1985) examined the relationship between role conflict and various symptoms of stress in female managers; the study found that the higher the frequency of reported interference between job and family life, the greater was the depression, irritation and anxiety in the female subjects. In a further study, Greenglass, Pantomy, and Burke (1988) observed that both male and female teachers appeared to experience greater depression, anxiety, and somatization when stress resulting from conflict between work and family responsibilities was high. Using another population, Burke (1988) reported that police officers reporting greater work-family conflicts were also more likely to report more psychosomatic symptoms and more negative feeling states. Satisfaction with job and family congruence was found to be related to employee's health and mood (Jackson, Zedeck, & Summers, 1985). Hence, it would appear that role conflict can have deleterious psychological consequences.

It is not always possible to predict whether a role, or even a combination of roles, will be distressing to the individual based exclusively

on the conditions that can be easily and objectively observed. It is not the roles themselves, but the stresses and satisfactions experienced within them that have an impact on the individual. Subjectively experienced stressors have been found to be important in understanding and predicting psychological outcomes. For example, perception of spousal support and acceptance (Aneshansel, 1986; Vanfossen, 1986), and perceived conflict between roles (Krause & Geyer-Pestello, 1985) have all been found to be important variables.

There is a wealth of information on the effects of subjectively experienced stressors at work on psychological outcomes. Ganster, Fusilier and Mayes (1986) observed that somatic complaints increased with the amount of reported organizational stress. Jackson and Maslach (1982) found a relationship between self-reported burnout and psychosomatic symptoms. Clark (1990) was able to narrow down this relationship in a study of military personnel, and found that reported emotional exhaustion was the main factor that was positively related to psychosomatic complaints.

When looking at the association between stressors and psychological and physiological outcomes, the specific predictors are not always obvious and intuitive. For example, Schwartzberg and Dytell (1988) studied employed and unemployed mothers, and although they found no difference between the two groups in the amount of stress experienced, the importance of the stresses in predicting psychological outcomes differed as a function of employment status of the women. Essentially, they found that employed women were less sensitive to family sources of stress.

In summary, the literature illustrates that both work and family have been studied in a stress framework. Unfortunately, these two areas have been

investigated independently. Since work and family domains individually contain the elements of a stress paradigm, it is expected that they can also be studied jointly within this theoretical framework. Before proceeding with such research, attention is dispensed to some of the more pervasive methodological and statistical concerns that face researchers in the quest to unravel the work and family linkage.

Chapter 3

Methodological and Statistical Issues in the Research of Work and Family

Although research interest in work and family dates back to the 1960's, it is only in the past decade that there has been an influx of research investigations in this area (Voydanoff, 1988). Since the field of work and family is relatively new, some investigators feel that by definition, the research is exploratory (Kelly, 1988). As a consequence, Kelly (1988) notes that several standard practices rigorously pursued in the more developed fields (e.g., sampling issues) are excused in this area. Methodological and statistical shortcomings limit the pursuit and acquisition of knowledge in this area, and hence need to be addressed. This chapter reviews some of the more pertinent methodological issues (such as, the comparison of laboratory against field research, the use of objective versus subjective measures, cross-sectional and longitudinal designs) and statistical challenges (such as regression versus path analysis versus covariance structure modeling). In addition to comparing and contrasting different methods, shortcomings and limitations will be identified.

Methodological Issues

The field of work and family, being an off-shoot of occupational stress research, shares many of its problems. Kasl (1978) has outlined several methodological problems that hinder the development of knowledge about occupational stress. First, he noted that the studies tend to be retrospective in design (contrast with longitudinal, prospective, and follow-up designs), limiting the causal analyses and interpretations. Second, more standardized methods and instruments are needed to assess psycho-social risk factors and psychological outcomes. Third, assessment of working conditions should

include extensive use of collateral measures that go beyond self report of the worker, perhaps including assessment by co-workers and managers. Fourth, Kasl (1978) suggested that it is desirable to establish representative sampling procedures and replications (e.g., at multiple centres) to ascertain that the findings will have general application. Fifth, there is the need for increased use of advanced statistical methods (e.g., structural analysis) to improve understanding of causal mechanisms and pathways. Other suggestions include the development of more complex models rather than stressor-outcome relationships, and the incorporation of potential moderators, like coping and social support.

The criticisms outlined above have led to some noted changes, such as, the use of longitudinal studies (e.g., Fisher, 1985; Karasek, Baker, Marxer, Ahlbom, & Theorell, 1981), the inclusion of moderators (e.g., Gore, 1986; House, 1981), the move towards standardizing methods and measures (e.g., Type A assessed using the Jenkins Activity Survey, 1979; burnout assessed with the Maslach Burnout Inventory, 1986), and attempts to measure work in an objective way (e.g., Frese, 1985). Nevertheless, there continue to be many studies that have not adopted these methodological suggestions, and Kasl (1986, 1987) and Burke (1987) have been able to repeat many of these criticisms as late as 1987. A review of the literature indicates that these suggestions have not necessarily been ignored but rather that a more advanced conceptual and methodological approach leads to problems that are different from those encountered in the less advanced methodology.

Laboratory and Field Research

The long-standing debate over laboratory and field research continues. In a comparison of laboratory and field research, Giorgi (1986) proposed that

the two research situations seem to trade on observation and control. While the laboratory is a place where control is primary and observation is secondary, in the field observation dominates and control is haphazard.

Field research remains the most popular method of information gathering in industrial and organizational psychology. In fact, there is skepticism as to the value and appropriateness of laboratory research in these areas. Giffin and Kacmar (1991) believe that certain editors and reviewers have a negative bias against laboratory studies. These researchers conducted a review of the five leading organizational and organizational/industrial journals (e.g., Journal of Organizational Behavior, Journal of Management, and Academy of Management Journal) for the methodology used, and found that between 1986 and 1988 (inclusive) the number of laboratory studies had declined in eighty percent of the journals. In those three years, 7.5 % (10) of the published studies in these five leading journals were laboratory based in contrast to 55 % (73) being field studies. The remainder were archival research.

There are many compelling reasons for espousing laboratory rather than field research. The strengths of laboratory studies are that the researcher can randomly assign subjects to treatment conditions, extraneous conditions and variables can be controlled, and independent variables can be manipulated in a controlled manner. Above all, laboratory research provides the investigator with the opportunity to isolate specific variables and test hypotheses about cause and effect.

In any research it is appealing to be able to control what one measures. However, what is being measured must be the phenomena of interest otherwise no amount of control and precision will advance knowledge.

Lazarus and Folkman (1984) emphasized this concern, and outlined four persuasive reasons for avoiding the laboratory in stress research. First, the stressors used in the laboratory are often weak imitations of the stressors that people face in their daily lives, especially since the laboratory stressor is finite and, moreover, controlled by the subject. Second, many adaptational outcomes, such as the elicitation of coping responses, take time to emerge and hence cannot be captured by laboratory research, which is time limited. Third, they suggest that the laboratory cannot provide important information about the variations in the sources of stress or patterns of coping associated with age and other socio-demographic characteristics. Observational studies in natural setting are necessary for such investigations. Their fourth, and perhaps the most serious concern pertains to the very essence of laboratory research, namely providing precise control over the key variables of human behaviour. To obtain precise measurement, the experimenter must limit what the subject is allowed to do, and hence the response is not representative of events in the natural setting. Also, Lazarus and Folkman (1984) suggest that often there is only an illusion of precision and control, since the experimenter fails to reflect what is going on psychologically and socially in the experimental context.

Many of these concerns have been echoed by other researchers (e.g., Burke, 1987; Chapanis, 1976; Fisher, 1984; Gordon, Slade, & Schmitt, 1986; Kelman, 1967; Rosenthal & Rosnow, 1969). In summary, it would appear that there are limitations of the laboratory which outweigh its applicability to important research questions. The major criticisms appear to be based on artifacts of the laboratory (e.g., demand characteristics, evaluation apprehension, and experimenter expectancy), lack of realism in the laboratory

setting, and the limited generality or ecological validity of the results.

While the controversy about field versus laboratory continues, one position held by most researchers in the field of industrial and organizational psychology is that the two methodologies are complimentary approaches. For example, while promoting the value and need for more laboratory research, Fromkin and Streufert (1983) recognised that some phenomena cannot be studied directly in laboratory settings. Dobbins, Lane, and Steiner (1988) suggested that one important contribution of laboratory research is to improve understanding of the processes that underlie behaviour in work settings. Moreover, introductory and other textbooks (e.g., Berry & Houston, 1993; Dunette, 1983) tend to devote equal attention to laboratory and field research.

Towards the aim of increasing laboratory research, some investigators in the field of organizational and industrial psychology have undertaken the issue of what makes good laboratory research. For example, one question of prime importance has centred around the presentation mode of information to more closely simulate real life settings. Dipboye (1985) has suggested that the use of video-taped performances in decision making tasks would more closely simulate the real life setting when compared to written information. However, it appears that greater effect sizes are obtained with written information (Murphy, Herr, Lockhart, & Maguire, 1986). In the continued debate, Woehr and Lance (1991) investigated this issue and found that in judgement/decision making research in the laboratory, direct observation methods such as videotape did not represent as large an increment at representing real life as previously claimed. Moreover, they found that an individual's ability to identify target behaviours was irrespective of stimulus

presentation mode.

The lack of laboratory experimentation has left a vacuum in the data about organizational phenomena, and Fromkin and Streufert (1983) urged that “direct experimentation within organizations is of paramount importance and is required immediately” (p. 416). These authors demonstrated the unique contributions of experimental strategies, while others (e.g., Giffin & Kacmar, 1991) proposed several opportunities for laboratory studies in organizational and industrial research. However, the latter make no claim that the laboratory is the only or the better alternative, only that it is an alternative that should be considered. After all, they emphasized that the research question should dictate the methodology.

Objective and Subjective Measures

Several researchers (e.g., Cooper & Payne, 1992) have argued for the refinement of measures of organizational stress and for the need to supplement self-report measures with more objective ones. A review of the literature on work and family uncovers rampant use of self-report measures in this field, and many researchers have called attention to this practice and to its limitations (e.g., Burke, 1987; Burke & Greenglass, 1986; Greenhaus, 1988; Shultz, et al., 1988).

There are several reasons for using self report measures; a major advantage is that administration is easy as it elicits minimum interference and resistance from the employees and the organizations involved. This is especially obvious when compared to the intrusive nature of obtaining physiological measures to assess dysfunction (Fried, 1988). When assessing variables, ranging from the job characteristic to the individual’s physiological state, the question remains whether or not self-report inventories reflect the

actual situation. There are also noted interpretational difficulties encountered with the use of self report measures, and several compelling reasons for using objective measures.

The problems of interpreting a correlation between subjective measures of two variables are worth noting. Obtained significant correlations could be due to method variance, overlap in the content between independent and dependent measures, problems associated with a third variable that influences both the dependent and independent variables, current well-being influencing the judgement of the antecedent (e.g., the stressor), and demand characteristics encouraging the subjects to give the researchers what they are perceived to want (Orne, 1962). These problems are reduced by using objective measures.

Murphy, Hurrell, and Quick (1992) suggest two main reasons for the use of objective measures: to validate the employee's perceptions of the work characteristics, and to provide employers with specific guidance on changes to be made in order to improve the well-being of workers. From a methodological viewpoint, if the employee's perceptions are not objectively measured then trivial correlations could occur between subjective measures of stress and well-being (e.g., Kasl, 1978). For practical reasons, if objective measures are not taken then it would be impossible to determine how stress is to be reduced: by focussing on the individual or focussing on the organization. Frese and Zapf (1988) suggested a theoretical rationale for the use of objective measures. These researchers believe that a trend integrating the popular cognitive viewpoint with the behavioural approach, sparked by the better understanding of the role of environmental feedback in the production of accurate cognitions (Neisser, 1967), has restored the theoretical

status of objective conceptualizations and measures in the study of industrial psychology.

While the problems of using subjective assessment (e.g., self-report questionnaires) have been openly discussed, and the virtues of objective measures (e.g., observer ratings) have been applauded, the problems associated with observer ratings have been largely ignored, even by researchers who have used observer ratings. Zapf (1987, reported in Frese & Zapf, 1988) proposed four problems that are prevalent in the acquisition of observers' judgements. First, any observation is limited in time. The observer may miss peak stressors, which although powerful in their impact, appear infrequently. Second, some stressors that are related to mental processes (e.g., high concentration) cannot be observed directly. Third, the presence of observers changes work behaviour as has been well documented by several researchers (e.g., Frese & Zapf, 1968; Hawthorne studies- Roethlisberger & Dickson, 1939, reported in Berry & Houston, 1993). Last, the workplaces available for observation are not necessarily representative of all workplaces, especially since companies with bad working conditions tend to be off limits to researchers, and supervisors tend to restrict researchers to more presentable work areas. In each of these cases, the peak stressors cannot be observed, with resulting under-estimation in their variance. This makes it very difficult to obtain significant correlations, as reflected in several reports of non-significant findings in this area (Gardell, 1971; Wells, 1982).

Another possible problem about objective data may stem from the conceptualization of objective and subjective measures (Frese & Zapf, 1988). In general, stress research has considered subjective methods to be questionnaire measures filled out by the subject, and objective methods to be

ratings done by expert raters. Instead of this general classification, Frese and Zapf (1988) suggested that, whether a measure or an item is assessed as subjective or objective should be based on the degree of 'cognitive and emotional processing' required to complete the task, rather than by the method of assessment. Some questionnaire answers, such as those related to age or hours spent at the office, require very little 'cognitive and emotional processing,' and hence can be deemed as an objective report. In the same light, they suggested that some 'objective' ratings made by observers may be reasonably influenced by 'cognitive and emotional processing'. As a result, researchers observe different degrees of inter-rater reliability even in the measure of 'objective' dimensions.

If one accepts the argument (by Frese & Zapf, 1988) that both the subject and the observer perform 'cognitive and emotional processing' to a certain degree, then the same problems in self-report (noted above) are relevant with the use of 'objective' measures in the assessment of antecedent variables. However, these researchers correctly point to the difference that in the case of the observers, the effects lead to pure error variance in the antecedent measure since the deviation from the 'true score' is not associated with the subject's reported outcome. Frese and Zapf (1988) compared the data obtained from individual subjects, experts, and groups on several job dimensions, and concluded that objective measures of job characteristics tended to underestimate the true correlation between job factors and health outcomes.

There is one documented situation where self-report has been demonstrated to be better than objective measurement. Researchers (e.g., Clements, Hafer & Vermillion, 1976; MacKay, 1980; Thayer, 1967) have demonstrated the relationship between self-reported arousal and various

physiological variables such as skin resistance, heart rate, body temperature, respiration rate, and finger blood volume. Moreover, Thayer (1967) noted that the correlations between self-reported arousal and a variety of physiological measures were stronger than the correlation of the physiological measures among themselves. Also, this researcher suggested that self-report measures of physiological arousal "may be more representative of general bodily activation than any single peripheral physiological system" (p. 677). Thayer cautioned however, that individual differences may exist in the discrimination and accuracy of self-reports of activation.

As noted above, one objection to the use of self-report measures is method variance. Method variance refers to variance attributed to the measurement method rather than to the construct of interest. One such error can be due to biases associated with social desirability. The term social desirability is most closely linked with the work of Edwards (1953), who investigated its effects on the MMPI. However, the term has been used more generally to represent tendencies to distort self-reports in a favourable direction. This perspective implies that controlling for social desirability would improve or enhance validity. This has not necessarily been the case. Dickens (1963) compared self report with ratings obtained from high school principals and trained psychological assessors in the validation of the California Personality Inventory; surprisingly, he found that correcting for response sets did not strengthen the observed association. Goldberg, Rorer, and Greene (1970), along with McCrae and Costa (1983) obtained similar results. The latter found that correcting for social desirability actually lowered agreement between self-report and the objective criterion of spousal ratings.

In an investigation more applicable to the field of industrial and organizational psychology, Somers and Birnbaum (1991) studied self-appraised job performance in relation to supervisory ratings and found no evidence of leniency error or restriction of range in self-appraised job performance. Self and supervisory ratings were found to be convergent. In another study, Wells (1982) investigated the association between objective work conditions and perception of occupational stressors, and found reasonable support for this association in blue collar workers.

The issue of method variance in studies employing self appraisal remains unresolved and continues to arouse research interest. Using the classic procedure proposed by Campbell and Fiske (1959), Spector (1987) concluded that there was little evidence of method variance in multitrait-multimethod data from 10 studies of self-reported affect and perceptions at work. However, in a re-analysis using a powerful confirmatory factor analytic approach Williams, Cote, and Buckley (1989) concluded that method variance was prevalent. In an attempt to settle this discrepancy, Bagozzi and Yi (1990) re-analysed these 10 studies using a direct product model and came to the decision that method variance was more prevalent than Spector concluded but less prevalent than Williams et al. asserted. It would appear that whether method variance is a concern depends on the method of analysis employed, and hence there are no easy ways to settle the issue.

Cross-Sectional and Longitudinal Designs

Cross-sectional designs are the most frequently employed research methods in the field of work and family, and occupational stress. There are several advantages to the use of cross-sectional designs and these may outweigh the weaknesses due to the development stage of the field. This

section will review some of the benefits and costs of using a cross-sectional design, and the merits, shortcomings, and special considerations of the more highly acclaimed longitudinal design.

A major strength of a cross-sectional design is that it is a method of assessing the prevalence or relative prevalence of an outcome or risk factor in a given population. Also, the method allows for the study of several outcomes simultaneously. A cross-sectional design allows more control over subject selection since the problem of subject attrition, which is prevalent in longitudinal designs, is eliminated. Moreover, since there is no waiting time, it is fast, relatively inexpensive, and there is no concern about subject attrition. It is considered to be a good first step in a cohort study or experiment. Most importantly, the cross-sectional design can establish associations among variables, which can later be studied more closely for causal inferences.

A major weakness of cross-sectional studies is that one cannot establish causal relations from data collected in a single time frame. There is also the potential for survivor bias in this type of research, such that the sample studied does not reflect a representative sample of the population but only those who have 'survived' the condition; this may lead to a restriction of range, which has an impact on the statistical analysis. There could also be potential bias in measuring predictors. Cross-sectional studies with no control group are more likely to be vulnerable to the effects of inadequate procedures (e.g., inaccurate data collection cannot be rectified if only one time measure is obtained), and to transition effects (e.g., especially stressful day). It has been suggested that use of longitudinal studies can help reduce problems associated with cross-sectional studies (see Dwyer, 1983).

One especially promising advantage of using longitudinal designs is the potential for empirical validation of causal inferences. However, Dwyer (1983) cautions about methodological problems such as third variable problems, in addition to cohort and selection effects. Moreover, Frese and Kapf (1988) warn that longitudinal designs present problems in causal modeling, since very little knowledge exists about the exact time-frame needed for a stressor to have an impact on dysfunctional status. From a methodological and statistical point, time mis-specification can lead to serious problems (Dwyer, 1983).

Frese and Kapf (1988) suggest several possible roles that time plays in the stress model. In the *stress-reaction model*, the impact of a stressor increases and leads to dysfunction after a certain time period, but improves upon removal of the stressor. The *accumulation model* purports that illness (e.g., ulcers) comes about as a result of the accumulation of stress effects and does not go away even after the reduction of the stressor. When the inner dynamic operates in such a fashion that there is further increase in dysfunction even after the stressor is removed (although this increase may be decelerated), the effect can be illustrated in the *dynamic accumulation model*. The *adjustment model* is related to the stress effect model in that initially there is a linear increase in dysfunction with the duration of the stressor, however, after a certain point, an adjustment process sets in and the dysfunctioning decreases although the stressor is still present. Sometimes, a dysfunction does not appear for a long time after exposure to the stressor (e.g., cancer) as described in the *sleeper-effect model*. Besides the lack of information regarding the exposure time to a particular stressor before illness or adaptation sets in, the exposure intensity is also unknown (Frese & Kapf,

1988). Hence, the authors recommended the need for more exploratory studies on how stressors have an impact on dysfunction.

There have been a few longitudinal investigations of the work/family interface (e.g., Belsky, Perry-Jenkins, & Crouter, 1985; Greenglass, Fiksenbaum, & Burke (1993); McHale & Houston, 1985; Piotrowski, 1979). These studies have generally taken the form of repeated data collection after designated periods of time of approximately three to twelve months. However, some researchers have come up with some innovative methods to study work and family in a longitudinal fashion. Lee (1984) used both a series of interviews and collection of diary records to study patterns of structuring daily life in the study of work and family. Subjects were required to indicate where they were, what they were doing, who they were with, and in what time frames these situations occurred for the waking hours of nine consecutive days. Bolger et al. (1989) used a daily diary format, to record role-related stress and mood daily over a period of six-weeks. These researchers were able to clearly show the spill-over and cross-over effects of interpersonal conflict and overload between home and family. These studies make clear the superiority of longitudinal designs in sorting out causal relationships.

Some researchers, on the other hand, call for a more diverse set of research methodologies. While stating that "we should not be so tied to a particular methodology that we lose sight of the contributions that the other approaches can make" (p. 40), Greenhaus (1988) acknowledges that although some cross-sectional studies can provide important information, they can only take us so far. Lambert (1990) believes that cross-sectional studies can provide a considerable amount of insight. She feels that to enhance this knowledge, one should assess such factors as direct and indirect relations

postulated on the basis of logic and theory, and which links job histories and family histories.

Statistical Issues

To capture the complexities of the relationship between work and family researchers must employ sophisticated statistical techniques (Lambert, 1990). Multivariate techniques such as multiple regression, path analysis, and structural equation modeling make it possible to specify and list complex relationships. This section is devoted to a review of the statistical techniques currently used, their benefits and limitations.

Regression Techniques

One of the most frequently employed methods of data analysis in occupational and family research is regression techniques. There are several types of regression models. Those that describe the relationship between a single dependent variable and several explanatory variables are referred to as univariate multiple regression or simply multiple regression. Most work and family research incorporate several dependent and several independent variables, and the regression method is hence referred to as a multivariate multiple regression (Johnson & Wichern, 1982; Streiner, 1986).

Regression methods are a definite improvement over purely correlational methods in a number of important ways. The regression method allows the researcher to investigate the relation between more than two variables at a time. In the social sciences, one is rarely restricted to only two variables, or interested in simple relations, and hence regression methods are highly welcomed. Regression analysis also allows the researcher to parse out relevant from irrelevant independent variables. For example, an independent variable that may have a high simple correlation with a

dependent variable may not show much promise in a multiple regression. This happens when the first independent variable is highly correlated with a second independent variable, which is entered in the regression equation first. Moreover, the technique allows researchers to gain insight into the conditional expectation of a variable (referred to as outcome) as a function of another variable (referred to as predictor).

One important limitation of the regression technique is that it fails to test the directionality of inferences. A principal goal of research in psychology is to provide a basis for inferring causation. This is normally achieved through active manipulation and control of independent variables, random assignment to treatment conditions, and appropriate methods of data analysis. Causal inferences are very difficult to achieve without true experimentation. However, true experimentation in the field of work and family, as in most social sciences, is extremely difficult both for methodological reasons (as outlined above) and for ethical reasons. To attain a closer approximation to their theoretical models, incorporating causal relations, social scientists have developed sophisticated statistical analysis of data obtained in non-experimental and quasi-experimental contexts.

Path Analysis - Structural Equation Analysis

The most frequent technique for testing the effects of predictor variables on outcome variables, as well as their indirect effects through intervening variables, has been through path analysis. The geneticist Sewall Wright developed the method of path analysis (in 1918-1921) to explain causal relations in population genetics (Goldberger, 1972). In 1925, Wright extended the use of the technique to economics, looking at pricing, and the role of supply and demand. The goal of path analysis (or structural equation

analysis) is to provide plausible explanations of observed correlations by constructing models of cause and effect relations among variables. In general, the procedure estimates the coefficients of a set of linear structural equations representing the cause and effect relationships hypothesized by the investigator. Each equation in the model represents a causal link rather than a mere empirical association (Johnson & Wichern, 1982). Hence, the structural parameters do not generally coincide with the coefficients of regression among observed variables.

The advantages of structural equation analysis over a regression technique are embraced by researchers in the social sciences (e.g., Dillon & Goldstein, 1984; Goldberger, 1973). Goldberger (1973) proposed three conditions where structural equations are important, and regression parameters fail to provide relevant information: if measurement errors are present in the observed variables, if the predicted variables are interdependent, and if certain omitted predictor variables are statistically related to the specified predictor variables. Essentially, the shared concern in these three scenarios is related to the issue that the regression parameters are mixtures of the structural parameters and thus the structural parameters are more fundamental measures (Goldberger, 1973). Consequently, structural parameters are more invariant or stable to changes in one variable in the population.

Although path analysis was highly applauded and a welcomed improvement from regression methods, there have been concerns about the validity of path analysis and a push for a more sophisticated method of analysis (Lavee, 1988). In path analysis, residuals are assumed to be uncorrelated, moreover, single indicators are employed to measure a

variable. In the social sciences, many of the variables of interest are unobserved, complex constructs, which are difficult to capture reliably with single indicators. This has led to the development of a new approach to study structural models, known as the *latent variable structural equation models* or as *analysis of covariance structure models* (Long, 1983).

Covariance Structure Modeling

The covariance structure model merges the logic of confirmatory factor analysis, multiple regression, and path analysis within a single data analytic framework. Covariance structure models are often referred to as LISREL after the statistical analytic technique and the computer program developed by Jöreskog and Sörbom (Jöreskog, 1973, 1978; Jöreskog & Sörbom, 1984). It should be noted that several models for the analysis of covariance structure have been developed but LISREL appears to be the most popular. LISREL was developed to handle two basic problems prevalent in the social and behavioural sciences. The first pertains to the measurement of theoretical concepts or constructs that are not directly measurable or observable. The second role of LISREL is to capture the causal relations among these variables that cannot be directly observed (latent variables).

LISREL is a powerful and versatile method. It estimates the causal relations among the unobserved (latent) variables, and allows for measurement errors and correlated residuals. LISREL can also handle a variety of statistical methods such as regression analysis, analysis of variance, multivariate analysis of variance, and various extensions thereof. It is normally applied to data from a single sample but can also be used to analyse samples from several populations simultaneously. Given the versatility of the method, its use has been growing steadily in various social science fields

(Lavee, 1988).

One major problem with covariance structure model (e.g., LISREL) is that it is complex and hard to learn and use. To that end, several attempts (e.g., Goldberger, 1972, 1973; Hayduk, 1987; Jöreskog & Sörbom, 1988; Lavee, 1988) have been made to explain and clarify the method for use by non-mathematically inclined researchers. Despite the difficulty in employing this method of analysis, a review by Bentler (1990) suggests that the use of covariance structure modeling is on the rise. The author reported 72 studies employing the technique between 1977 and 1987, inclusive (average approx. 6 studies yearly), and 28 studies in 1988 and 1989 (average 14 studies per year).

Publications, including textbooks, textbook chapters and articles, applaud the emergence of covariance structure modeling but also caution researchers about its use and interpretation. Concerns revolve around such issues as sample size, choosing a goodness of fit index, model modification, flawed and unjustified interpretations. Some of the more pertinent issues will be briefly addressed.

Covariance structure modeling is used to test whether a given theoretical model is consistent or inconsistent with the data. Therefore, researchers are primarily interested in the goodness of fit of a model. This has normally been achieved by looking at the chi-square statistics (Lavee, 1988) which is a global fit index. This statistic has limitations and Breckler (1990) suggests that researchers should use several fit criteria rather than relying on a single statistic. To properly assess a model, he recommends that attention be directed to three areas: the entire model (global fit), each equation in the model (e.g., squared multiple correlations) and individual parameter estimates (e.g., t-values).

A number of methods are available to test the global fit of a model. Apart from the chi-square statistics, several researchers (e.g., Breckler, 1990; Hayduk, 1987; Jöreskog & Sörbom, 1988) suggest the evaluation of the Root Mean Square Residual (which reflects the deviation between the observed covariances and their estimates) and comparison of the model with theoretically competing models. A number of fit indices are also available, including the Goodness-of-Fit Index (GFI), the Adjusted-Goodness-of-Fit Index (AGFI), Bentler and Bonett normed (NFI) and non-normed fit index (NNFI).

Controversy exists on the choice of assessment of global model fit. It has been suggested that some of the fit indices vary systematically with sample size (MacDonald & Marsh, 1990). Two types of sample size influences exist: whether sample size directly enters the calculation of fit index, and whether the mean of the sampling distribution of the fit index is associated with sample size. MacDonald and Marsh (1990) recommend that a normed function be used as an unbiased Goodness of Fit Index. However, two new indices proposed by Bentler (1990), the Fit Index (FI) which is non-normed and the Comparative Fit Index (CFI) which is normed, performed well at all sample sizes. Furthermore, in an evaluation of Goodness-of-Fit indices, Mulaik, James, Van Alstine, Bennett, Lind, and Stilwell (1989) found that some indices (e.g., the normed-fit index and the LISREL GFI) were quite comparable. Given the lack of consensus on the issue, Bollen (1990) recommends prudence through the reporting of multiple measures rather than relying on a single choice.

Hypothesized models frequently do not provide an adequate fit to the data (Breckler, 1990). It has been recommended that if a model is testable but

does not fit the data well, the modification indices can provide important information on improving the fit of a model. Modification of a model is supposed to be based on substantive theorizing rather than data driven. Unfortunately, there is a lack of substantive theory in fields that are in their relative infancy such as work and family, and hence, modifications are often data driven. MacCallum, Roznowski, and Necowitz (1992) warned that this process is likely to capitalize on chance characteristics of the data, and raised the question of the generalizability of the modified model to other samples, or to the population. These researchers demonstrated this issue empirically by looking at repeated samples in two different populations. As a result, they recommended that testing against an alternative a-priori model is a preferred strategy.

Even when the hypothesized model is acceptable, there are sometimes aberrations in the interpretation of the analysis. Two prominent issues pertain to the uniqueness of the model and to the causal inference about the model. An acceptable model in a covariance structure analysis is one that the data fails to disconfirm. There are likely many other equally fitting models that are not disconfirmed. Researchers do not always acknowledge the presence of equivalent models that could fit the data, and unjustifiably present their solution as a unique possibility. It is also a flaw for the researcher to interpret the accepted model as proof of causality, as often noticed in the literature. Covariance structure modeling does not provide a sufficient basis for drawing such inferences. Ultimately, the inference of causality does not depend on the data analytic system but on criteria such as manipulation and control of independent variables. This confusion may have originated from the many names by which covariance structure is

referred to, including causal modeling (e.g., Bentler, 1980).

Regardless of the research method and the data analytic system employed, it is important for the researcher to recognize the limitations of the design and the shortcomings of the statistical technique. Many investigators have failed to do so, as several authors, including Kline and Cowan (1988) and Robbins (1987), have noted. Not only researchers, but also journal reviewers and editors should be sensitized such that their over-enthusiasm about interest in this field will not mask the scientific rigor and interpretation needed for the advancement of knowledge.

Chapter 4

Testing a Work/Family Stress Model

Purpose of this Study

The current research tests a hypothetical model (see Figure 1) of work and family stress, which extends previous investigations in three important ways. First, it conceptualizes stress in an integrated and systemic framework, such that experienced strain or outcomes of stress are a function of joint work and home stressors. Second, it blends into the overall model the role of the resources available to individuals within each setting. Third, it incorporates into the stressor-strain model the role of mediating variables, such that stressors and resources do not have a direct impact on psychological outcomes, but interact through intermediate variables such as emotional exhaustion.

The paths in the hypothetical model outlined in Figure 1 are based on both the proposed conceptualization of work and family, and findings from past research. This Integration Model suggests that there should be paths from predictors in a domain to criteria in both the work and family domains. For example, paths are present from resources at home to both the work domain (i.e. Emotional Exhaustion and Personal Accomplishment) and the home domain (i.e. Marital Satisfaction). Past research has shown these associations to be consistent. However, contrary to the proposed conceptualization, sometimes paths from predictors in one domain to criteria in the same or the opposite domain are omitted. For example, there is no path from work demands to personal accomplishment at work or to marital satisfaction. Such lines were omitted when there was no clear evidence of such relationships in past research.

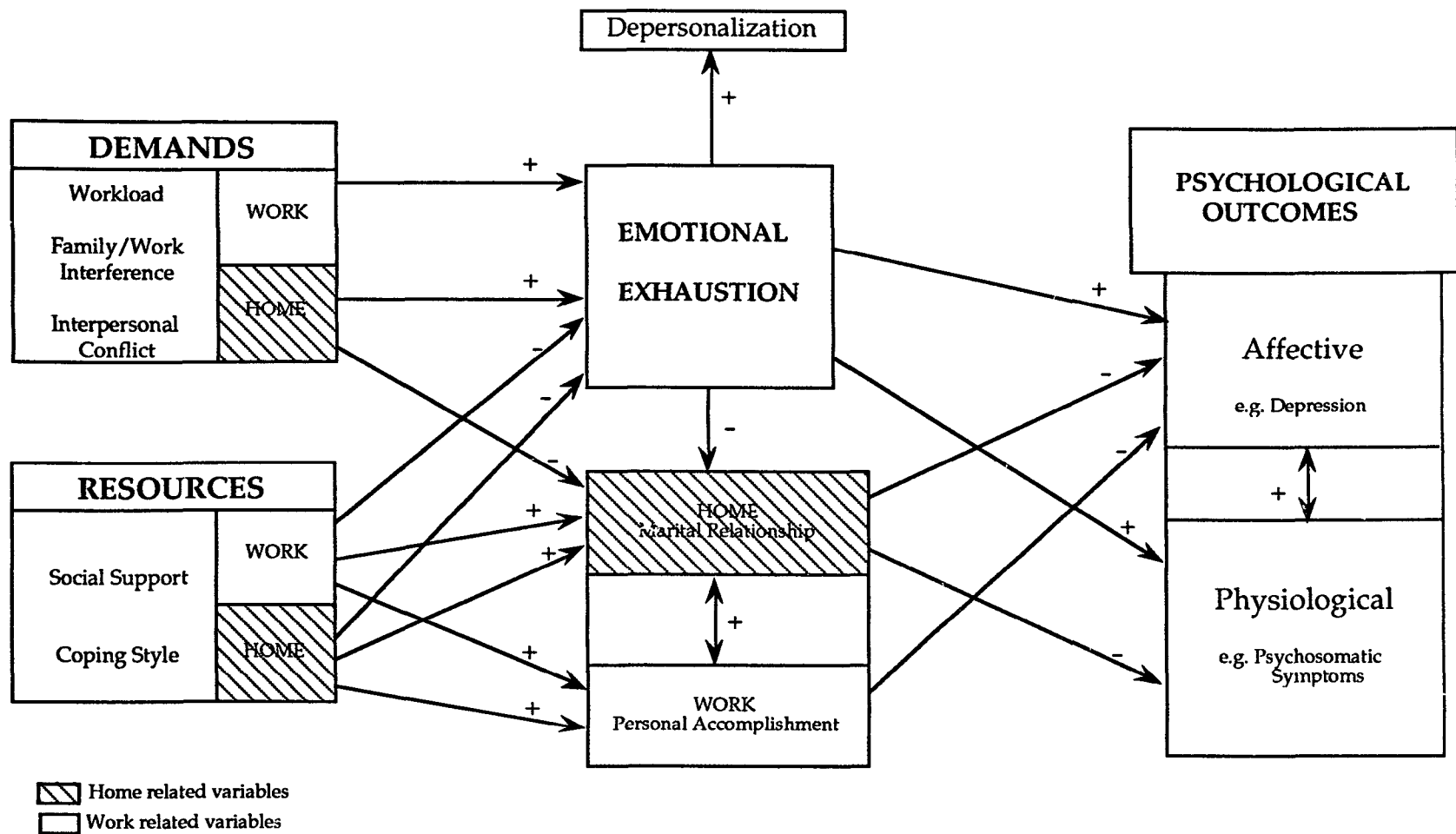


Figure. 1. Hypothetical Integration Model

The analysis tests the Integration Model statistically against alternative models. Two models that have received considerable attention in the literature have been that of "separate worlds", which suggests domain-specific influence only, and that of "mutual influence", which suggests cross-domain or reversed-influence of home and work. The Domain-Specific Model (see Figure 2) is a subset of the Integration Model in that only the paths from Figure 1 which outline domain-specific influences are included. The Reverse-Influence Model (see Figure 3) is also a subset of the Integration Model since only paths from Figure 1 marking cross-domain influences are present. One other alternative model was included in the analyses. Bentler and Bonett (1980) suggested that a most restricted model would be useful for comparison with other less restricted models in a nested sequence of models. The most restricted model of choice, where the variables do not exert any influence on each other, is the Null Model (see Figure 4).

A review of the literature suggests that the debate continues as to the specific role of resources. Some researchers suggest that the availability of resources relates linearly to outcomes, while others believe that resources act as buffers or moderators between demands and outcome, such that the relations between demands and outcomes is more salient for people lacking coping resources. The current research contrasts these two models within both the work and family domains.

Another comparison involves the role of mediator variables. It is possible that demands have a direct influence on general outcomes such as mood and psychosomatic symptoms as has been suggested by some investigators. In this study, contrasting models with no mediating variables are tested against the proposed model, which includes mediating variables,

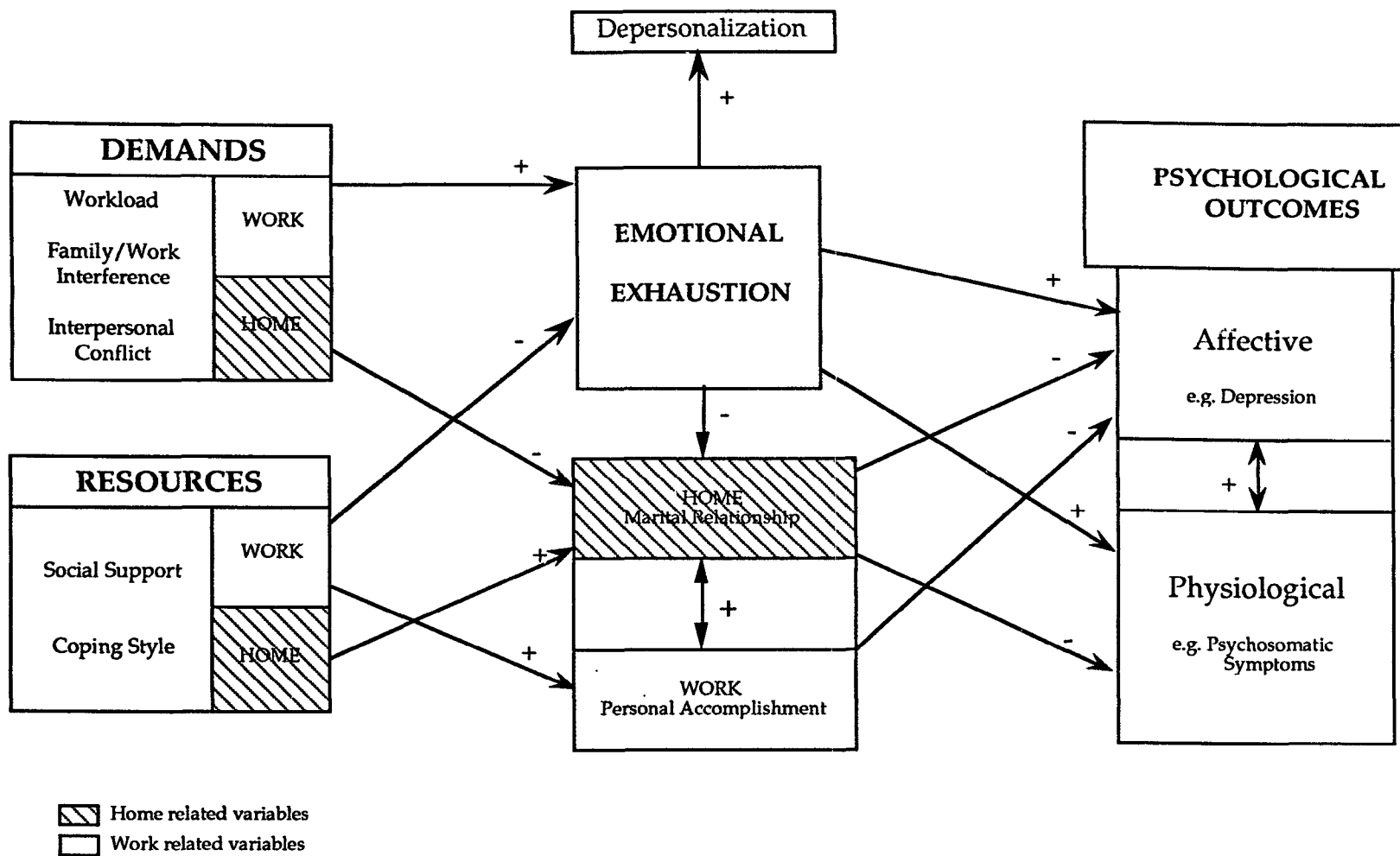


Figure 2. Domain-Specific Influence Model

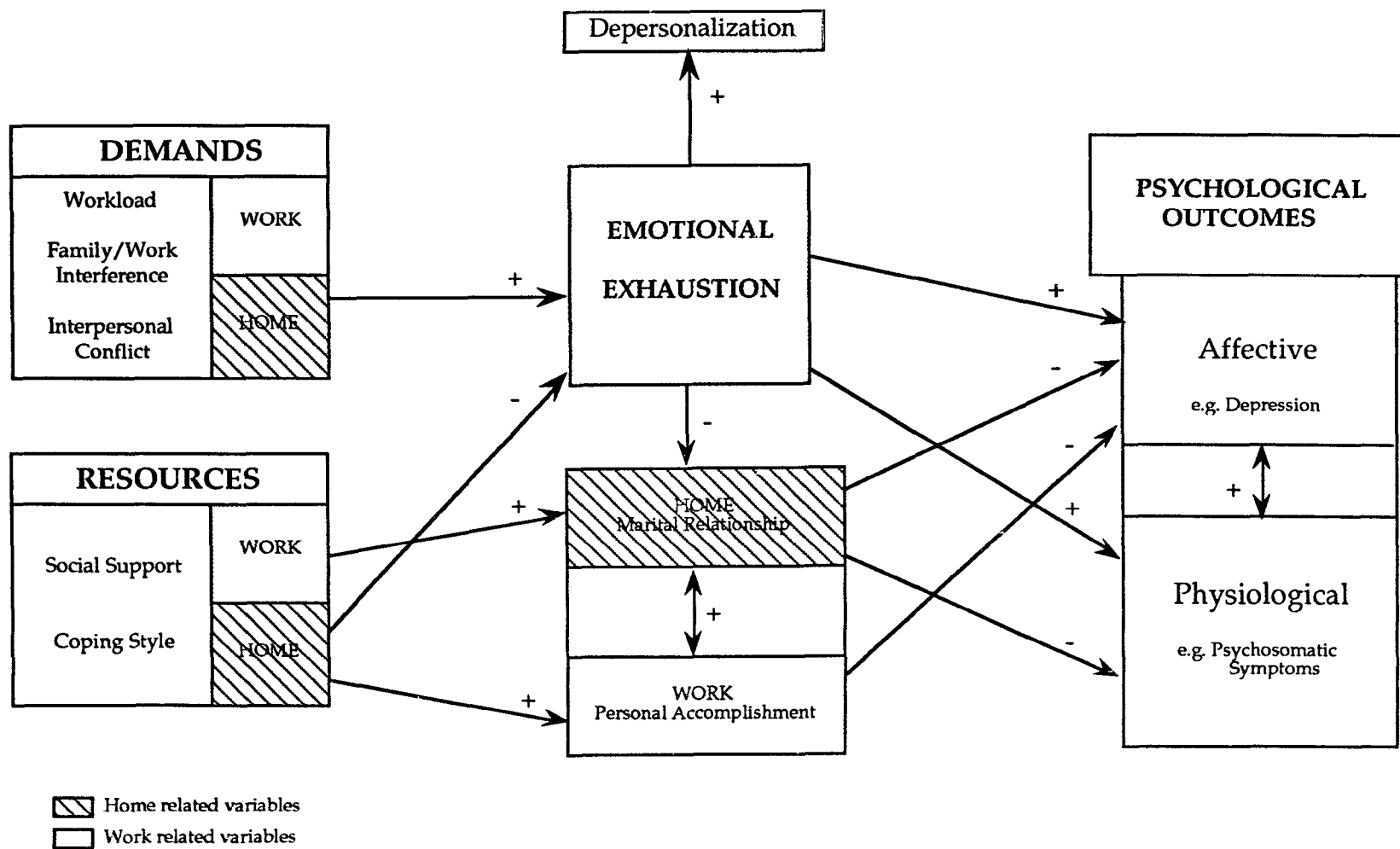


Figure 3. Reverse-Influence Model

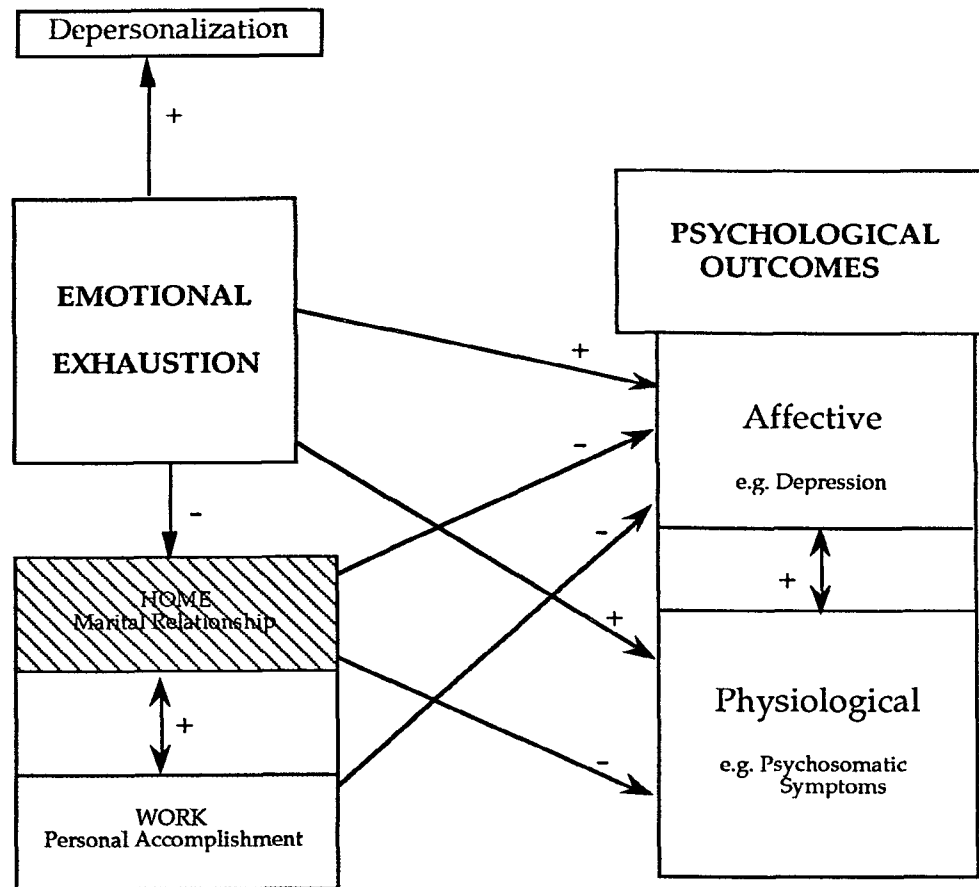
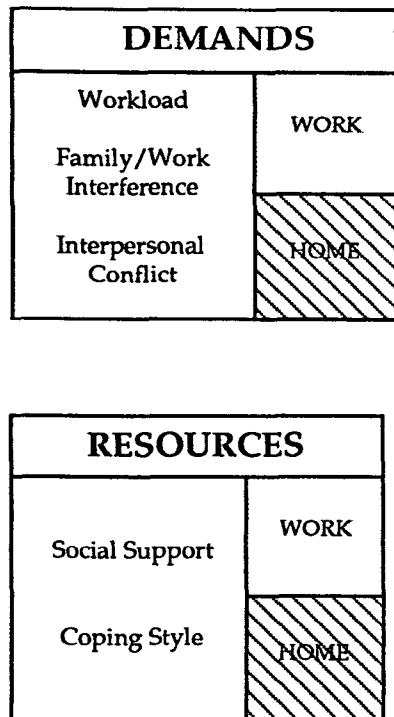


Figure 4. Null Model

namely burnout and satisfaction.

Essentially, the current study attempts to pull together various themes in the work and family stress perspective that others have examined in isolation. It proposes to present a comprehensive overview of the relationships, and produce an integrated model of work and family stress.

Hypotheses

The aim of the present study is to test a theoretical stress model that is predictive of satisfaction at home and at work, and psychological outcomes. Predictors of these variables are the demands placed on the individual at home and at work, and the resources available in these environments. High demands on a person would tend to lead to low levels of satisfaction and high levels of negative psychological consequences. Greater resources would tend to have an overall effect of increasing satisfaction and diminishing negative psychological outcomes.

The first set of hypotheses addresses the simple relationships among the variables in the study. A prediction was made when past research showed a strong association among the variables in question.

Section 1 - Simple Relationships Among Variables

a). Relationship between Demands and Emotional Exhaustion

Maslach (1982) argued that excessive demands placed on individuals can be emotionally depleting and increase their vulnerability to burnout. This has been confirmed in both work demands (e.g., Leiter, 1988) and home demands (e.g., Burke & Greenglass, 1986). Hence it was predicted that:

i) there would be a positive correlation between work demands and emotional exhaustion; and ii) there would be a positive correlation between

home demands and emotional exhaustion.

b). Relationship between Demands and Satisfaction

According to popular stress theories, stressors in a domain contribute to a reduction in the feelings of well-being in that environment. These relationships have been observed in the family domain between such factors as family argument and marital satisfaction (Moos, Cronkite, Billings, & Finney, 1984). Hence, it was predicted that: i) there would be a negative correlation between home demands and home satisfaction. No relationship was specified between work demands and satisfaction at home due to inconclusive evidence from past research (for review, see Kline & Cowan, 1988).

c). Relationship between Resources and Emotional Exhaustion

Several writers believe that individuals are better able to deal with the demands of their world if they have resources such as the necessary coping tools and/or supportive others (e.g., Hobfoll, 1988). Indeed, researchers (e.g., Leiter, 1990, 1991) have shown that both work and family resources are associated with reduced strain at work (e.g., emotional exhaustion). Hence, it was predicted that: i) there would be a negative correlation between resources at work and emotional exhaustion; and ii) there would be a negative correlation between resources at home and emotional exhaustion.

d). Relationship between Resources and Satisfaction

According to the stress literature (Cohen & Will, 1985; Hobfoll, 1988; Lazarus & Folkman, 1984), resources, such as supports and coping style, are positively associated with measures of well-being (e.g., satisfaction in a domain). These relationships have been confirmed by a number of researchers in the area of both work and family (Crouter, 1984; Greenglass &

Burke, 1986; Latack, 1986; Zborowski & Berman, 1990). Hence, it was predicted that: i) there would be a positive correlation between resources at work and work satisfaction; ii) there would be a positive correlation between resources at home and work satisfaction; iii) there would be a positive correlation between resources at work and home satisfaction; and iv) there would be a positive correlation between resources at home and home satisfaction.

e). Relationship between Emotional Exhaustion and Satisfaction

Maslach (1982) found that police officers who were experiencing stress at work (as measured by the emotional exhaustion subscale of the MBI) were also likely to report being less satisfied in their marriages. Hence, it was predicted that: i) there would be a negative correlation between emotional exhaustion and home satisfaction.

No relationship was specified between emotional exhaustion and satisfaction at work (namely, personal accomplishment) since past investigations have shown this association to be weak (Gold, Bachelor, & Michael, 1989; Iwanicki & Schwab, 1981; Stout & Williams, 1983).

f). Relationship between Emotional Exhaustion and Depersonalization

Past research has consistently shown a strong and positive relationship between these two measures (Gold, Bachelor, & Michael, 1989; Iwanicki & Schwab, 1981; Stout & Williams, 1983). Hence, it was predicted that: i) there would be a positive correlation between emotional exhaustion and depersonalization.

g). Relationship between Emotional Exhaustion and Psychological Outcomes

Several studies have shown a robust association between emotional

exhaustion and affective (e.g., Firth, McIntee, McKeown, & Britton, 1986; Landsbergis, 1988) and psychosomatic (e.g., Clark, 1990) symptoms. Hence, it was predicted that: i) there would be a positive correlation between emotional exhaustion and affective outcome; and ii) there would be a positive correlation between emotional exhaustion and physiological outcome.

h). Relationship between Satisfaction and Psychological Outcomes

Past research has consistently observed that individuals who are happy in their home life tend to report fewer physical and emotional complaints, and individuals happy with their work life report less physiological outcome (e.g., Burke, 1969, 1970). Hence, it was predicted that: i) there would be a negative correlation between work satisfaction and affective outcome; ii) there would be a negative correlation between home satisfaction and affective outcome; and iii) there would be a negative correlation between home satisfaction and physiological outcome.

i). Interrelationship of Measures in one Variable

Research findings generally indicate that individuals who are satisfied with their job lives are also satisfied with their home lives (e.g., Hulin & Blood, 1968; Katzell, Barrett, & Parker, 1961; Rice, Near and Hunt, 1980), and that individuals who report negative emotional states also make health complaints (see, Watson & Pennebaker, 1989, for a review). Hence, it was predicted that: i) there would be a positive relationship between satisfaction at home and satisfaction at work; and ii) there would be a positive relationship between affective outcome and physiological outcome.

Section 2 - Contrasting Models:

a). Moderator Variables

The contrasting model hypothesizes that resources act as moderators. In the present study, possible moderators are social support at work and at home, and the coping style employed by individuals in these two environments.

Social Support at Work (see Figure 5)

- i). Social support at work moderates the relationship between work demands and emotional exhaustion,
- ii). Social support at work moderates the relationship between home demands and emotional exhaustion,
- iii). Social support at work moderates the relationship between home demands and marital satisfaction, such that, interaction effects are observed, and the relationships between the demands and both emotional exhaustion and marital satisfaction are weaker for individuals with high work support than for individuals with low work support.

Social Support at Home (see Figure 5)

- i). Social support at home moderates the relationship between work demands and emotional exhaustion,
- ii). Social support at home moderates the relationship between home demands and emotional exhaustion,
- iii). Social support at home moderates the relationship between home demands and marital satisfaction, such that, interaction effects are observed, and the relationships between the demands and both emotional exhaustion and marital satisfaction are weaker for individuals with high home support than for individuals with low home support.

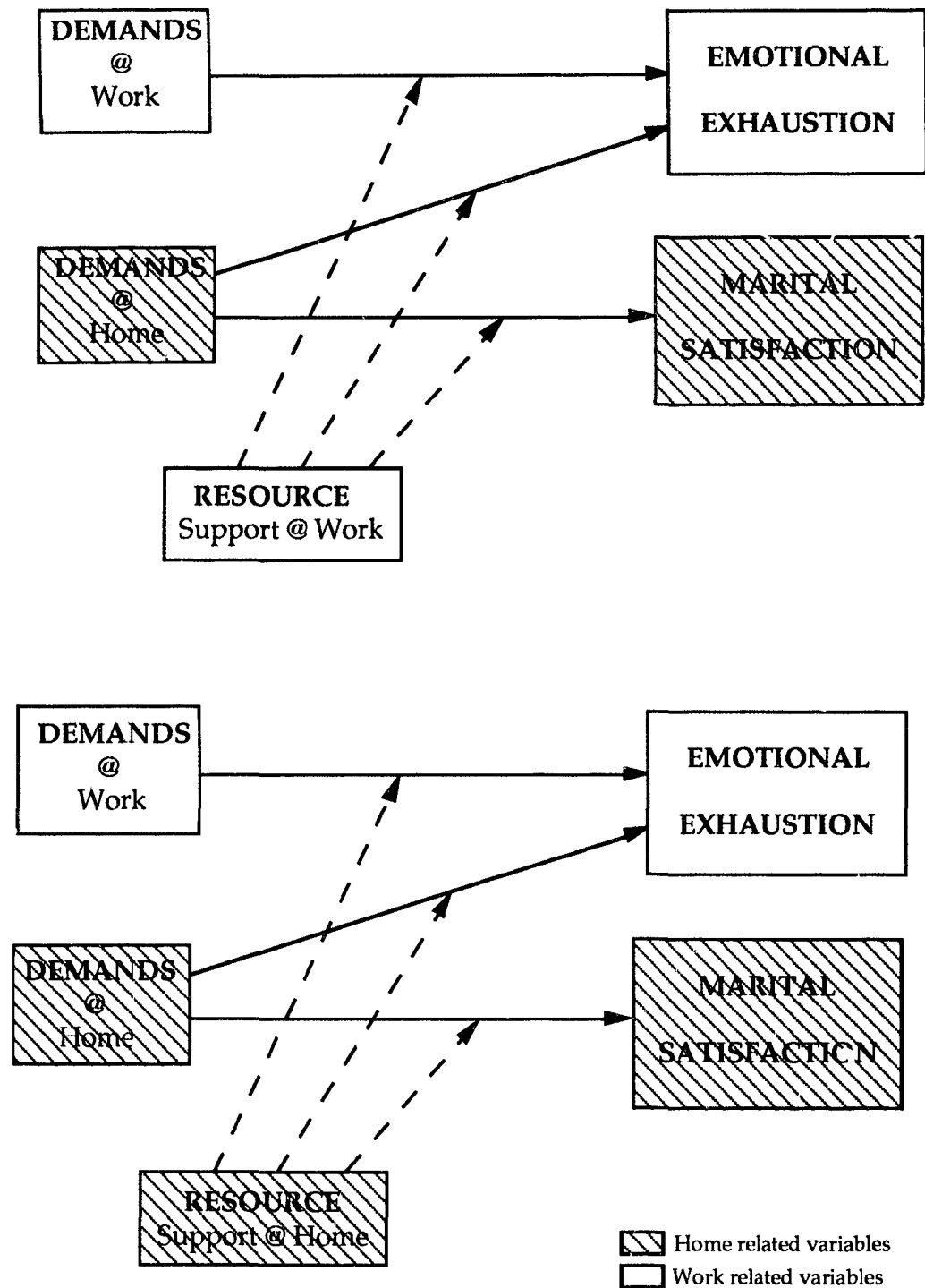


Figure 5.
Contrasting Models; Support as a moderator of
Demands on Emotional Exhaustion and Marital Satisfaction.

Coping Style at Work (see Figure 6)

- i). Coping style at work moderates the relationship between work demands and emotional exhaustion,
- ii). Coping style at work moderates the relationship between home demands and emotional exhaustion,
- iii). Coping style at work moderates the relationship between home demands and marital satisfaction, such that, interaction effects are observed, and the relationships between the demands and both emotional exhaustion and marital satisfaction are weaker for individuals with high work coping abilities than for individual with low work coping abilities.

Coping Style at Home (see Figure 6)

- i). Coping style at home moderates the relationship between work demands and emotional exhaustion,
- ii). Coping style at home moderates the relationship between home demands and emotional exhaustion.
- iii). Coping style at home moderates the relationship between home demands and marital satisfaction, such that, interaction effects are observed, and the relationships between the demands and both emotional exhaustion and marital satisfaction are weaker for individuals with high home coping abilities than for individual with low home coping abilities.

b). Mediating Variables

The contrasting model hypothesizes that general psychological outcomes are directly predicted by stressors, and that mediators do not improve the model.

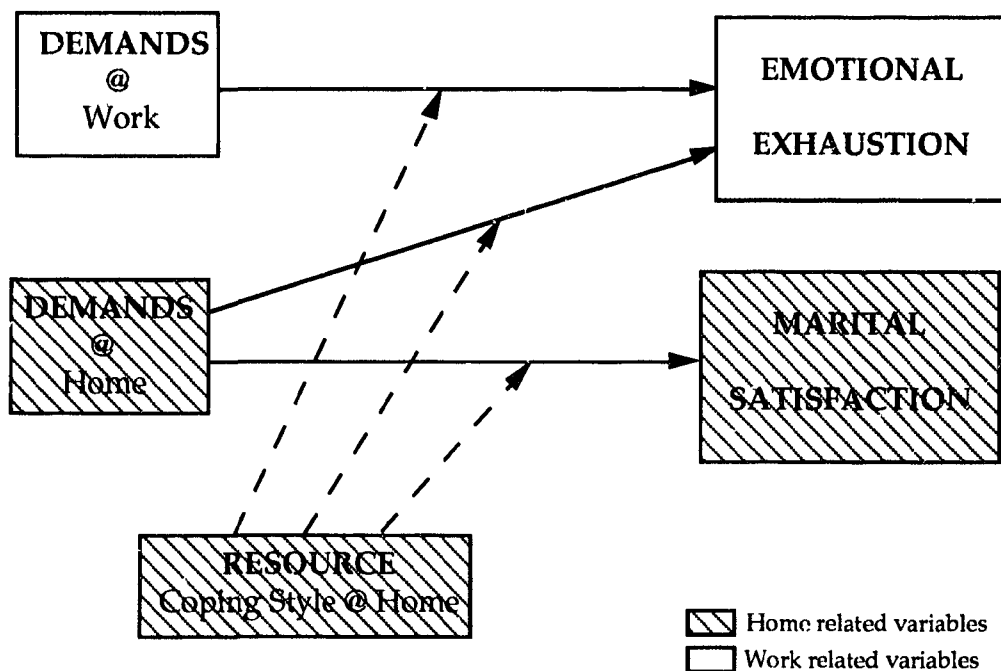
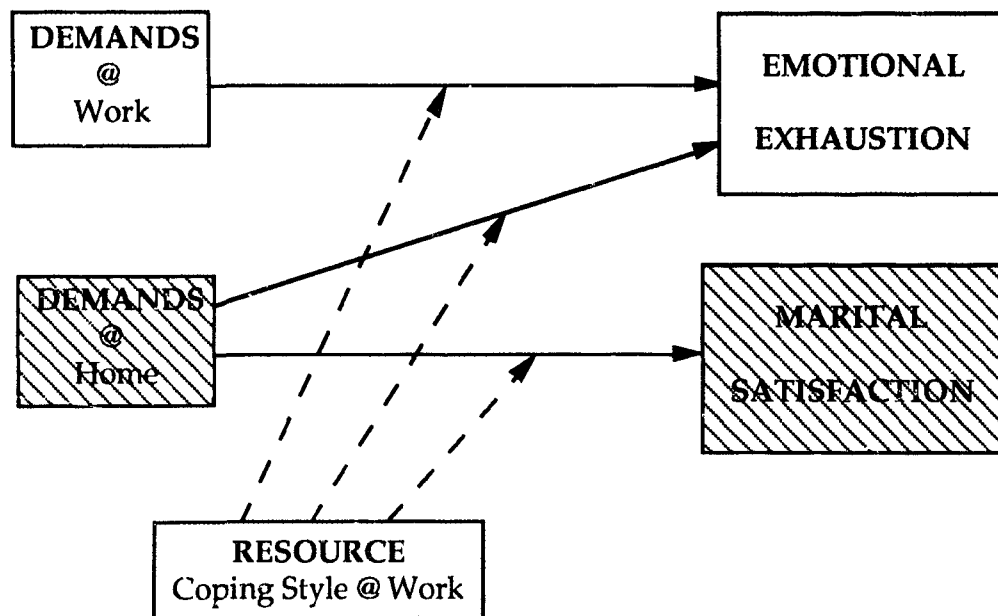


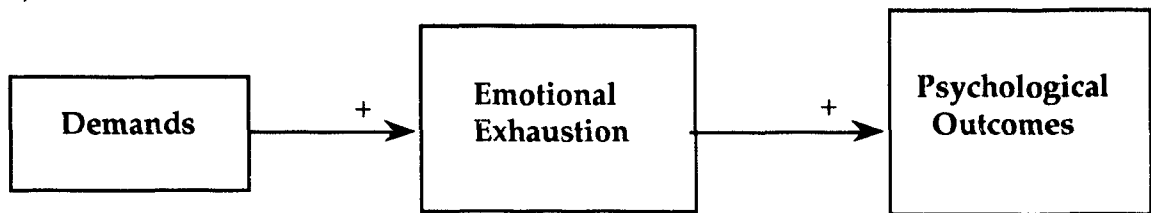
Figure 6.
 Contrasting Models; Coping Style as a moderator of
 Demands on Emotional Exhaustion and Marital Satisfaction.

Hence,

i). Emotional Exhaustion (see Figure 7)

is not a mediator between demands and psychological outcome, such that, a better fit is obtained when a direct route between demands and psychological outcome is specified, and

i)



ii)

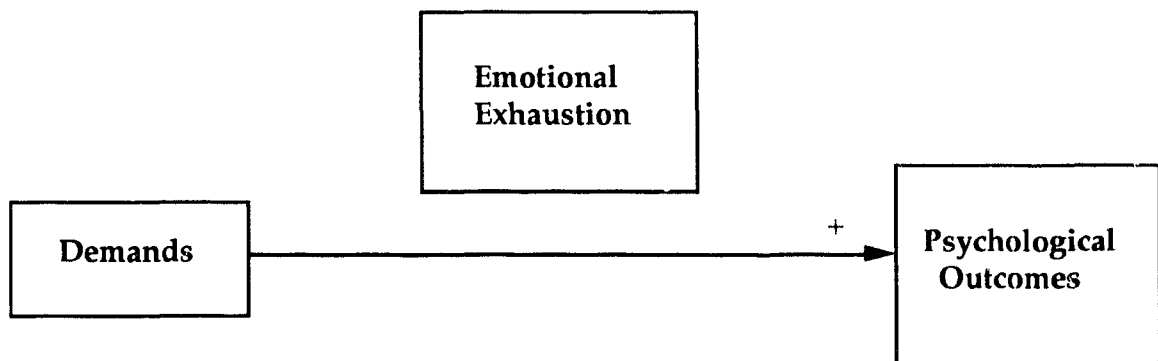


Figure 7. Contrasting Model; Emotional Exhaustion as a mediating variable between Demands and Psychological Outcomes.

ii). Satisfaction (see Figure 8)

is not a mediator between resources and psychological outcome, such that, a better fit is obtained when a direct route between resources and psychological outcome is specified.

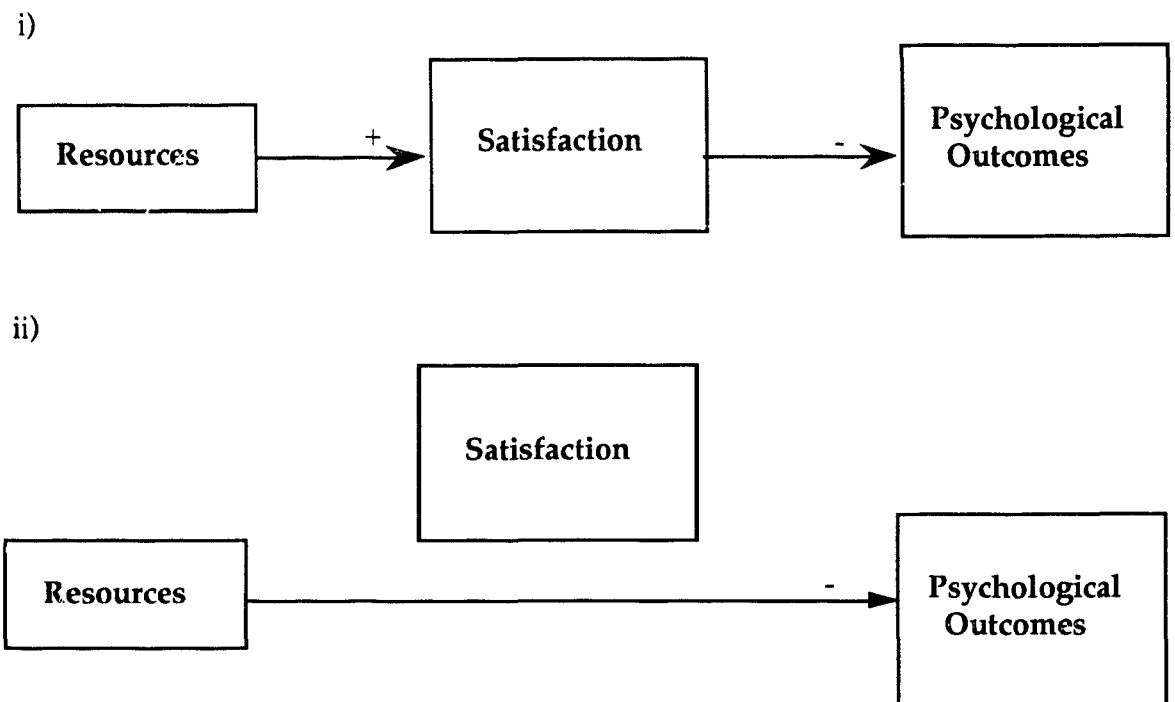


Figure 8. Contrasting Model; Satisfaction as a mediating variable between Resources and Psychological Outcomes.

Section 3 - A Theoretical Integration Model

The simple correlations based on past research provided the basis for the theoretical model illustrated in Figure 1. It is hypothesized that:-

- i). The predicted theoretical causal model depicted in Figure 1 will be confirmed.
- ii). Each of the directional lines in the model will be confirmed.

Section 4 - Alternate Models

The study tests two models originally proposed by researchers in the field of work and family, namely, the Domain-Specific Model and the Reverse-Influence Model, and compares them to the Integration Model. The

Null Model is also included as a point of comparison for both the alternative models and the Integration Model.

a). Domain-Specific Model

The Integration Model will provide a better fit of the data than the Domain-Specific Model in Figure 2, as measured by the various fit indices, including the residual and chi-square comparison.

b). Reverse-Influence Model

The Integration Model will provide a better fit of the data than the Reverse-Influence Model in Figure 3, as measured by the various fit indices, including the residual and chi-square comparison.

c). Null Model

The three models outlined above will provide a better fit of the data than the Null Model in Figure 4, as measured by the various fit indices, including the residual and chi-square comparison

Method

Subjects

The subjects in this study were chosen from the pool of all staff involved in direct health care from a large, metropolitan, general hospital in Halifax, Nova Scotia. Contact was established with key individuals in middle and upper management positions who welcomed and offered support for this line of research in their departments and/or units. Participation in the study was completely voluntary.

Subjects were recruited first through an information letter (See Appendix A) which was distributed to the department heads and head nurses to be posted for the perusal of all staff members. Furthermore, the researcher requested time at departmental and ward staff meetings to discuss the

research proposal and answer questions during the weeks following distribution of the information letter. Each participant was requested to complete a participation form (See Appendix B), which clarified aspects of confidentiality and the general thrust of the study.

Subject Characteristics

All individuals included in this research were female staff members who had a spouse or a significant other living in the same household. Females reflected the larger percentage of staff employed in direct patient care in the hospital settings. This sample consisted of 205 individuals.

This sample was a fairly young group (see Table 1) with over 50% being below 35 years of age, and only 3.9% above 50 years of age. Nearly eighty-eight percent (n = 180) of the sample was married (see Table 2).

TABLE 1

<u>AGE</u>		
<u>Value Label</u>	<u>Frequency</u>	<u>Percent</u>
21-25	34	16.6
26-30	40	19.5
31-35	38	18.5
36-40	48	23.4
41-45	17	8.3
46-50	19	9.3
51-55	6	2.9
over 55	2	1.0
<u>Missing</u>	1	.5
Total	205	100.0

Valid cases 204
Missing cases 1

Over 35% of these individuals were in relatively new relationships (less than or equal to 5 years), and 36% were in relatively stable relationships (between 11 and 25 years) (see Table 3). Nearly 40% of the sample had no

children at home, while a large majority (60%) had between one and three children (see Table 4).

TABLE 2

MARITAL STATUS

<u>Value Label</u>	<u>Frequency</u>	<u>Percent</u>
Legally Married	180	87.8
Significant Other	25	12.2
Total	205	100.0

Valid cases 205
Missing cases 0

TABLE 3

YEARS MARRIED

<u>Value</u>	<u>Frequency</u>	<u>Percent</u>
Less than 1	25	12.2
1-5	49	23.9
6-10	43	21.0
11-15	28	13.6
16-20	26	12.6
21-25	20	9.8
26-30	8	3.9
33-34	3	1.5
Missing	3	1.5
Total	205	100.0

Valid cases 202
Missing cases 3

TABLE 4

NUMBER OF CHILDREN AT HOME

<u>Value</u>	<u>Frequency</u>	<u>Percent</u>
0	80	39.0
1	39	19.0
2	62	30.3
3	22	10.7
4	2	1.0
Total	205	100.0

Valid cases 205
Missing cases 0

A large percentage of subjects (66.8%) and an even larger percentage of spouses (87.8%) was in full-time employment (see Tables 5 and 6). Over 50% of the sample earned a salary of \$30,000 or greater (see Table 7), while nearly 70% of the group had a family income of \$45,000 or higher (see Table 8).

TABLE 5

EMPLOYMENT STATUS OF STAFF MEMBER

Value Label	Frequency	Percent
Full-time	137	66.8
Part-time: Half	42	20.5
Quarter	1	0.5
Other	20	9.8
Casual	5	2.4
Total	205	100.0

Valid cases 205
Missing cases 0

TABLE 6

SPOUSE EMPLOYMENT STATUS

Value Label	Frequency	Percent
Full-time	180	87.8
Part-time: Half	3	1.5
Quarter	0	0.0
Other	13	6.3
Casual	4	2.0
Missing	5	2.4
Total	205	100.0

Valid cases 200
Missing cases 5

TABLE 7PERSONAL INCOME OF STAFF MEMBER

<u>Value Label</u>	<u>Frequency</u>	<u>Percent</u>
Less than \$9,999	8	3.9
\$10,000 to \$14,999	16	7.8
\$15,000 to \$19,999	27	13.2
\$20,000 to \$24,999	27	13.2
\$25,000 to \$29,999	19	9.3
\$30,000 to \$44,999	74	36.1
\$35,000 to \$44,999	29	14.1
\$45,000 to \$54,999	3	1.5
Missing	2	1.0
Total	205	100.0

Valid cases 203
Missing cases 2

TABLE 8FAMILY INCOME

<u>Value Label</u>	<u>Frequency</u>	<u>Percent</u>
Less than \$9,999	1	0.5
\$10,000 to \$14,999	2	1.0
\$15,000 to \$19,999	4	2.0
\$20,000 to \$24,999	4	2.0
\$25,000 to \$29,999	6	2.9
\$30,000 to \$44,999	22	10.7
\$35,000 to \$44,999	21	10.2
\$45,000 to \$54,999	39	19.0
\$55,000 or more	101	49.3
Missing	5	2.4
Total	205	100.0

Valid cases 200
Missing cases 5

Over fifty percent of the sample had completed a diploma, while approximately 25% had completed undergraduate studies. Only about 10% had some post-graduate work (see Table 9).

TABLE 9EDUCATION ATTAINED

<u>Value Label</u>	<u>Frequency</u>	<u>Percent</u>
Less than grade 12	3	1.5
Completed high school	15	7.3
Some college	3	1.5
Completed Diploma	109	53.2
Completed undergraduate	52	25.4
Some post graduate work	21	10.2
<u>Missing</u>	<u>2</u>	<u>1.0</u>
Total	205	100.0

Valid cases 203
Missing cases 2

Fifty-seven percent of subjects had been on the job for five years or less (see Table 10). Approximately 50% of the participants had been in their profession for ten years or less (see Table 11).

TABLE 10YEARS ON JOB

<u>Value Label</u>	<u>Frequency</u>	<u>Percent</u>
1-5	117	57.0
6-10	45	21.9
11-15	23	11.1
16-20	13	6.5
21-31	4	2.0
<u>Missing</u>	<u>3</u>	<u>1.5</u>
Total	205	100.0

Valid cases 202
Missing cases 3

TABLE 11YEARS IN PROFESSION

<u>Value Label</u>	<u>Frequency</u>	<u>Percent</u>
1-5	55	25.9
6-10	52	25.3
11-15	44	21.5
16-20	30	14.6
21-25	16	7.9
26-35	4	2.0
<u>Missing</u>	<u>4</u>	<u>2.0</u>
Total	205	100.0

Valid cases 201
Missing cases 4

A large percentage of staff reported that they had little or no intention to leave the job (89.8%) or to leave the family (96.1%) (see Tables 12 & 13), suggesting that this sample felt fairly stable both at work and at home.

TABLE 12JOB TURNOVER INTENTION

<u>Value Label</u>	<u>Value</u>	<u>Frequency</u>	<u>Percent</u>
No chance of staying in job	1	7	3.4
	2	4	2.0
	3	3	1.5
	4	5	2.4
	5	14	6.8
	6	43	21.0
Will definitely stay in job	7	127	62.0
<u>Missing</u>		<u>2</u>	<u>1.0</u>
Total		205	100.0

Valid cases 203
Missing cases 2

TABLE 13MARITAL TURNOVER INTENTION

<u>Value Label</u>	<u>Value</u>	<u>Frequency</u>	<u>Percent</u>
No chance of staying in marriage	1	0	0.0
	2	3	1.5
	3	0	0.0
	4	3	1.5
	5	3	1.5
	6	17	8.3
Will definitely stay in Marriage	7	177	86.3
<u>Missing</u>		2	1.0
Total		205	100.0

Valid cases 203
Missing cases 2

Measures

This section provides descriptions of all instruments used in data collection in this study, along with available reliability and validity information. The variables and measures used in this research are summarized in Table 14. The level of deviation from normality, as indicated by the skewness and kurtosis index, was acceptable for all variables in the study. Copies of most instruments are available in the questionnaire package in Appendix D.

Demands1(i). Overload at work

Workload at work was measured by a four-item scale that asks subjects directly about the adequacy of the number of people provided to do the work and the extent to which the work is physically and emotionally demanding. These items were adapted from Kahn et al (1964) and used by Leiter (1988). The scores on these four items, rated on a scale of 1 to 5, are summed to produce one score termed workload. Examples of the items are:

TABLE 14VARIABLES AND MEASURES

<u>Variable</u>	<u>Abbr.</u>	<u>Measure</u>	<u>Author(s)</u>
<u>Demands @ Work</u>			
1. Workload	WWL	Overload at work	Kahn et al. (1964)
2. Interpersonal Conflict	WIC	Interpersonal Conflict Scale	Leiter (1988)
3. Work Interference with Family	WIF	Work Interference with family	Koppelman et al. (1983)
<u>Demands @ Home</u>			
4. Workload	HWL	Family Stress Scale	Dytell et al. (1986)
5. Interpersonal Conflict	HIC	Health and Daily Living Form	Moos et al. (1984)
6. Family Interference with Work	FIW	Family Interference with Work	Burley (1989)
<u>Resources @ Work</u>			
7. Supervisor Support	SUP	Contact Rating Scale	Leiter et al. (1986)
8. Co-Worker Support	CWK	Contact Rating Scale	Leiter et al. (1986)
9. Escape Coping	ESC	Coping Strategies Scale	Latack (1986)
10. Control Coping	CON	Coping Strategies Scale	Latack (1986)
<u>Resources @ Home</u>			
11. Friend Support	FS	Perceived Social Support	Procidano et al. (1983)
12. Family Support	FMS	Perceived Social Support	Procidano et al. (1983)
13. Active Marital Coping	CSACT	Marital Coping Inventory	Zborowski et al. (1990)
14. Passive Marital Coping	CSPAS	Marital Coping Inventory	Zborowski et al. (1990)
<u>Experience @ Work</u>			
15. Emotional Exhaustion	EE	Maslach Burnout Inventory	Maslach et al. (1986)
16. Depersonalization	DP	Maslach Burnout Inventory	Maslach et al. (1986)
17. Accomplishment	PA	Maslach Burnout Inventory	Maslach et al. (1986)
<u>Experience @ Home</u>			
18. Marital Satisfaction	SAT	Dyadic Adjustment Scale	Spanier (1976)
<u>General Outcomes</u>			
19. Affective	PSYC	Profile of Moods States	McNair et al. (1971)
20. Psychosomatic	PS	Wahler Physical Symptoms Inventory	Wahler (1983)

1. How would you describe the workload level you normally experience on your job?
2. How adequate is the number of staff in your section in terms of

meeting the work requirements?¹

In a study with nurses Leiter (1988) reported an alpha of .79 for this measure which proved relatively high internal consistency.

1(ii). Overload at home

Workload at home was measured using the role overload subscale of the Family Stress Scale (Dytell & Schwartzberg, 1986). This scale consists of eight subscales. Schwartzberg and Dytell (1988) reported the internal consistency (alpha coefficient) for the full scale was .82 in a sample of employed and non-employed mothers. The role overload subscale consists of two items ($r = .62$). The items are rated on a seven-point Likert scale ranging from (1) agree to (7) disagree. They are:

1. I do not have enough time to do what my family expects of me.
2. I am asked to do excessive amounts of work at home.²

2(i). Interpersonal conflicts at work

Interpersonal conflict at work was measured by asking subjects directly about the frequency of conflict with subordinates, co-workers, supervisors, and the job in general. The level of frustration resulting from these contacts was also measured. The instrument, developed by Leiter (1988), is composed of five items. Examples of the items are:

3. I encounter conflict with my superiors.
4. On a weekly basis, I deal with difficult people at work.³

Leiter (1988) reported good internal consistency for this scale (alpha

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² Reprinted with the permission of Dr. Rita Scher Dytell, College of Mount Saint Vincent, Riverdale Avenue at 263rd Street, New York, 10471.

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coeff. = .83).

2(ii). Interpersonal conflict at home

To measure interpersonal conflict outside work, the Family Argument subscale of the Health and Daily Living Form (Moos, Cronkite, Billings, & Finney, 1984) was used. Individuals were required to indicate a "YES" or a "NO" response to 14 items that are likely to be issues of family arguments such as, relatives, use of car, TV, money and helping with household chores. In a sample of adults in the community, the alpha level was .75, indicating good reliability.

3. Work/Family Interference

Work-family interference was measured using two four-item scales. Work interference with the family (WIF) scale was developed by Kopelman, Greenhaus and Connolly (1983). Four more items, paralleling the WIF items, were developed by Burley (1989) to assess family interference with work (FIW). Participants are required to endorse an option on a five-point scale ranging from (1) strongly agree to (5) strongly disagree.

The alpha coefficient reported was .80 for WIF, and was .79 for FIW. The correlation coefficient between the two scales was .26. Although the measure is subjective, objective conditions in the form of time spent in the domain influence the individual's perception of work-family conflict (Gutek, Klepa, & Searle-Porter, 1989).

Examples of work interference with family items are:

1. After work, I come home too tired to do things I'd like to do.
3. My family/friends dislike how often I am preoccupied with my work while I am at home.

Examples of family interference with work items are:

2. My personal demands are so great that it takes away from my work.
4. My personal life takes up time that I'd like to spend at work.⁴

Resources

a). Social Support :

In the context of this study, social support refers to both instrumental and emotional supports. In non-work situations this pertains to the relationship with the family and with friends, whereas in the work environment, this pertains to the relationship between the subject and both her favourite co-worker and immediate supervisor.

4 (i). Support at work

In the work setting, these interpersonal relationships were measured using the Contact Rating Scale (Leiter & Maslach, 1986). The scale includes items that are relevant to coworkers of equal status as well as to supervisors. Some items directly assess emotional support while others assess the extent to which participants view their co-workers or supervisors as a source of expertise and information on which they can draw. The scale requires the individual to rate her supervisor and favourite co-worker using a 7-point Likert scale ranging from (1) strongly disagree to (7) strongly agree.

Typical items include:

5. Listens to what I have to say.
10. Provides creative solutions to problems.⁵

The scale is composed of nine items concerning both the supervisor

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and the favourite co-worker. Coefficient alpha was found to be .78 for supervisor support and .85 for co-worker support (Leiter, 1988).

4(ii). Support at home

The Perceived Social Support (PSS) instrument measured social support in the home setting (Procidano & Heller, 1983). There are two subscales, perceived social support from friends (Fr) and from family (Fa), with 20 items for each dimension. Each item consists of declarative statements to which the individual answers 'Yes', 'No', or 'Don't Know'. Typical items are:

Fr-10. My friends are sensitive to my personal needs.

Fr-12. My friends are good at helping me solve problems.

Fa - 1. My family gives me the moral support I need.

Fa - 6. Members of my family share many of my interests.⁶

The scale is scored such that items indicative of social support are scored 1, with the remaining two options being scored 0. The total number of items scored 1 are counted, resulting in a possible range from 0 (no perceived social support) to 20 (maximum perceived social support) from family and/or friends.

The authors (Procidano & Heller, 1983) reported a study where the scale produced both high test-retest reliability ($r = .83$ over a 1 month interval) and internal consistency (Cronbach alpha = .90). Also reported are correlations between PSS-Fa and PSS-Fr ($r = .24$).

⁶ Permission obtained from the Office of Rights/Permissions, Plenum Publishing Corp, 233 Spring Street, New York, NY 10013. Permission also obtained from Dr. Mary Procidano, Psychology Department, Fordham University, Bronx, New York.

b). Coping Survey:

5(i). Coping style at work

Coping at work was measured using the Coping Strategies Scale developed by Latack (1986). Individuals indicated the extent to which they engage in the presented strategies when experiencing work related difficulties. The scale taps the extent to which the coping strategies are used rather than the participant's evaluation of their effectiveness and appropriateness. The scale contains 28 items scored on a 5-point Likert scale ranging from (1) rarely to (5) often.

Latack reported a cluster analysis that produced a two-factor solution, resulting in two distinct coping modes: Control (actions and cognitive reappraisals that constitute a proactive strategy) and Escape (actions and cognitive reappraisals that constitute a avoidance strategy). Leiter (1991) used this survey with health service providers and also obtained a two-factor solution consistent with the cluster structure reported by Latack. Control coping is made up of seventeen items (e.g., #13. Give it my best effort to do what I think is expected of me) and escape coping has eleven items (e.g., #26. Do my best to get out of the situation gracefully)⁷.

Coefficient alpha ranges from .54 for the escape scale to .79 for the control scale. Evidence of construct and discriminant validity is also available (Latack, 1986).

5(ii). Coping style at home

Coping at home was measured using the Marital Coping Inventory (MCI) (Zborowski & Berman, 1990). The scale aims at assessing the ways in

⁷ Items reproduced with the permission of Dr. Janina Latack, University of Arizona, Tucson, Arizona.

which individuals may try to prevent or deal with difficulties with their marriage. The MCI is a 58 item inventory, and individuals must rate the frequency of use of each item in dealing with these problems. Items were empirically developed and fit a theoretical model of coping. They fitted five distinct categories, one based on the focus of the coping strategies, namely problem versus emotion, and four categories characterized by the method of coping, namely, active versus passive, cognitive versus behavioural, spouse related versus spouse unrelated, and active others versus inactive others.

Factor analysis generated five subscales, Cognitive Resolution ($\alpha = .88$), Interpersonal Focusing ($\alpha = .88$), Passive Emotional ($\alpha = .89$), Non-Confrontational ($\alpha = .88$), and Distraction ($\alpha = .44$). Zborowski and Berman (1990) demonstrated discriminant and construct validation. Of the five subscales, Interpersonal Focusing and Non-Confrontational appear to be the most analogous to control and escape coping, respectively. Only these two subscales were administered to subjects in this study.

Outcomes:

a). Domain Specific Outcomes

6(i). Burnout

The most commonly used measure of burnout is the Maslach Burnout Inventory (MBI) (Maslach & Jackson, 1981, 1986). The MBI is a 22 item scale. Maslach and Jackson (1981) analyzed the responses of 1025 subjects in various helping professions, and showed that the MBI factors clearly into three subscales. These subscales are Emotional Exhaustion (EE) made up of nine items, Depersonalization (DP) made up of five items, and Personal Achievement (PA) made up of eight items. Typical items for the EE, DP, and PA scales, respectively, are:

- 2. I feel used up at the end of the work day.
- 15. I don't really care what happens to some recipients.
- 9. I feel I am positively influencing other people's lives through my work.⁸

The original version of the MBI produced a frequency and an intensity score for each item. However these two dimensions have been found to be highly correlated (Gaines & Jermier, 1983; Stevens & O'Neill, 1984). Hence, in the current version, only a frequency score is obtained (Maslach & Jackson, 1986). Items are scored using a Likert scale ranging from (0) never to (6) every day, and are summed up to provide a single score for each subscale. High scores on EE indicate feelings of emotional over-extension and being worn out by one's work; the worker is no longer able to give of him/herself at a psychological level. High scores on DP reflect a tendency to describe an unfeeling or impersonal response towards recipients of one's care or services and negative cynical attitudes and feelings about clients. Low scores on PA reflect feelings of incompetence or ineffectiveness at work.

Coefficient alphas were found to be .90, .79, and .71 for EE, DP, and PA, respectively (Maslach & Jackson, 1986). Test-retest reliabilities were established on a group of 53 graduate students over a two to four week interval. The coefficients for the subscales were .82, .60, and .80 for EE, DP, and PA, respectively. These researchers were also able to demonstrate solid evidence for convergent and discriminant validity.

6(ii). Satisfaction at home

Satisfaction at home is assumed reflected in the marital relationship. The Dyadic Adjustment Scale (DAS) measured the quality of this relationship

⁸ See reference table: Maslach & Jackson (1986).

(Spanier, 1976). The DAS measures marital adjustment on four inter-related dimensions; Dyadic Consensus, Dyadic Cohesion, Dyadic Satisfaction, and Affectional Expression. Subjects decide which series of statements best describe their marital relationship.

The DAS is a statistically reliable measure, with coefficient alpha of .96 for the overall scale. Spanier (1976) demonstrated that the DAS can discriminate maritally distressed from non-distressed couples. Only the Dyadic Satisfaction subscale was administered for the purposes of this study, as it is seen as a global evaluation of marriage (Touliatos, Perlmutter, & Straus, 1990). This sub-scale was reported to have an alpha coefficient of .94, and to discriminate between married and divorced individuals (Spanier, 1976).

b). General Psychological Outcomes

7(i). Affective outcomes

The Profile of Mood States (POMS), a self report assessment of emotional states (McNair, Lorr, & Droppleman, 1971) was used to measure affective outcomes. The POMS is a 64 item inventory that can be completed in five minutes. Subjects rate on a 0 to 4 scale the extent to which they felt each of the adjectives during the previous week. The scores are organized into six mood states; Tension-anxiety, Depression-dejection, Anger-hostility, Fatigue-inertia, Vigor-activity, and Confusion. The POMS is a psychometrically sound measure of mood states (McNair, Lorr, & Droppleman, 1971). It is standardized to both clinical and normal populations, and has been used extensively in both therapeutic and research settings. Both the overall POMS score, and the subscales showed good internal consistency, and in this study a total mood score was the measure of

affective state.

7(ii). Physiological outcomes

Physiological outcomes were measured using the Wahler Physical Symptoms Inventory (WPSI) (Wahler, 1983). The WPSI is a brief self-report scale that measures the degree to which subjects complain of somatic symptoms. The intensity of physical complaints is assessed with a multiple option format: subjects indicate the degree to which specific symptoms bother them on a 6 point scale. Items focus on only somatic complaints; "neurotic" symptomatology are excluded. The scale possesses high internal consistency (Kuder-Richardson values range from .85 to .94).

Procedure

Questionnaire packages distributed to potential subjects included instructions for the participants (see Appendix C). Given the sensitive nature of the selected measures, subjects were assured of utmost confidentiality regarding individual responses and performance (see Appendix E).

Subjects were requested to complete the information pertaining to work (namely, demands and resources at work, and the MBI) at work. Similarly, information pertaining to the home situation (namely, demands and resources at home, and the DAS) was to be completed at home. This procedure was suggested to emphasize the salience of a particular domain. Questions about the demographics, psychological and physical states were not thought to be domain specific and hence could be answered in any domain.

Data collection lasted over a period of 3 to 4 weeks. During this time, the researcher was available at the hospital to answer questions, assist subjects with unforeseen difficulties, and to collect the completed questionnaires.

Statistical Analysis

All the raw data was entered in a micro-computer. Two computer packages were used to analyse the data, namely, SPSS-X and LISREL VII (Jöreskog & Sörbom, 1988). Simple correlations were confirmed using Pearson's correlation analyses. SPSS-X was used to test for main effects and interaction effects in the data. The presence of mediator variables was also investigated using SPSS-X. LISREL VII was used to estimate the path analysis models and structural coefficients in the alternative, and hypothesized models.

To test for interaction effects, the standardized scores of pairs of predictor variables were multiplied to produce a product vector, which served as the interaction variable. Multiple regression analyses were performed using SPSS-X in which the significance of the interaction variable was tested after the two predictor variables had been entered (Zedeck & Blood, 1974).

Mediation was established by a procedure outlined by Baron and Kenny (1986), necessitating three regression equations. First, the mediator is regressed on the independent variables. Second, the dependent variables are regressed on the independent variables. Third, the dependent variable is regressed on both the independent variables and the mediator. The last step was carried out in a hierarchical fashion, such that the independent variables were entered first, followed by the mediator. In order to establish mediation, three conditions must be met. First, the independent variable must affect the mediator in the first equation. Second, the independent variable must be shown to affect the dependent variable in the second equation. Third, the mediator must affect the dependent variable in the third equation.

Three steps are involved in the calculation of a path analysis model.

First, the structural equations for the dependent variables, in terms of the independent variables and the random errors, are solved (e.g., see Appendix G for Figure 1). The second and third steps involve estimating the regression of the dependent variables on the independent variables, and then solving for the structural parameters in terms of the regression coefficients.

Estimating a path analysis model for directly observed variables with LISREL is straight-forward. In the model, if a concept is directly caused or influenced by another concept, it is classified as endogenous. If a concept always acts as a "cause" and never as an "effect" in the specified model, then it is exogenous. Rather than estimating each equation separately, the program considers the model as a system of equations and estimates all the structural coefficients directly.

Besides the path coefficients, the LISREL program provides several means of assessing the fit of a model, and providing information regarding the specific points at which a model does not fit the data. The assessment of fit falls into three main categories; the examination of the solution, the measure of the overall fit, and the detailed assessment of fit.

In the examination of the solution, careful attention goes towards the parameter estimates, standard errors, correlation of parameter estimates, the squared multiple correlations, and the coefficients of determination. Parameter estimates must have the right sign and size. Small standard errors correspond to good precision in model specification. Large correlations among the parameters could lead to "unidentifiable models", implying that the analysis cannot converge to a unique solution. The squared multiple correlation is a measure of the strength of a linear relationship and the coefficient of determination is a measure of the strength of several

relationships jointly. These measures show how well the observed variables serve, separately and jointly, as measurement instruments for the latent variables. Good models have large values of both the squared multiple correlation and coefficient of determination. LISREL also provides T- values, which are the parameter estimates divided by their standard errors. These are used to test the null-hypothesis that the true parameter value is zero.

LISREL's T- value is entered in a normal probability table (not a t- table) to obtain the corresponding critical value. For example, an interval of + or – 1.96 standard errors provides a 95% confidence interval for the corresponding population parameter (Hayduk, 1987).

The second mode of evaluation concerns the assessment of the overall fit of the model to the data. Four measures of overall fit, namely, chi-square (χ^2), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), and the root mean square residual (RMSR), determine the goodness of fit of the whole model. The chi-square test assesses the fit between variances and covariances as predicted by the model compared to the variances and covariances calculated from the data on the observed indicators. A small chi-square value indicates a better fitting model since it suggests that the difference between the predicted and the observed is sufficiently small for the remaining difference to be due to mere sampling fluctuations. The goodness of fit index is a ratio of the Fit Function (Tanaka & Huba, 1985) after the model has been fitted, compared to that before the model has been fitted. The adjusted GFI takes into account the degrees of freedom of the model, and values should be between one and zero with higher values indicating better fitting models. The RMSR is a measure of the average of the fitted residuals. It is also an indication of the fit of a model, with smaller values more

acceptable. Furthermore, it can be used to compare the fit of two different models for the same data.

The third mode of examination is the detailed assessment of fit. This method is used if, on the basis of the overall measures of fit and other considerations, it is determined that the model does not fit sufficiently well. By inspecting the standardized residuals and the modification indices, one may determine possible sources of lack of fit. If the standardized residual in a particular cell is greater than 2.58 in magnitude, it is an indication that the model does not account for the data in that particular cell sufficiently well (Jöreskog & Sörbom, 1988). A plot of standardized residuals can point to outliers, which indicate non-linearity, or a specification error. The modification indices are measures associated with the fixed or constrained parameters of the model. For each such parameter, the modification index is a measure of the predicted decrease in χ^2 if a single constraint is relaxed and the model is re-estimated. A modification index of greater than 5.00 indicates that the model would probably be significantly enhanced were that path to be included (Lavee, 1988). LISREL VII provides not only the measures of the expected improvement of fit, but also a prediction of the estimated change of each constrained parameter. This gives valuable information about the sensitivity of the measure of fit to change in parameters.

Results

The results of this research have been organized into four main sections. Section 1 looks at the test of the simple correlations as outlined in Hypotheses a to i, above. Section 2 discusses the contrasting models that examine the presence of moderating effects, and the importance of mediating variables, as previously discussed in the Section 2 hypotheses. Section 3

reviews the test of the hypothesized Integration Model. Section 4 examines the alternative models, analyzing the fit of the Domain-Specific, the Reverse-Influence, and the Null Models.

The estimated response rate was between eighty-five and ninety percent. This figure was based on consultation from unit managers regarding the number of staff members solicited to participate in the study. This unexpectedly high return rate was probably due to endorsement received from upper and middle management, and to an incentive program which provided the work unit with a lottery ticket for every questionnaire completed by a member of that unit.

TABLE 15

DESCRIPTIVE STATISTICS

Variable	Abbr.	Mean	S. D.	N/Items	α
1. Workload @ Work	WWL	13.8	2.55	4	.49
2. Interpersonal Conflict @ Work	WIC	12.0	4.44	5	.73
3. Work Interference with Family	WIF	11.1	3.43	4	.72
4. Workload @ Home	HWL	6.1	3.61	2	.79
5. Interpersonal Conflict @ Home	HIC	17.4	3.09	14	.96
6. Family Interference with Work	FIW	6.5	2.38	4	.62
7. Supervisor Support	SUP	47.0	10.33	9	.92
8. Co-Worker Support	CWK	52.0	6.66	9	.85
9. Escape Coping	ESC	31.6	6.14	11	.71
10. Control Coping	CON	61.5	8.95	17	.83
11. Friend Support	FS	32.5	6.44	20	.81
12. Family Support	FMS	35.0	6.40	20	.94
13. Active Marital Coping	CSACT	24.5	9.06	12	.79
14. Passive Marital Coping	CSPAS	21.5	10.11	9	.90
15. Emotional Exhaustion	EE	19.6	9.59	9	.88
16. Depersonalization	DP	5.1	4.54	5	.67
17. Personal Accomplishment	PA	35.8	7.10	8	.75
18. Marital Satisfaction	SAT	38.0	6.08	10	.81
19. Total Mood Disturbance	PSYC	49.2	21.77	65	.95
20. Psychosomatic Symptoms	PS	29.4	17.34	42	.97

N=205

Table 15 displays the means, standard deviations, and Cronbach alphas for the variables in the study. Overall, the alpha values were consistent with those found in previous research and found to be acceptable. One exception was the alpha value for the Workload at Work variable that was found to be extraordinarily low ($\alpha = .49$). Of the four items making up this scale, no single item or set of items sufficiently reflected the concept being measured, and hence could not be parsed out of the measure. Despite the low reliability measure, this scale performed well in terms of its relationships with other known variables (e.g., PSYC, and PS). Also given the high face validity of the items in the scale, and the salience of this variable to the model, it was decided to keep this variable in the analyses.

Section 1 - Test of Simple Relationships among Variables

(Hypotheses a to i)

The Pearson correlation coefficients among the variables in the study are tabulated in Table 16. Tests of the strength of the simple relationships among the variables were based on this statistic.

a). Relationship between Demands and Emotional Exhaustion

i) Positive correlations were observed between emotional exhaustion and all the specified work demands (work-load, work interference with family, and work interpersonal conflict).

ii) Emotional exhaustion was positively correlated with home demands such as work-load and family interference with work. No particular relationship was observed between emotional exhaustion and interpersonal conflict at home.

TABLE 16**PEARSON'S CORRELATION COEFFICIENTS**

1.	WWL	1.000									
2.	WIC	.287**	1.000								
3.	WIF	.371**	.248**	1.000							
4.	HWL	.158*	.227**	.395**	1.000						
5.	HIC	.092	.076	.137	.268**	1.000					
6.	FIW	.062	.132	.309**	.447**	.084	1.000				
7.	SUP	-.226**	-.333**	-.142*	-.190**	-.155*	-.136	1.000			
8.	CWK	-.048	-.064	-.016	-.013	-.035	-.011	.262**	1.000		
9.	ESC	.143*	.086	.090	.059	.051	.085	-.128	.069	1.000	
10.	CON	-.034	-.057	.061	.038	.094	.006	.207**	.207**	.159*	1.000
11.	FS	.027	-.069	-.076	-.058	.019	-.100	.027	.071	.073	.111
12.	FMS	-.067	-.173*	-.144*	-.222**	-.181**	-.150*	.172*	-.062	.022	.126
13.	CSACT	.220**	.174*	.271**	.428**	.273**	.246**	-.271**	.093	.218**	-.016
14.	CSPAS	.017	.140*	.148*	.435**	.193**	.212**	-.042	.084	.264**	.126
15.	EE	.395**	.495**	.560**	.364**	.134	.300**	-.242**	.031	.196**	.032
16.	DP	.197**	.348**	.277**	.267**	.081	.196**	-.366**	-.132	.192**	-.112
17.	PA	.058	-.264**	-.038	.007	-.032	-.104	.373**	.304**	-.142*	.325**
18.	SAT	-.021	-.092	-.163*	-.315**	-.343**	-.210**	.167*	.045	-.195**	.049
19.	PSYC	.164*	.287**	.335**	.367**	.136	.348**	-.088	.056	.149*	-.002
20.	PS	.215**	.272**	.349**	.251**	.107	.201**	-.096	-.039	.095	.114
		WWL	WIC	WIF	HWL	HIC	FIW	SUP	CWK	ESC	CON
		1	2	3	4	5	6	7	8	9	10
11.	FS	1.000									
12.	FMS	.375**	1.000								
13.	CSACT	.078	-.298**	1.000							
14.	CSPAS	-.118	-.328**	.523**	1.000						
15.	EE	-.160*	-.246**	.302**	.193**	1.000					
16.	DP	-.156*	-.261**	.288**	.149*	.494**	1.000				
17.	PA	.160*	.227**	-.056	.068	-.169*	-.287**	1.000			
18.	SAT	.167*	.538**	-.516**	-.459**	-.203**	-.255**	.195**	1.000		
19.	PSYC	-.151*	-.325**	.425**	.385**	.470**	.353**	-.094	-.408**	1.000	
20.	PS	-.174*	-.082	.121	.215**	.398**	.193**	-.067	-.077	.356**	1.000
		FS	FMS	CSACT	CSPAS	EE	DP	PA	SAT	PSYC	PS
		11	12	13	14	15	16	17	18	19	20

* - $p < .05$ ** - $p < .01$ Note: Significance Levels, $N=205$; $p < .05$, $r = .138$; $p < .01$, $r = .181$

With 190 correlations: Approx. 10 would attain $p < .05$ significance by chance.
 Approx. 2 would attain $p < .01$ significance by chance.

Abbreviations refer to variable labels in Table 15.

b). Relationship between Demands and Satisfaction

i) Negative correlations were obtained between all the demands at home (work-load, family interference with work, and interpersonal conflict at home) and family satisfaction.

c). Relationship between Resources and Emotional Exhaustion

i) Emotional exhaustion at work was negatively correlated with supervisor support, and positively correlated with escape coping. No relationships were noted with the other resources at work.

ii) Emotional exhaustion was negatively correlated with both friend support, and family support. Both active and passive coping at home were found to be positively correlated with emotional exhaustion. This suggested that active coping at home was clearly not a measure of a resource factor.

d). Relationship between Resources and Satisfaction

i). Personal accomplishment was positively correlated with resources at work, namely, supervisor support, co-worker support, and control coping. Conversely, an escapist style of coping was associated with diminished achievement at work.

ii). Work satisfaction was positively correlated with both friend support and family support. No relationship was observed between coping patterns at home and achievement at work.

iii). Family satisfaction was positively associated with resources at home such as friend support, and family support. However, it was negatively correlated with both active and passive coping patterns at home, again suggesting that the latter two measures were reflecting degree of conflict rather than an enduring coping style at home, irrespective of the level of experienced stress.

iv). The only relationships between resources at work and home satisfaction were observed in supervisor support (which was positively related) and escape coping (which was found to be negatively correlated) with home satisfaction.

e). Relationship between Emotional Exhaustion and Satisfaction

i). The relationship between emotional exhaustion and home satisfaction was significant, and in the predicted direction.

f). Relationship between Emotional Exhaustion and Depersonalization

i). There was a strong positive correlation between emotional exhaustion and depersonalization.

g). Relationship between Emotional Exhaustion and Psychological Outcomes

i). There was a strong positive correlation observed between emotional exhaustion and affective outcomes.

ii). A strong positive correlation was also observed between emotional exhaustion and psychosomatic outcomes.

h). Relationship between Satisfaction and Psychological Outcomes

i). No significant relationship was observed between work satisfaction and affective outcome.

ii). A significant negative correlation was noted between home satisfaction and affective outcome.

iii). No relationship was observed between home satisfaction and psychosomatic outcome.

i). Interrelationship of Measures in one Variable

i). A significant positive relationship was observed between satisfaction at home and satisfaction at work.

ii). There was also a positive relationship noted between affective outcome and psychosomatic outcome.

Section 2 - Test of Contrasting Models

a). Moderator Variables

The contrasting hypothesis proposed that social support and coping style had a moderating impact on the relationship of demands with emotional exhaustion and marital satisfaction. Hence, if supports and coping styles function as resources that a person can draw upon in difficult situations, then people with such resources would be expected to show less strain in the face of high demands, whereas people with low resources would show less of this buffering effect.

This moderating effect is demonstrated by a statistical interaction between stressors and resources when predicting stress reactions. The alternative, outlined in the proposed model (see Figure 1), is that resources have a direct linear relationship with emotional exhaustion and marital satisfaction, such that the absence of the resources is a stress in itself, while its presence can enhance the individual's well-being. The main effects and interaction effects are outlined in Tables 17 A, B and C.

The results of these analyses indicate that support and coping style were not consistent moderators of the impact of demands on emotional exhaustion and marital satisfaction. Significant interaction effects were observed in only five (out of 54) instances. The relationship between workload at home and marital satisfaction was found to be moderated by friend support (t -value = 2.583, p = .011), family support (t -value = 2.001, p = .047), and control coping (t -value = 2.141, p = .034). The relationship between family interference with work and emotional exhaustion was also

TABLE 17 A**MODERATING EFFECTS OF SUPPORT AT WORK**

		MAIN EFFECTS		INTERACTION EFFECTS	
		t-value	Sig.	t-value	Sig.
WORK DEMANDS	WWL to EE	4.722	.001	(WWL x SUP) to EE	-.535 .594
	SUP to EE	-1.980	.049		
ON	WWL to EE	5.238	.001	(WWL x CWK) to EE	.459 .647
	CWK to EE	.645	.520		
	WIF to EE	8.442	.001	(WIF x SUP) to EE	1.425 .156
	SUP to EE	-2.275	.024		
	WIF to EE	8.727	.001	(WIF x CWK) to EE	1.724 .086
	CWK to EE	.766	.445		
EMOTIONAL EXHAUSTION	WIC to EE	7.359	.001	(WIC x SUP) to EE	-.572 .568
	SUP to EE	-.845	.399		
	WIC to EE	8.099	.001	(WIC x CWK) to EE	-.868 .387
	CWK to EE	1.131	.260		
HOME DEMANDS	HWL to EE	5.082	.001	(HWL x SUP) to EE	1.484 .139
	SUP to EE	-2.602	.010		
ON	HWL to EE	5.616	.001	(HWL x CWK) to EE	.365 .715
	CWK to EE	.372	.710		
	FIW to EE	4.084	.001	(FIW x SUP) to EE	.356 .722
	SUP to EE	-2.594	.001		
	FIW to EE	4.305	.001	(FIW x CWK) to EE	.357 .722
	CWK to EE	.565	.573		
EMOTIONAL EXHAUSTION	HIC to EE	1.408	.161	(HIC x SUP) to EE	-1.461 .146
	SUP to EE	-3.220	.002		
	HIC to EE	1.894	.060	(HIC x CWK) to EE	-.957 .340
	CWK to EE	.443	.658		
HOME DEMANDS	HWL to SAT	-4.322	.001	(HWL x SUP) to SAT	1.523 .129
	SUP to SAT	1.798	.074		
ON	HWL to SAT	-4.752	.001	(HWL x CWK) to SAT	.310 .757
	CWK to SAT	.948	.344		
	FIW to SAT	-2.638	.009	(FIW x SUP) to SAT	-1.176 .241
	SUP to SAT	2.615	.010		
	FIW to SAT	-2.935	.004	(FIW x CWK) to SAT	-.308 .759
	CWK to SAT	.917	.360		
MARITAL SATISFACTION	HIC to SAT	-4.319	.001	(HIC x SUP) to SAT	.969 .334
	SUP to SAT	2.012	.046		
	HIC to SAT	-4.618	.001	(HIC x CWK) to SAT	1.950 .053
	CWK to SAT	.765	.446		

Abbreviations refer to variable labels in Table 15.

TABLE 17 C**MODERATING EFFECTS OF COPING STYLE AT WORK**

		MAIN EFFECTS		INTERACTION EFFECTS	
		t-value	Sig.	t-value	Sig.
WORK DEMANDS		WWL to EE	4.962 .001	(WWL x ESC) to EE	-2.244 .026
		ESC to EE	2.212 .028		
ON		WWL to EE	5.242 .001	(WWL x CONT) to EE	-.282 .778
		CONT to EE	.391 .696		
		WIF to EE	8.648 .001	(WIF x ESC) to EE	-1.919 .057
		ESC to EE	2.571 .011		
		WIF to EE	8.704 .001	(WIF x CONT) to EE	-.839 .403
		CONT to EE	-.101 .920		
EMOTIONAL EXHAUSTION		WIC to EE	7.903 .001	(WIC x ESC) to EE	-.262 .793
		ESC to EE	2.436 .016		
		WIC to EE	.753 .453	(WIC x CONT) to EE	-1.099 .273
		CONT to EE	8.064 .001		
HOME DEMANDS		HWL to EE	5.284 .001	(HWL x ESC) to EE	.453 .651
		ESC to EE	2.508 .013		
ON		HWL to EE	5.420 .001	(HWL x CONT) to EE	1.112 .268
		CONT to EE	.178 .859		
		FIW to EE	4.125 .001	(FIW x ESC) to EE	-.415 .678
		ESC to EE	2.429 .016		
		FIW to EE	4.316 .001	(FIW x CONT) to EE	.096 .923
		CONT to EE	.331 .741		
EMOTIONAL EXHAUSTION		HIC to EE	1.782 .076	(HIC x ESC) to EE	.348 .728
		ESC to EE	2.721 .007		
		HIC to EE	1.851 .066	(HIC x CONT) to EE	-1.003 .317
		CONT to EE	.292 .771		
HOME DEMANDS		HWL to SAT	-4.485 .001	(HWL x ESC) to SAT	-.335 .738
		ESC to SAT	-2.635 .009		
ON		HWL to SAT	-4.728 .001	(HWL x CONT) to SAT	2.141 .034
		CONT to SAT	1.189 .236		
		FIW to SAT	-2.662 .009	(FIW x ESC) to SAT	1.172 .243
		ESC to SAT	-2.750 .007		
		FIW to SAT	-2.941 .004	(FIW x CONT) to SAT	.793 .424
		CONT to SAT	1.275 .204		
MARITAL SATISFACTION		HIC to SAT	-4.854 .001	(HIC x ESC) to SAT	1.350 .179
		ESC to SAT	-2.823 .005		
		HIC to SAT	-5.021 .001	(HIC x CONT) to SAT	.248 .805
		CONT to SAT	1.359 .174		

Abbreviations refer to variable labels in Table 15.

moderated by family support (t -value = 2.251, p = .026). Escape coping was found to be a moderator of the relationship between workload at work and emotional exhaustion (t -value = -2.244, p = .026). None of the interaction effects observed involved supports at work.

Correlational analyses indicated that although workload at home was negatively correlated with marital satisfaction, this relationship was stronger for lower levels of friend support (FS < 34, r = -.396, p < .01; FS > 33, r = -.220, p < .05), family support (FMS < 38, r = -.445, p < .01; FMS > 37, r = -.055, p > .05), and control coping (CONT < 62, r = -.347, p < .01; CONT > 61, r = -.274, p < .01), than for higher levels of these resources. Similarly, the analyses indicated that while workload at work was positively related to emotional exhaustion, the relationship was stronger for lower levels of escape coping (ESC < 32, r = .431, p < .01; ESC > 31, r = .325, p < .01). While family interference with work was found to be positively correlated with emotional exhaustion for all levels of family support, the relationship was stronger for lower levels (FMS < 38, r = .371, p < .01) than for higher levels of support (FMS > 37, r = .226, p < .05).

b). Mediator Variables

In the model depicted in Figure 1, it was hypothesized that emotional exhaustion and satisfaction were necessary mediating factors. Whereas, it was thought that emotional exhaustion mediated the relationship between demands and psychological outcomes, satisfaction was thought to mediate the relationship between resources and psychological outcomes. As a way of testing whether this model was correctly specified, it was proposed that the hypothesized model be tested without any mediating variables, such that the routes between demands and psychological outcomes were direct.

For each mediator, the analysis proceeded by first investigating the regression of the general outcomes on the work predictors, followed by the regression of general outcomes on home predictors, and last examining the regression of the general outcomes on work and home predictors together. The results of these analyses are displayed in Table 18 A, B, and C.

TABLE 18 A

TEST OF EMOTIONAL EXHAUSTION AS A MEDIATOR BETWEEN
DEMANDS AND GENERAL OUTCOMES

Dependent Var.	STEP 1			STEP 2			
	WWL	WIC	WIF	EE	R ²	Adj. R ²	Change in R ²
1. EE	.109	.353	.417		.449*	.440	
2a. PS	.074	.185	.307		.190*	.176	
3a. PS	.053	.116	.225	.196	.211	.193	.021*
2b. PSYC	-.067	.318	.248		.185*	.171	
3b. PSYC	-.113	.171	.074	.417	.281	.265	.096*

Dependent Var.	STEP 1			STEP 2			
	HWL	HIC	FIW	EE	R ²	Adj. R ²	Change in R ²
1. EE	.300	-.019	.184		.167*	.152	
2a. PS	.173	.043	.096		.061*	.045	
3a. PS	.063	.050	.030	.360	.169	.150	.108*
2b. PSYC	.290	.024	.238		.194*	.181	
3b. PSYC	.174	-.016	.167	.388	.320	.305	.126*

Dep. Var.	STEP 1						STEP 2			
	WWL	WIC	WIF	HWL	HIC	FIW	EE	R ²	Adj. R ²	Change in R ²
1. EE	.118	.332	.349	.099	-.024	.116		.476*	.457	
2a. PS	.078	.175	.276	.036	.041	.045		.197*	.169	
3a. PS	.056	.113	.211	.018	.045	.024	.186	.215	.183	.018*
2b. PSYC	-.051	.277	.117	.202	-.028	.208		.281*	.256	
3b. PSYC	-.092	.163	-.003	.168	-.020	.168	.343	.342	.315	.062*

bold print = significant regression coefficients

* = significant R² and Change in R²

TABLE 18 B

TEST OF PERSONAL ACCOMPLISHMENT AS A MEDIATOR BETWEEN
RESOURCES AND GENERAL OUTCOMES

	STEP 1				STEP 2			
Dependent Var.	CWK	SUP	CON	ESC	PA	R ²	Adj. R ²	Change in R ²
1. PA	.169	.233	.299	-.134		.247*	.230	
2a. PS	-.044	-.105	.145	.096		.039	.017	
3a. PS	-.031	-.086	.168	.086	-.078	.044	.016	.005 n.s.
2b. PSYC	.035	-.086	.018	.145		.033	.010	
3b. PSYC	.048	-.068	.042	.134	-.079	.037	.010	.005 n.s.

	STEP 1			STEP 2		
Dependent Var.	FMS	FS	PA	R ²	Adj. R ²	Change in R ²
1. PA	.190	.082		.054*	.043	
2a. PS	-.023	-.169		.032	.021	
3a. PS	-.017	-.167	-.034	.033	.017	.001 n.s.
2b. PSYC	-.286	-.061		.098*	.088	
3b. PSYC	-.282	-.060	-.020	.098	.083	.000 n.s.

	STEP 1				STEP 2					
Dep. Var.	CWK	SUP	CON	ESC	FMS	FS	PA	R ²	Adj. R ²	Change in R ²
1. PA	.180	.207	.278	-.139	.135	.045		.271*	.245	
2a. PS	-.037	-.098	.174	.104	-.022	-.194		.079*	.047	
3a. PS	-.028	-.088	.188	.097	-.014	-.192	-.052	.081	.044	.002 n.s.
2b. PSYC	.010	-.032	.062	.156	-.282	-.079		.129*	.099	
3b. PSYC	.013	-.029	.067	.154	-.280	-.078	-.017	.129	.094	.000 n.s.

bold print = significant regression coefficients

* = significant R² and Change in R²

The results of these analyses indicate that Emotional Exhaustion (EE) meets the criteria to be a mediator of both work and home demands on both affective and psychosomatic symptoms. When home and work demands are investigated separately, the paths mediated are those from Work Interpersonal Conflict (WIC), Work Interference with Family (WIF), and Home Workload (HWL) to both outcomes, and Family Interference with Work (FIW) to affective symptoms only. When home and work demands

are investigated in a more integrated fashion (i.e., together), only the paths from WIC and WIF to psychosomatic symptoms, and WIC and FIW to affective symptoms are mediated by Emotional Exhaustion.

TABLE 18 C

TEST OF MARITAL SATISFACTION AS A MEDIATOR BETWEEN
RESOURCES AND GENERAL OUTCOMES

	STEP 1				STEP 2			
Dependent Var.	CWK	SUP	CON	ESC	SAT	R ²	Adj. R ²	Change in R ²
1. SAT	.042	.155	.042	-.216		.084*	.063	
2a. PS	-.044	-.105	.145	.096		.039	.017	
3a. PS	-.042	-.098	.147	.087	-.043	.041	.013	.002 n.s.
2b. PSYC	.035	-.086	.018	.145		.033	.010	
3b. PSYC	.049	-.036	.032	.075	-.324	.129	.104	.096*

	STEP 1		STEP 2			
Dependent Var.	FMS	FS	SAT	R ²	Adj. R ²	Change in R ²
1. SAT	.526	-.037		.263*	.255	
2a. PS	-.023	-.169		.032	.021	
3a. PS	.003	-.171	-.049	.034	.017	.002 n.s.
2b. PSYC	-.286	-.061		.098*	.088	
3b. PSYC	-.152	-.071	-.255	.146	.131	.048*

	STEP 1				STEP 2					
Dep. Var.	CWK	SUP	CON	ESC	FMS	FS	SAT	R ²	Adj. R ²	Change in R ²
1. SAT	.096	.057	-.014	-.231	.521	-.032		.329*	.306	
2a. PS	-.037	-.098	.174	.104	-.022	-.194		.079*	.047	
3a. PS	-.037	-.098	.174	.104	-.021	-.194	?	.079	.041	.000 n.s.
2b. PSYC	.010	-.032	.062	.156	-.282	-.079		.129*	.099	
3b. PSYC	.031	-.020	.059	.105	-.166	-.086	-.223	.163	.128	.033*

bold print = significant regression coefficients

* = significant R² and Change in R²

While Personal Accomplishment does not appear to operate as a mediator between any of the resources at work and at home, and affective and psychosomatic symptoms, Marital Satisfaction operates as a mediator between

some supports and only affective outcomes. When supports at work and at home are looked at separately, only the path from Family Support (FMS) to affective outcomes (PSYC) is mediated by SAT. When all the resources are looked at together, both Family Support and Escape Coping (ESC) are mediated by SAT.

Section 3. Test of the Integration Model

In the hypothetical model depicted in Figure 1, the predictor variables—demands and resources at home and at work—were defined as exogenous (independent) variables. Satisfaction at work and at home, emotional exhaustion, depersonalization, and psychological outcomes were designated as endogenous (jointly dependent) variables.

The analysis of the original model encountered difficulties during computation. Hence, meaningful assessment of this model could not be made. Evidences that problems have been encountered in the LISREL analysis are 1) the program stops with no output, 2) an incomplete output is produced with many warnings and error messages, or 3) a meaningless output is provided (e.g., negative values for R^2 or correlation coefficients greater than 1.00). In the current analysis, an output was obtained which was both meaningless and incomplete.

Two problems were anticipated from the original analysis of the correlation matrix. First, the pattern of correlations of passive and active coping at home with other variables suggested that these two variables were indicators of stresses at home rather than styles of coping. Hence, given that these two variables were behaving as outcomes rather than predictors, they were wrongly specified in the model, and hence the latter would not converge in the analysis. Instead of re-specifying the model, which would

then amount to new hypothesis testing, it was decided to discard these two variables and to test the remaining model. Second, the program appeared unable to handle reciprocal relationships, such as between work and home satisfaction, and between the two psychological outcomes. It should be noted that in the zero-order correlations, these relationships were found to be significant and as predicted. To carry on with the analysis, it was decided to eliminate those two reciprocal paths.

These alterations led to a convergent model (see Table 19).

Examination of the output, however, suggested that ignoring the paths from work satisfaction to depersonalization resulted in a poor fit of the model and data ($\chi^2(38) = 67.84$, $P = .002$, AGFI = .847, RMSR = .036). It was expected that attitude toward the patient (depersonalization) would be predicted by subjective experience at work, namely emotional exhaustion, rather than by the sense of work accomplishment. However, a strong correlation between these two variables has been observed by some researchers (e.g., Maslach & Jackson, 1986; Richardsen, Burke, & Leiter, 1992). Since the addition of this path was theoretically supported, it was included in the analysis.

TABLE 19

INTEGRATION MODEL: SUMMARY OF FIT AND χ^2 CHANGES

<u>TEST OF FAMILY GR.</u>	<u>Coeff./Det.</u>	<u>χ^2</u>	<u>df</u>	<u>p</u>	<u>GFI</u>	<u>AGFI</u>	<u>RMSR</u>	<u>$\Delta\chi^2$</u>
A. ORIGINAL Hx Model minus Reciprocal Paths, and family coping vars.	.796	67.84	38	.002	.966	.847	.036	
B. ADD: PA to DP	.811	45.41	37	.161	.977	.893	.026	22.43

The addition of this path made a significant improvement in the fit of the model, as indicated by the GFI, AGFI, RMSR, and significant χ^2 changes (22.43, $p < .05$). Inclusion of other paths would not make a significant

improvement to the model as suggested by low modification indices and small estimated change. Bentler and Mooijart (1989) and Hayduk (1987) stressed that even in statistical analysis we should not abandon the parsimony canon of science; Hayduk (1987) suggests that the "fewer the structural coefficients required to achieve an acceptable data fit, the more parsimonious is the explanation of the observed data" (p. 154).

The resulting model depicted in Figure 9 was highly consistent with the data ($\chi^2 (37) = 45.41$, $P = .161$, $GFI = .977$, $AGFI = .893$, $RMSR = .026$). Table 20 outlines the results of the analyses of this model, including the path coefficients and T-values. Most, but not all, of the paths specified in the new model were significant. There were no modification indices greater than 5.00 that would significantly improve the model.

This model shows that demands at work predict emotional exhaustion at work. Demands at home such as workload and interpersonal conflict predict home satisfaction, while family interference with work did not appear to significantly contribute to the model. Resources available to the individual were not totally domain specific. Friend support negatively predicted emotional exhaustion at work, while family support contributed to increased feelings of accomplishment at work. An escapist style of coping at work related not only to emotional exhaustion and diminished accomplishment at work, but also to lowered marital satisfaction. The expected positive relationships of, family support with marital satisfaction, and that of supports at work and a control style of coping with satisfaction at work, were evident in the results (see Table 20).

Depersonalization was predicted by both emotional exhaustion (LISREL T- value = 5.369, $p < .05$), and diminished feelings of accomplishment

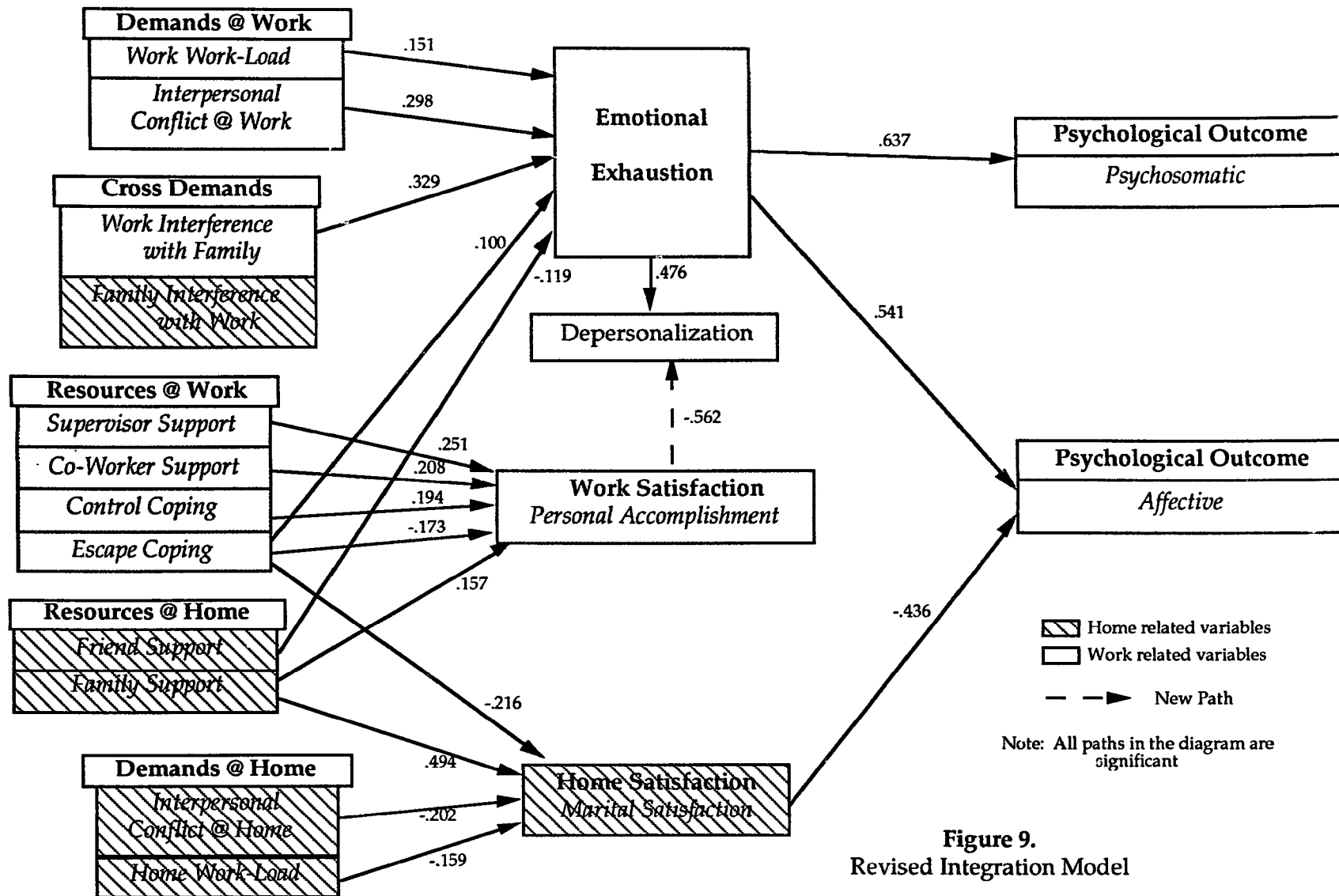


Figure 9.
Revised Integration Model

TABLE 20OUTPUT OF REVISED INTEGRATION MODELMaximum Likelihood Estimates.Beta Matrix

	EE	DP	PA	SAT	PSYC	PS
EE	.***	.***	.***	.***	.***	.***
DP	.476	.***	-.562	.***	.***	.***
PA	.***	.***	.***	.***	.***	.***
SAT	.127	.***	.***	.***	.***	.***
PSYC	.541	.***	.181	-.436	.***	.***
PS	.637	.***	.***	.077	.***	.***

Gamma Matrix

	WWL	WIC	WIF	HWL	HIC	FIW
EE	.151	.298	.329	.096	.004	.094
DP	.***	.***	.***	.***	.***	.***
PA	.***	.***	.***	.***	.***	.***
SAT	.***	.***	.***	-.159	-.202	-.089
PSYC	.***	.***	.***	.***	.***	.***
PS	.***	.***	.***	.***	.***	.***

Gamma Matrix (cont.)

	SUP	CWK	ESC	CON	FS	FMS
EE	-.016	.047	.100	.045	-.119	-.053
DP	.***	.***	.***	.***	.***	.***
PA	.251	.208	-.173	.194	.066	.157
SAT	-.025	.072	-.216	.048	-.005	.494
PSYC	.***	.***	.***	.***	.***	.***
PS	.***	.***	.***	.***	.***	.***

Squared Multiple Correlations for Structural Equations

EE	DP	PA	SAT	PSYC	PS
.513	.160	.290	.411	.283	.105

Total Coefficient of Determination for Structural Equations: .811

Chi-Square with 36 degrees of freedom = 45.41 (p = .161)

Goodness of Fit Index = .977

Adjusted Goodness of Fit Index = .893

Root Mean Square Residual = .026

SUMMARY STATISTICS FOR STANDARDIZED RESIDUALS

smallest standardized residual = -1.556

median standardized residual = .000

largest standardized residual = 2.314

LISREL T-Values

Beta Matrix

	EE	DP	PA	SAT	PSYC	PS
EE	.***	.***	.***	.***	.***	.***
DP	5.369	.***	-4.366	.***	.***	.***
PA	.***	.***	.***	.***	.***	.***
SAT	1.170	.***	.***	.***	.***	.***
PSYC	5.730	.***	1.371	-3.720	.***	.***
PS	6.018	.***	.***	.662	.***	.***

Gamma Matrix

	WWL	WIC	WIF	HWL	HIC	FIW
EE	2.880	5.690	5.873	1.678	.083	1.771
DP	.***	.***	.***	.***	.***	.***
PA	.***	.***	.***	.***	.***	.***
SAT	.***	.***	.***	-2.290	-3.483	-1.416
PSYC	.***	.***	.***	.***	.***	.***
PS	.***	.***	.***	.***	.***	.***

Gamma Matrix (cont.)

	SUP	CWK	ESC	CON	FS	FMS
EE	-.288	.942	2.039	.903	-2.322	-.946
DP	.***	.***	.***	.***	.***	.***
PA	4.219	3.575	-3.109	3.360	1.132	2.610
SAT	-.399	1.229	-3.683	.807	-.083	7.729
PSYC	.***	.***	.***	.***	.***	.***
PS	.***	.***	.***	.***	.***	.***

Note: **Bold** type means $p < .05$

(LISREL T-value = -4.366, $p < .05$). Psychological outcomes of work and family stress were specified as either affective or psychosomatic. Influencing variables in the model were emotional exhaustion and marital satisfaction. While emotional exhaustion at work predicted both affective (LISREL T-value = 5.730, $p < .05$) and psychosomatic (LISREL T-value = 6.018, $p < .05$) symptoms, marital satisfaction predicted only affective symptoms (LISREL T-value = -3.720, $p < .05$).

While this resulting model captures many of the features of the hypothesized Integration Model, including some of the paths observed in the multiple regressions (e.g., EE and SAT as mediators), it differs from the hypothesized model in some important ways. Coping style at home and reciprocal paths were not included in the model. One new path was added, from work satisfaction to depersonalization. In the final model, some of the paths hypothesized were not significant. The paths to emotional exhaustion from demands at home, family support, and resources at work (except for escape coping style) were not significant. Home satisfaction was not predicted by emotional exhaustion, family interference with work, friend and work supports, and a control coping style at work. Work satisfaction was not predicted by friend support. Also, affective symptomatology was not predicted by feelings of diminished accomplishment at work, and the level of psychosomatic symptoms was not predicted by the degree of home satisfaction.

There are several reasons why some of the hypothesized paths were not present in the Integration Model. One possibility is that significant associations were not there to start with. However, this is unlikely as although the relations outlined above were not observed in the model, most

of them were significant in the zero-order correlations. One likely explanation is that the variance in the downstream variable was adequately accounted for by the other relationships. For example, the variance in work satisfaction was adequately accounted for by resources at work and family support, such that the contribution of friend support was not significant, although a significant association between these two variables was obtained in the zero-order correlations ($r = .160, p < .05$; Table 16).

Section 4. Test of Alternate Models

To facilitate the testing of the alternative models, certain changes were made based on the problems encountered in testing the Integration Model, namely, reciprocal paths and variables denoting coping style at home were eliminated from the analyses altogether. Summaries of the analyses of alternative models are depicted in Tables 21, 22, and 23. In these tables, the first model tested (A) was the alternative version based on Figures 2 and 3, minus the reciprocal paths and coping styles at home. The second model tested (B) was the alternative version of the revised Integration Model (i.e., Figure 9). In the development of the alternative models, the focus of interest was the path between exogenous and endogenous variables, within and between domains. Hence, the relationships among the endogenous variables were maintained according to the model on which it was based (i.e., Figure 1 for A, and Figure 9 for B).

a). Domain-Specific Model

A domain-specific model, in which the influences of stressors and resources do not extend beyond the domains where they originated provided a contrast point for the hypothesized model. It included all paths except for those which crossed between the work and family domains (e.g., the path

TABLE 21**SUMMARY OF TEST OF DOMAIN-SPECIFIC MODEL**

TEST OF FAMILY GR.	Square Multiple Corr. for Str. Eqs.						Coeff./Det.	GFI	AGFI	RMSR	χ^2	df	P
	EE	DP	PA	SAT	PSYC	PS							
A. ORIGINAL Hx Model minus Reciprocal Paths, and family coping vars.	.478	.229	.240	.363	.273	.124	.759	.946	.813	.055	110.76	49	.000
B. Revised Model	.474	.167	.255	.364	.291	.123	.770	.952	.855	.050	97.20	56	.001

TABLE 22**SUMMARY OF TEST OF REVERSE-INFLUENCE MODEL**

TEST OF FAMILY GR.	Square Multiple Corr. for Str. Eqs.						Coeff./Det.	GFI	AGFI	RMSR	χ^2	df	P
	EE	DP	PA	SAT	PSYC	PS							
A. ORIGINAL Hx Model minus Reciprocal Paths, and family coping vars.	.151	.111	.058	-1.833	.181	.058	.507	.904	.694	.096	246.68	54	.000
B. Revised Model	.015	.155	.031	.021	.213	-.736	.087	.867	.644	.146	371.80	64	.000

TABLE 23**SUMMARY OF TEST OF NULL MODEL**

TEST OF FAMILY GR.	Square Multiple Corr. for Str. Eqs.						Coeff./Det.	GFI	AGFI	RMSR	χ^2	df	P
	EE	DP	PA	SAT	PSYC	PS							
A. ORIGINAL Hx Model minus Reciprocal Paths, and family coping vars.	.000	.229	.000	.007	.304	.114	.000	.865	.645	.154	386.64	65	.000
B. Revised Model	.000	.221	.000	.000	.307	.122	.000	.865	.656	.154	386.64	67	.000

from family support to work accomplishment was eliminated). Both the A and B versions of the model were significantly different from the data, as observed by the χ^2 statistics (see Table 21), and hence not a good fit of the data.

b). Reverse-Influence Model

The Reverse-Influence Model differed from the Integration Model only in that it deleted all paths from exogenous to endogenous variables within each domain (e.g., the path from work conflict to emotional exhaustion). Tests of both versions of this model encountered difficulty, as denoted by the squared multiple correlation values being greater than 1, and also of negative values (see value of -1.833 for SAT in Table 22). This is a strong indication that the model is wrongly specified (as discussed above) and hence not a good reflection of the data.

c). Null Model

The Null Model suggests that the variables under scrutiny do not exert any influence on each other. A test of this model indicated that the Null Model was significantly different from the data, as observed by the χ^2 statistics, and hence not a good fit of the data (see Table 23).

Comparison of Models

The Integration, Domain-Specific, and Reverse-Influence Models being nested within the Null Model allows for direct comparison by a chi-square difference test (Bentler & Bonett, 1980). Only the statistics for the B versions were used in the analyses. A test of the χ^2 differences indicated that the Reverse-Influence Model was a significant improvement over the Null Model (χ^2 diff. (3) = 14.84, $p < .01$). A test of the χ^2 differences indicated that the Domain-Specific Model provided a significantly better fit than the Null Model (χ^2 diff. (11) = 289.44, $p < .01$). Overall, the Integration Model was

found to provide the best fit of the data when compared to the Null Model (χ^2 diff. (37) = 341.23, $p < .01$) (see Table 24).

TABLE 24

COMPARISON OF MODELS

1: Comparison to Null Model

Model	χ^2	df	$\Delta\chi^2$	Δdf	p
Null Model	386.64	67			
Reverse-Influence Model	371.80	64	14.84	3	<.01
Domain-Specific Model	97.20	56	289.44	11	<.01
Integration Model	45.41	37	341.23	30	<.01

2: Comparison to Integration Model

Model	χ^2	df	$\Delta\chi^2$	Δdf	p
Integration Model	45.41	37			
Domain-Specific Model	97.20	56	51.79	19	<.01
Reverse-Influence Model	371.80	64	326.41	27	<.01
Null Model	386.64	67	341.23	30	<.01

All three alternative models also being nested within the Integration Model allows for direct comparison by a chi-square difference test, as above. Test of the χ^2 differences (of the B versions) indicated that all the alternative models were significantly worse reflections of the data than the Integration Model: the Domain-Specific Model (χ^2 diff. (19) = 51.79, $p < .01$), the Reverse-Influence Model (χ^2 diff. (27) = 326.41, $p < .01$), and the Null Model (χ^2 diff. (30) = 341.23, $p < .01$).

Chapter 5

Conclusion and Discussion

The main purpose of the study was to develop a model of work and family stress that would conceptualize stress in a systematic framework, and integrate the role of resources and mediating variables into the model. The results provided support for including these elements into a model of work and family stress. They argued for the contribution of family factors in an organizational stress model and provided a direction for integrating developments from family research into the models of organizational stress. Leiter (1989) had argued for the role of factors such as skill utilization and resources when developing a model of organizational stress. Karasek (1990) pursued a model that incorporated the role of demand and control. Although these additions have been major improvements over previous models, this study suggests that any conceptualization of organizational stress is incomplete unless the role of family influences is incorporated into the model.

This chapter reviews the findings of this research, and investigates their implications. It explains and discusses the components of the Integration Model, and comparisons of the latter with alternative models such as the Domain-Specific and Reverse-Influence Models. In addition, it discusses the results of the inquiry into contrasting models, with moderator and mediator variables. Before ending, I will deliberate on the short-comings of this research, and make some suggestions and recommendations for future investigations into both organizational and family stress.

The Hypothetical Integration Model

The resulting model comprises three levels: stressors and resources, context specific outcomes, and more general outcomes. It depicts the relationships between demands and resources at home and at work, the subjective experience of individuals in the two domains, and the final outcome in terms of the psychological impact on the service relationship (namely, depersonalization) and distress for the staff member (namely affective and psychosomatic symptoms). Some of the central elements in the model are: (1) domain specific demands (namely, workload at work and at home, interpersonal conflict at work and at home, and work interference with family), (2) domain specific resources (namely, support from supervisor and co-worker, control and escape coping styles, and family support), (3) cross domain resources (namely, escape coping style, friend and family support), (4) domain specific outcomes (namely, emotional exhaustion, personal accomplishment, depersonalization, and marital satisfaction) and (6) general outcomes (namely, affective and psychosomatic symptoms). Each of these points will be discussed below.

The resulting model suggested that demands predict subjective experiences exclusively in the domain they originate from, such that demands at home predict marital satisfaction and demands at work predict emotional exhaustion at work. This clear-cut relationship was also evident when looking at cross demands that dealt with such issues as time constraints, psychological involvement, and the sense of over-extension of oneself in the particular setting. Hence, it was observed that work interference with family, which is primarily due to work demands, predicted emotional exhaustion at work. Family interference with work was not

predictive of subjective experience of stress at work or at home.

It is important to note that in the final Integration Model, the spill-over relationships between demands and the subjective experience at home and at work were not present. Instead, the relationship between demands and context specific experiences follows the segmentation principle. In considering the demographic information, it was expected that the work demands would spill-over into the home sphere, and that family demands would spill-over into work. The composition of the sample was primarily young females (<36 years of age) with over 60% having one or more children at home. Intuitively, one would expect that family demands would be high, and given the young age of the children, that family responsibilities would take priority. As a result, such individuals may consider work to be an unnecessary burden and a hindrance, and hence problematic. At this stage one can only speculate at the phenomenon at work here. One obvious possibility is that the measures employed failed to gauge those demands of the family and work-place that spill over. One speculation, about the lack of spill-over from family into work, is that employed individuals (in this case, females) are oblivious to family obligations. Support for this latter idea comes from researchers (Schwartzberg & Dytell, 1988) who have found that although employed and unemployed mothers experienced the same amount of stress, employed mothers were less sensitive to family sources of stress. However, Gutek, Klepa, and Searle-Porter (1989) found no support for the popular notion that women are less sensitive to family work and that men do not notice paid work. More systematic manipulations are required to clarify this issue, which could have important implications for separate models of male and female work/family stress.

In the simple correlational analyses, family interference with work was related to both marital satisfaction and emotional exhaustion at work, whereas work interference with the family was related to only emotional exhaustion at work. This indicates that at the micro level there was no spill-over from work to home, only from home to work. In the overall model however, family interference with work did not make a unique contribution to the prediction of marital satisfaction, which was likely better accounted for by the other variables.

Resources at work such as supports and coping style were predictive of personal accomplishment. Contrary to the Leiter (1988b) model of burnout, supports and coping style at work did not predict the individual's subjective experience of stress at work. However, they contributed to the phenomenon of job burnout through their capacity to predict the level of work accomplishment experienced by the individual; diminished accomplishment is an important aspect of psychological burnout. In the current model, supervisor support was not predictive of depersonalization, as observed by some researchers (e.g., Leiter, 1988b). Greenglass and Burke (1988) had noted gender differences in these relationships, namely that supervisor support was associated with depersonalization for men only, suggesting that females were incapable of developing such feelings given their propensity for empathy. Hence, it is noteworthy that the population under study (namely, females) did not show this association between supervisor support and depersonalization, corroborating the observations by Greenglass and Burke (1988). Establishing causal links will require further research, which might include manipulating the level of supervisor support available to the individual staff.

An escapist style of coping at work was found to be incompatible with both personal accomplishment at work and marital satisfaction. It may be that the escape style of coping at work is not exclusive to that environment, but a more pervasive part of the individual's way of coping with stressful situations, and hence predictive of diminished satisfaction in an individual's life. Lazarus and Folkman (1984) suggested that any style of coping, including the avoidant style, had the potential to alleviate stress. This assertion was not corroborated in this research. Leiter (1991) noted that an escapist style appears to be poorly suited to work coping, in that it presents ethical problems, and suggests ineffectiveness in a domain where people strive for efficacy.

Resources at home, namely friend and family supports, predicted both factors at work and at home. In the model, friend support directly lessened the subjective experience of stress at work. Family support appeared to be a valuable asset for both the work place and home life. It was found to predict accomplishment at work and marital satisfaction at home. Previous studies have established the positive effects of family support (e.g., Leiter, 1990; Repetti & Cosmas, 1991).

Two distinct ways in which supportive relationships outside work can contribute to reduced stress at work are by bringing resources to deal with physical and emotional work problems, and by not contributing to more stress on the individual. Supportive friends and families are less likely to subject their members to excessive demands that might further aggravate occupational stress. Friends and family may perceive the member's needs and extend their support in solving problems. To differentiate between these two possible explanations will require more thorough investigation.

Interestingly, there was no relationship observed in the model among

emotional exhaustion, marital satisfaction and personal accomplishment, suggesting no direct spill-over from one subjective experience to another. This indicates for example, that hardships and/or marital dissatisfaction at home need not necessarily predict problems on the job and vice versa. In addition, low accomplishment at work should not influence marital satisfaction, and vice versa. It is important to note in the model that emotional exhaustion at work and personal accomplishment at work are totally independent of each other in their antecedents. This corroborates previous findings that these two aspects of burnout are not necessarily interdependent (Leiter, 1990, 1991), although they have similar relationships to some aspects of organizational environments.

Depersonalization, in the Integration Model, is predicted by both emotional exhaustion and a diminished sense of personal accomplishment at work. In a review, Leiter (1993) had expected that depersonalization would be adequately predicted by emotional exhaustion. In the current model, it was observed that the lack of a sense of personal accomplishment at work also contributed to depersonalization. Human service professionals generally subscribe to a code of ethics that explicitly denounces depersonalization of service recipients. In keeping with a mission of personable care, health service organizations might do well to allot energy and resources to both bolstering personal accomplishment and reducing emotional exhaustion. According to the Integration Model, this would be attained by reducing work demands, and promoting resources in the workplace.

In the resulting model, psychological distress was predicted by marital satisfaction and one aspect of burnout, namely emotional exhaustion. High levels of emotional exhaustion at work were predictive of both affective and

psychosomatic symptoms, while subjective experience of the home life (namely, marital satisfaction) was only predictive of affective outcomes. The level of personal accomplishment experienced by the individual was not predictive of psychological distress in the model. Clark (1990) had also observed a strong relationship between the subjective experience of stress at work and physical ailments.

Alternative Models

In developing a model, it is important to ascertain that there are no other conspicuous alternative models fitting a certain theoretical framework that would better explain the data. Hence, the Integration Model was tested against the Null, Domain-Specific, and Reverse-Influence Models. The Null Model specifies no relationships among the variables of interest. The Domain-Specific Model specifies that there are no spill-overs between the work and home domains, including only influences do not extend beyond the domain from which they originated. In the Reverse-Influence Model, factors at work spill over into the family arena, and vice versa, with no pathways within each domain.

The Integration Model not only provided a better fit of the data but differed significantly from the alternate models. This finding does not preclude the possibility that certain antecedents may be domain-specific in their impact, or have a null effect. In fact, in the resulting model, all the demands under study and some of the resources were clearly domain specific in their relationships. However, the results suggest that a better picture is obtained when these two domains are investigated simultaneously.

Contrasting Models

In the process of model development, it is also important to contrast the hypothesized model against other models with different kinds of relationships among the same variables. In the development of the Integration Model, it was proposed that supports and coping style exerted main effects, and that domain-specific outcomes mediated the relationship between stressors and general psychological outcomes. To ensure that indeed the Integration Model had been correctly specified, it was contrasted against models having moderator variables, and others having mediator variables.

A resource is said to exert a main effect if its presence is inversely related to the subjective experience of stress at work and directly related to satisfaction at home and at work. In other words, the absence of a resource is a stressful event in itself. An alternative point of view is that the presence of resources alone does not imply reduced stress and/or increased satisfaction; what counts is their availability in the face of difficulties, when they have the potential to buffer the impact of a demanding situation. According to this viewpoint, the absence of a resource would be stressful only in a demanding situation.

The analyses suggested that such moderating effects of perceived resources were generally not present. Out of 54 possibilities, only five buffering relationships were observed. Family support moderated the relationship between family interference with work and emotional exhaustion, and between home workload and marital satisfaction. The relationship between workload at home and marital satisfaction was moreover buffered by friend support and a control coping style. Also, an escapist style of coping buffered the relationship between workload at work

and emotional exhaustion. Despite these few observed buffering effects and the suggestion in the literature of such processes, the overwhelming evidence in this investigation is that perceived resources act as main effects, and hence were correctly specified in the model.

Recently, some researchers (Greenglass, Fiksenbaum, & Burke, 1993) have suggested that in order to observe an interaction effect between stressors at work and burnout, it may be important to look at support in a longitudinal context. They found that individuals who reported receiving moderate and high levels of friend and family support a year earlier were less likely to experience burnout in the presence of stressors at work. These results provide an interesting direction for future research on the moderating effects of variables.

The Integration Model proposed that resources and demands did not directly predict psychological outcomes, but that the subjective experiences of the individuals were important in determining the level of distress experienced. Alternative configurations were statistically contrasted, to determine whether models without mediating variables accounted for the variance in the outcome variable as well as models with mediating variables. The results suggested that while emotional exhaustion at work and marital satisfaction sometimes acted as mediators, personal accomplishment at work was never a mediator. In the integrated model, the experience of emotional exhaustion at work was a mediator between interpersonal conflict at work and both affective and psychosomatic outcomes. Moreover, the relationships between work interference with family and psychosomatic symptoms, and between family interference with work and affective symptoms were both mediated by emotional exhaustion. The paths from both escape coping style

and family support to affective symptoms were mediated by marital satisfaction. Essentially, these results suggest that some demands and resources do not directly predict general psychological outcomes, but that the subjective experience of the individual is important in determining the outcome.

Summary and Recommendations

In summary, the results provided support for an Integration Model of work and family stress, over the Null, Domain-Specific, or Reverse-Influence Models. In addition, the findings attested that resources act as main effects rather than as moderators. The results also endorsed the inclusion of mediator variables between both stressors and resources, and general psychological outcomes.

Moreover, the evidence showed that spill-over between work and family happens at the stage of demands and resources; it does not happen at the point of subjective experience. This suggests for example that negative feelings about work need not be predictive of marital dissatisfaction, and that a poor marital relationship need not predict negative feeling about work and/or diminish one's level of accomplishment. These findings run contrary to the practice of some managers to blame the stress problems of employees on difficulties at home.

Some facets external to the work sphere, for example, friend and family support, can be predictive of one's feelings and performance in the workplace. The resulting model indicated that these external resources can predict both positive and negative influences on work. The role of the institution might be to capitalize on findings by assisting in diminishing negative influences and nurturing the positive influences through organizational policies. For

example, policies and practices of an organization to cultivate family and friend support may be an important part of addressing occupational stress.

Success or satisfaction in one area does not imply success in the other. One might inquire whether the coping style employed by the individual in the different domains might play a role. Control coping at work, although highly predictive of accomplishment at work, was not associated with marital satisfaction. It had been proposed above that an escapist style of coping at work was likely transferable to the home situation. Apparently, this logic does not hold for control coping, where it would appear that the use of control coping at work does not suggest the use and benefit of a similar style at home. Control copers have a pro-active and take charge approach to problems, and a subjective feeling of competence which Hobfoll (1989) would describe as a fundamental coping resource. One wonders whether it is possible that such a coping resource might not be portable. Research should be undertaken to unravel the link between style of coping in one domain and satisfaction in that domain and the effects of using consistent versus using dissimilar coping styles across domains.

It was also observed that general emotional distress was predicted by the subjective experience in both the work and the family domains, while psychosomatic distress is a function of negative work experiences. Consistent with the model, this would suggest that there was no family input in the development of physical ailments, and that the latter was exclusively a function of work stresses. However, family input was an important factor that contributed to the emotional state of the individual. This follows popular wisdom that work causes ulcers and heart attacks while family causes elation, misery and depression.

In the Integration Model, all work demands operated through emotional exhaustion, while no resources originating from work operated through this mediating variable. Work Supports and coping styles at work directly determined the level of personal accomplishment at work. However, emotional exhaustion consistently mediated the general psychological outcomes. Greenglass (1988) had also observed that the level of emotional exhaustion determined how much emotional distress the individual experienced.

One research finding deserving of emphasis was the observation that family support appeared to be relevant to both work and home. The processes underlying this relationship remain unknown, warranting further investigation. Currently, several organizations have instituted family focussed programs, including on site day-care facilities and self-scheduling for shift workers, in the hope of gaining family support and increasing efficiency for the organization. However, it is unknown whether these are the sort of programs that nurture family support or whether they actually achieve their prescribed aim of increasing productivity. To answer these questions adequately will require more detailed and rigorous inquiries.

Application of the Model to Work and Home Experiences

The findings suggest that emotional exhaustion at work is associated primarily with conditions at work. The analysis showed that emotional exhaustion was predicted primarily by work related demands, namely work-load, interpersonal conflict, and work interference with the family. Addressing these demands may be a first step in attempting to reduce emotional exhaustion. That is, interventions designed to improve the nature of tasks and personal relationships at work have a greater potential for

alleviating exhaustion than do interventions based on addressing personal problems outside of work. The findings are more consistent with work redesign strategies than employee assistance programs.

An escape coping style also predicted emotional exhaustion. Leiter (1991) suggested that people are more likely to use an escapist style of coping when they feel powerless. Interventions which increase control over important issues at work through empowering employees may also be a method of countering high emotional exhaustion.

These interventions are entirely focused on the work domain, but they may have implications beyond the work setting. The model suggests that in addition to decreasing emotional exhaustion, empowering employees may have a positive impact on experiences outside of work, namely marital satisfaction. The model denotes that an escapist style of coping, which is associated with feelings of powerlessness, is inconsistent with good marital relations.

The model indicates that good marital relations was predicted by not only empowerment, but also low demands at home and a supportive family. Addressing the task requirements in the home and conflict among the family members appear to be potentially more useful in improving relations at home, than focussing attention on work concerns. Moreover, cultivating supportive family relationships is of fundamental importance in the establishment of satisfaction in the home domain.

Furthermore, the results suggest that supportive personal relationships in the family domain are consistent with feelings of personal accomplishment at work. Promoting a supportive relationship at home, along with instituting interventions aimed at increasing the resources

available in the work domain appear to be consistent with developing a sense of accomplishment in one's work-life.

In the Integration Model, both friend and family supports predict work experiences. Encouraging those kinds of relationships and promoting a supportive social environment in the worker's home community may help to both increase a worker's sense of personal accomplishment. In any case a manager who focuses on personal relationships as competing with employees' contribution to their jobs is taking an excessively limited view of the broader social context of work.

It follows that interventions aimed at the development of supportive relationships and empowering decision making formats at work will have an impact on both the quality of employees' subjective experience at work and at home. From this perspective, enhancing the quality of the work environment is an effective way to contribute to the overall quality of a person's life.

Short-comings, Limitations, and Suggestions

The results of these analyses must be treated with caution. For example, one can never be sure that all possible relevant variables have been included. In an attempt to overcome this problem, a variety of demands and resources were measured in both work and family settings. Another concern is related to the possibility of other research models that might be consistent with the data. These may be theoretically plausible causal arrangements of the same variables that could explain their correlation equally well. Through the analyses of alternate and contrasting models, attempts have been made to test and eliminate some of the more prominent configurations of the same variables, which might have possible serious theoretical implications.

It should also be noted that prudence is necessary in generalizing the findings. First, the resulting model differs somewhat from the original hypothesis, and hence needs to be tested on a completely different sample to verify that the specific configuration obtained is reliable. Some researchers have addressed this problem by doing split sample analyses. This was not possible in the current research due to a combination of limited sample size, the search for a comprehensive model requiring several variables, and the type of analyses undertaken. Second, the hypothetical model of work and family stress was tested in a sample of health care workers; the same model may not satisfy other populations.

Other concerns include the use of some measures with only moderate levels of inter-item consistency. More work is required to improve the reliabilities of measures used in this line of research. The reliability, being a reflection of the correlations among the items, increases as all items in a measure converge on one idea. This will become a reality as researchers develop a clearer idea of the underlying concepts they wish to measure. By including an observation component, one might also attempt to improve the validity of the measures. Despite these shortfalls, the model received enough statistical support to warrant confirmation or disconfirmation in future research.

In an attempt to establish causality, the researcher should consider experimental manipulations through randomized trials in several centers across the country. This line of research does not lend itself easily to experimental manipulation. The type of stress outlined here is a chronic type that develops slowly over an extended period of time, with consequences that may not be reversible. Also, there are practical limitations to experimental

manipulation. In an organizational context, it is often not possible to change one variable at a time. Also, even though these are compelling research questions (for example, the influence of supervisor support on depersonalization) that would have interesting theoretical and practical relevance, the potential to do harm is too great. Longitudinal designs are suggested to establish causality in this field. Through the collection of data over a time period, the effects of naturally occurring changes in the organization, in the home and in the individual would become more apparent. The diary method would attempt to look at the micro-structure of these effects on a day to day basis, while more extended time periods may be important for factors such as, burnout and some psychological distress, that do not change that quickly.

Structural equation analysis (e.g., using LISREL) is an especially useful tool in these types of analyses. It is a rather complicated procedure, which produces convergent information relevant to verifying the results. One of the major strengths of this statistical analytic technique is its ability to extract and identify patterns in a complex set of data. For example, although a relationship was observed between family interference with work and marital satisfaction in the zero-order correlation, this relationship made no significant contribution in the context of the overall model.

Some Future Research Ideas

Future research should address gender differences. Many researchers in the field of work and family (e.g., Barnett, 1993) believe that models of the relationship between work and family may be different for men and women. The current model pertains to a sample of female staff only. Research energy should be allocated to testing the Integration Model on a male sample, to see

whether a similar pattern of segmentation and spill-over occurs. An additional contrast between the two groups might involve comparing the significance of the different antecedents in predicting a consequence. For example, one might ask whether personal accomplishment is predicted by the same antecedents in both men and women, and also whether the contribution of a particular predictor is significantly different in the two groups.

In the Integration Model, the contribution of family to work-life, although significant, was unexpectedly low. This is likely a result of the choice of antecedents, rather than the meaningfulness of family to the individual's work experience. Antecedents at work were chosen because they had been shown to be key variables in determining experiences at work. Predictors at home were chosen as parallel measures to the predictors at work. Some home measures were direct rewording of work measures. In future research, it may be important to use different measures of antecedent at home, including some that capture the essence of the home relationship, such as the number of dependants at home, decision-making/ problem-solving style, attitudes, beliefs, expectations, power roles, family boundaries, and financial security.

Having determined the key variables and paths in a model of work and family stress, the next step would involve gaining deeper knowledge about the processes underlying these paths. A relationship of interest is that between resources and psychological outcomes. An ambitious project would be to develop a taxonomy of all potential resources, their influence on various outcomes, and their response curves. Such a classification system would have important applications in mobilizing resources to address both

work and family stress. This line of research would build upon a central finding of this study: that resources and support systems cross the boundary between the work and family domains more readily than do demands.

It is highly recommended that future research in the work-family area continues to look at comprehensive models that consider simultaneously a wide variety of relationships and concepts. Such models should look at both positive and negative influences of work and family roles. The present research represented an important departure in this direction. Some components of the Integration Model have corroborated what was previously found on a more limited scale, while other pieces have contributed new theoretical knowledge, which needs to be further tested and improved.

As the mutual impact of work and family life becomes clarified, psychologists will gain a deeper appreciation of the full context in which workers are living, and hence be better able to design intervention programs and assist in developing organizational policies. Dual focussed policies and interventions may have more significant and long-lasting effects. Work and family are complicated aspects of peoples' lives and can only be thoroughly understood by carefully outlining and measuring their intricate parts, and then attempting to fit them all together into a working, dynamic whole.

APPENDIX A

INFORMATION LETTER

We are conducting a study to assess relationships between work and family issues and psychological states, such as satisfaction, burnout, and stress. It involves a series of questionnaires which assess participants' evaluations of their work and home environments, and assessments of participants' psychological relationships with these two facets of their lives.

Participation is anonymous, although participants will be asked to identify their department or unit. The questionnaires also include a minimal number of demographic items. Should you feel that the demographic items identify you too closely, you are free to ignore them. All research materials will be kept in a locked area, and destroyed after computer entry of data.

Following the assessment, the researchers will provide all participants with a report describing the findings. All participants will receive the same report; no special reports will be provided to any individuals or groups. In these reports, *no* individual participants or departments be identified. That is, the report will discuss trends over groups, not specific groups. The researchers will be available after the report distribution, should a department or unit wish to discuss their specific situation at one of their regular meetings.

The researchers intend this study to make a practical contribution to the people working at the VG Hospital, as well as a means of understanding important issues of work and family life. Your suggestions and comments are welcomed.

This study will form part of a doctoral dissertation project. The principal researcher is Josette Durup, a student of The Ph.D. in Clinical Psychology Program at Dalhousie University. This research will be supervised by Dr. Micheal Leiter, a psychology professor at Acadia University with involvement in the Ph.D. program in clinical psychology at Dalhousie.

This research has received approval from the Hospital's research ethics reviews. Participation in the study is entirely voluntary, and is *not* part of your regular job duties. You are free to withdraw from participation at any time during this longitudinal study.

Josette Durup, M.Sc,

Micheal Leiter, Ph.D.,

APPENDIX B

PARTICIPATION FORM

Work and Family Life Study

**Micheal Leiter, Ph. D., Josette Durup, M.Sc.
Psychology Department
Dalhousie University**

We are studying the role of job and family factors in determining how much people can give to their jobs and their families and what they can derive from these two aspects of their lives.

Your participation in this study will require completing a package of questionnaires. The questionnaires ask about your perception of your job and your home. It also deals with coping strategies which people use at work and at home. We will summarize the research findings for the entire organization; it will not break down data in any way which would permit identification of any participant.

At the end of the study, we will be writing a report which will be available to you and may help define ways to build more cohesion between work and family life.

IMPORTANT POINTS:

THIS STUDY IS CONDUCTED UNDER THE SUPERVISION OF A PSYCHOLOGIST FROM DALHOUSIE AND ACADIA UNIVERSITY.

NO ONE AT YOUR ORGANIZATION WILL HAVE ACCESS TO THE QUESTIONNAIRES.

PARTICIPATION IN THIS STUDY IS VOLUNTARY.

I have read this material and I agree to participate in the study.

(Signature)

APPENDIX C

INSTRUCTIONS

Please read the instructions with each questionnaire and answer all of the items. In most cases, you need only circle a number or check an item. Few written comments are necessary. If the perfect response does not seem to be on the questionnaire, please indicate the response which best approximates the perfect response. Please do not skip any items.

After completing all of the questionnaires, return them to the envelope, seal it, and return it.

Participation in this study is entirely voluntary. If you do not wish to contribute to this study, simply return the questionnaire package unanswered.

APPENDIX D

QUESTIONNAIRE PACKAGE

Work Questionnaire Package

Workload⁹

- | | | | | | |
|---|-------------|---|---|---|-----------|
| 1. *How would you describe the workload level you normally experience on your job? | 1 | 2 | 3 | 4 | 5 |
| | very heavy | | | | light |
| 2. *How adequate is the number of staff in your section in terms of meeting the work requirements? | 1 | 2 | 3 | 4 | 5 |
| | inadequate | | | | adequate |
| 3. How physically demanding is your current job? (walking, carrying, lifting, etc.) | 1 | 2 | 3 | 4 | 5 |
| | not at all | | | | very much |
| 4. How great is the amount of emotional strain that your job puts on you? (responsibility, worry, etc.) | 1 | 2 | 3 | 4 | 5 |
| | none at all | | | | very much |

Interpersonal Conflict¹⁰

- | | | | | | | | |
|---|-------------|---|--------------|---|---|-------------|---|
| 1. I encounter conflict with my Patients | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Rarely | | Occasionally | | | Always | |
| 2. I encounter conflict with my Coworkers | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Rarely | | Occasionally | | | Always | |
| 3. I encounter conflict with my Superiors | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Rarely | | Occasionally | | | Always | |
| 4. Most of the conflict I experience in my job is: | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Mildly | | | | | Extremely | |
| | Frustrating | | | | | Frustrating | |
| 5. On a weekly basis, I deal with difficult people at work. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | Rarely | | Occasionally | | | Always | |

Work Interference with Family¹¹

- | | Strongly Agree | | | | Strongly Disagree |
|--|----------------|---|---|---|-------------------|
| | 1 | 2 | 3 | 4 | 5 |
| 1. After work, I come home too tired to do things I'd like to do. | 1 | 2 | 3 | 4 | 5 |
| 2. On the job I have so much work to do that it takes away from my personal interest | 1 | 2 | 3 | 4 | 5 |
| 3. My family/friends dislike how often I am preoccupied with my work while I am at home. | 1 | 2 | 3 | 4 | 5 |
| 4. My work takes up time that I'd like to spend with family/friends. | 1 | 2 | 3 | 4 | 5 |

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WORK RELATIONSHIPS¹²

In this section you describe your relationships with important coworkers. Indicate below the extent to which each statement describes your relationship with your immediate supervisor, then the relationship with your favourite co-worker. In each case, think of your relationship with a particular person. Just describe the relationship as you experience it. Rate each of the following statements on the following scale:

1	2	3	4	5	6	7
Never			Sometimes			Always

My Immediate Supervisor:

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. Is easy to talk with. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Is committed to providing first rate service. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. *Appears to experience stress in his/her job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Is helpful in resolving conflicts among staff. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Listens to what I have to say. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Is an expert in his/her field. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. *Seems tense and frustrated when we talk. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Puts the needs of the work group first. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. Gives me support when I need it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Provides creative solutions to problems. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. *Is too busy to talk with me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. Makes fair decisions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

My Favourite Co-Worker:

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. Is easy to talk with. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Is committed to providing first rate service. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. *Appears to experience stress in his/her job. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. Is helpful in resolving conflicts among staff. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. Listens to what I have to say. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. Is an expert in his/her field. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. *Seems tense and frustrated when we talk. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Puts the needs of the work group first. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. Gives me support when I need it. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. Provides creative solutions to problems. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. *Is too busy to talk with me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. Makes fair decisions. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

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Coping Strategies¹³

Indicate the extent to which you engage in the following activities when you are having difficulties with your job responsibilities.

	Rarely			Often	
1. Get together with my supervisor to discuss this.	1	2	3	4	5
2. Try to be very organized so that I can keep on top of things.	1	2	3	4	5
3. Talk with people (other than my supervisor) who are involved.	1	2	3	4	5
4. Try to see this situation as an opportunity to learn and develop new skills.	1	2	3	4	5
5. Put extra attention on planning and scheduling.	1	2	3	4	5
6. Try to think of myself as a winner - as someone who always comes through.	1	2	3	4	5
7. Tell myself that I can probably work things out to my advantage.	1	2	3	4	5
8. Devote more time and energy to doing my job.	1	2	3	4	5
9. Try to get additional people involved in the situation.	1	2	3	4	5
10. Think of the challenges I can find in this situation	1	2	3	4	5
11. Try to work faster and more efficiently.	1	2	3	4	5
12. Decide what I think should be done and explain this to the people who are affected.	1	2	3	4	5
13. Give it my best effort to do what I think is expected of me.	1	2	3	4	5
14. Request help from people who have the power to do something for me.	1	2	3	4	5
15. Seek advice from people outside the situation who may not have power but who can help me think of ways to do what is expected of me.	1	2	3	4	5
16. Work on changing policies which have caused this situation.	1	2	3	4	5
17. Throw myself into my work and work harder, longer hours.	1	2	3	4	5
18. Avoid being in this situation if I can.	1	2	3	4	5
19. Tell myself that time takes care of situations like this.	1	2	3	4	5
20. Try to keep away from this type of situations.	1	2	3	4	5
21. Remind myself that work isn't everything.	1	2	3	4	5
22. Anticipate the negative consequences so that I'm prepared for the worst.	1	2	3	4	5
23. Delegate work to others.	1	2	3	4	5
24. Separate myself as much as possible from the people who created this situation.	1	2	3	4	5
25. Try not to be concerned about it.	1	2	3	4	5
26. Do my best to get out of the situation gracefully.	1	2	3	4	5
27. Accept this situation because there is nothing I can do to change it.	1	2	3	4	5
28. Set my own priorities based on what I like to do.	1	2	3	4	5

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Human Services Survey
Christina Maslach and Susan E. Jackson

see reference: Maslach & Jackson, 1986

Home Questionnaire Package

Work Overload¹⁴

- | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|--|---|---|---|---|---|---|---|
| 1. I do not have enough time to do what my family expects of me. | | | | | | | |
| 2. I am asked to do excessive amounts of work at home. | | | | | | | |

Interpersonal Conflict (Family Activities - Moos et al, 1984)¹⁵

Please answer each question as accurately as you can by placing an "x" in the space provided.

Do any of the following topics often cause disagreements in your family?

- | <u>Yes</u> | <u>No</u> | | <u>Yes</u> | <u>No</u> | |
|------------|-----------|----------------|------------|-----------|-------------------------------|
| ___ | ___ | Friends | ___ | ___ | Helping with Household Chores |
| ___ | ___ | Relatives | ___ | ___ | Sex |
| ___ | ___ | Driving Habits | ___ | ___ | Drugs |
| ___ | ___ | Politics | ___ | ___ | Alcohol |
| ___ | ___ | Money | ___ | ___ | Cigarette Smoking |
| ___ | ___ | Use of the Car | ___ | ___ | Discipline |
| ___ | ___ | Watching TV | ___ | ___ | Major Purchases |

Family Interference with Work¹⁶

- | | Strongly
Agree
1 | 2 | 3 | 4 | Strongly
Disagree
5 |
|---|------------------------|---|---|---|---------------------------|
| 1. I'm often too tired at work because of the things I have to do at home. | | | | | |
| 2. My personal demands are so great that it takes away from my work. | | | | | |
| 3. My superiors and peers dislike how often I am preoccupied with my personal life while at work. | | | | | |
| 4. My personal life takes up time that I'd like to spend at work. | | | | | |

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¹⁵ Copyright 1984, 1990, Rudolf H. Moos, Centre for Health Care Evaluation, Stanford University Medical Centre, Palo Alto, California 94305.

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Support¹⁷

The statements which follow refer to feelings and experiences which occur to most people at one time or another in their relationships with friends. For each statement there are three possible answers: Yes, No, Don't Know. Please circle the answer you choose for each item.

- | | | | | |
|-----|----|------------|-----|---|
| Yes | No | Don't Know | 1. | My friends give me the moral support I need. |
| Yes | No | Don't Know | 2. | Most other people are closer to their friends than I am. |
| Yes | No | Don't Know | 3. | My friends enjoy hearing about what I think. |
| Yes | No | Don't Know | 4. | Certain friends come to me when they have problems or need advice. |
| Yes | No | Don't Know | 5. | I rely on my friends for emotional support. |
| Yes | No | Don't Know | 6. | If I felt that one or more of my friends were upset with me, I'd just keep it to myself. |
| Yes | No | Don't Know | 7. | I feel that I'm on the fringe in my circle of friends. |
| Yes | No | Don't Know | 8. | There is a friend I could go to if I were just feeling down, without feeling funny about it later. |
| Yes | No | Don't Know | 9. | My friends and I are very open about what we think about things. |
| Yes | No | Don't Know | 10. | My friends are sensitive to my personal needs. |
| Yes | No | Don't Know | 11. | My friends come to me for emotional support. |
| Yes | No | Don't Know | 12. | My friends are good at helping me solve problems. |
| Yes | No | Don't Know | 13. | I have a deep sharing relationship with a number of friends. |
| Yes | No | Don't Know | 14. | My friends get good ideas about how to do things or make things from me. |
| Yes | No | Don't Know | 15. | When I confide in friends, it makes me feel uncomfortable. |
| Yes | No | Don't Know | 16. | My friends seek me out for companionship. |
| Yes | No | Don't Know | 17. | I think that my friends feel that I'm good at helping them solve problems. |
| Yes | No | Don't Know | 18. | I don't have a relationship with a friend that is as intimate as other people's relationships with friends. |

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Yes No Don't Know 19. I've recently gotten a good idea about how to do something from a friend.

Yes No Don't Know 20. I wish my friends were much different.

The statements which follow refer to feelings and experiences which occur to most people at one time or another in their relationships with families. For each statement there are three possible answers: Yes, No, Don't Know. Please circle the answer you choose for each item.

Yes No Don't Know 1. My family give me the moral support I need.

Yes No Don't Know 2. I get good ideas about how to do things or make things from my family

Yes No Don't Know 3. Most other people are closer to their familys than I am.

Yes No Don't Know 4. When I confide in the members of my family who are closest to me, I get the idea that it makes them uncomfortable.

Yes No Don't Know 5. My family enjoys hearing about what I think.

Yes No Don't Know 6. Members of my family share many of my interests.

Yes No Don't Know 7. Certain members of my family come to me when they have problems or need advice.

Yes No Don't Know 8. I rely on my family for emotional support.

Yes No Don't Know 9. There is a member of my family I could go to if I were just feeling down, without feeling funny about it later.

Yes No Don't Know 10. My family and I are very open about what we think about things.

Yes No Don't Know 11. My family is sensitive to my personal needs.

Yes No Don't Know 12. Members of my family come to me for emotional support.

Yes No Don't Know 13. Members of my family are good at helping me solve problems.

Yes No Don't Know 14. I have a deep sharing relationship with a number of members of my family.

Yes No Don't Know 15. Members of my family get good ideas about how to do things or make things from me.

Yes No Don't Know 16. When I confide in members of my family, it makes me feel uncomfortable.

Yes No Don't Know 17. Members of my family seek me out for companionship.

Yes No Don't Know 18. I think that members of my family feel that I'm good at helping them solve problems.

Yes No Don't Know 19. I don't have a relationship with a member of my family that is as intimate as other people's relationships with family members.

Yes No Don't Know 20. I wish my family were much different.

Coping Survey¹⁸

Below is a list of different ways individuals may try to prevent or deal with difficulties with their marriage. Circle the number that describes how often in general you use each item with problems or hassles in your marriage. Please rate each item.

	very rarely		occa- sionally		frequ- ently		very often
6. Think about how I wish I had someone outside my marriage to support me	1	2	3	4	5	6	7
7. Talk to a person outside my marriage about how others work out marital difficulties.	1	2	3	4	5	6	7
10. Seek advice on our problem from a marriage counsellor or clergy with my spouse	1	2	3	4	5	6	7
15. Go by myself to discuss our problems with friends or family	1	2	3	4	5	6	7
18. Throw things at my spouse or start hitting him/her	1	2	3	4	5	6	7
29. Leave my spouse alone and go talk to other people about how upset I am.	1	2	3	4	5	6	7
30. Actively work on developing my relationship with people outside my marriage	1	2	3	4	5	6	7
37. Call up a friend and vent my feelings to him/her	1	2	3	4	5	6	7
43. Cry or yell at my spouse, telling him/her how much he/she hurt me	1	2	3	4	5	6	7
49. Negotiate with my spouse ("If you do __ for me, I'll do __ for you")	1	2	3	4	5	6	7
50. Put in an extra effort to socialise with people in settings outside of my marriage	1	2	3	4	5	6	7
53. Wish my friends or relatives would support and encourage me more	1	2	3	4	5	6	7
4. Think about just forgetting the problem because of the children or friends	1	2	3	4	5	6	7
5. Think to myself that the best solution to the problem for my spouse and family would be if I gave in	1	2	3	4	5	6	7

¹⁸ Permission for reproduction obtained from Lydia L. Zborowski, Department of Psychology, Fairleigh Dickinson University, Teaneck, New Jersey 07666.

	very rarely	2	3	4	5	6	7 very often
9. Tell myself to forget it and just give in to my spouse	1	2	3	4	5	6	7
11. Tell myself that despite difficulties at home, things are going well for me at my work or hobby	1	2	3	4	5	6	7
26. Think about just forgetting it and letting my spouse have his or her way	1	2	3	4	5	6	7
33. Concentrate my time and energies on some task/project	1	2	3	4	5	6	7
38. Consider just giving in for the sake of the children or relatives	1	2	3	4	5	6	7
41. Remind myself of all the tasks I'm good at doing outside of my marriage	1	2	3	4	5	6	7
48. Think about giving in for the sake of my spouse and everyone else involved as a solution to the problem	1	2	3	4	5	6	7

Satisfaction¹⁹

	<u>All the time</u>	<u>Most of the time</u>	<u>More often than not</u>	<u>Occa- sionally</u>	<u>Rarely</u>	<u>Never</u>
16. How often have you discussed or considered divorce, separation, or terminating your relationship?	_____	_____	_____	_____	_____	_____
17. How often do you or your mate leave the house after a fight?	_____	_____	_____	_____	_____	_____
18. In general, how often do you think that things between you and your partner are going well?	_____	_____	_____	_____	_____	_____
19. Do you confide in your mate?	_____	_____	_____	_____	_____	_____
20. Do you ever regret that you married? (or lived together)	_____	_____	_____	_____	_____	_____
21. How often do you and your partner quarrel?	_____	_____	_____	_____	_____	_____
22. How often do you and your mate "get on each other's nerves?"	_____	_____	_____	_____	_____	_____
23. Do you kiss your mate?	_____	_____	_____	_____	_____	_____

¹⁹ Permission obtained from National Council on Family Relations, Minneapolis, MN, and Multi-Health Systems, Tonawanda, New York.

31. The dots on the following line represents different degrees of happiness in your relationship. The middle point, 'happy', represents the degree of happiness of most relationships. Please circle the dot which best describes the degree of happiness, all things considered, in your relationship.

0	1	2	3	4	5	6
Extremely Unhappy	Fairly Unhappy	A little Unhappy	Happy	Very Happy	Extremely Happy	Perfect

32. Which of the following statements best describes how you feel about the future of your relationship?

☐ I want desperately for my relationship to succeed, and would go to almost any length to see that it does

☐ I want very much for my relationship to succeed, and will do all I can to see that it does

☐ I want very much for my relationship to succeed, and will do my fair share to see that it does

☐ It would be nice if my relationship succeeded, but I can't do much more than I am doing now to help it succeed

☐ It would be nice if it succeeded, but I refuse to do any more than I am doing now to keep the relationship going.

☐ My relationship can never succeed, and there is no more that I can do to keep the relationship going.

2. \$25,000 or more

8. What is the employment status of your spouse/partner?

1. Full-time
2. Part-time: a) half-time b) quarter-time c) other (specify) _____
3. Casual: _____ hours/week

9. In what range was your family income last year? (Circle the correct answer)

- | | |
|-------------------------|-------------------------|
| 1. Less than \$9,999 | 6. \$30,000 to \$44,999 |
| 2. \$10,000 to \$14,999 | 7. \$35,000 to \$44,999 |
| 3. \$15,000 to \$19,999 | 8. \$45,000 to \$54,999 |
| 4. \$20,000 to \$24,999 | 9. \$55,000 or more |
| 5. \$25,000 to \$29,999 | |

10. What is the highest level you completed in school? (Circle only one answer)

1. Less than grade 12
2. Completed high school
3. Some college
4. Completed Diploma
5. Completed undergraduate degree
6. Some post graduate work or degree

11. What is your job title? _____

12. In what general category would you place your job? (Circle number)

- | | |
|------------------------------|-----------------------------|
| 1. Professional or Technical | 5. Clerical |
| 2. Managerial/Administrative | 6. Sales |
| 3. Teaching | 7. Service |
| 4. Medicine and Health | 8. Manufacturing/Processing |

13. How many hours a week do you work at the job indicated? _____ hrs/wk

14. How many hours of paid employment do you do in a week? _____ hrs/wk

15. How long have you been in your present job? _____

16. How long have you been in this general type of work? _____

17. How likely is it that you will be in the same job next year?

- | | | | | | | |
|----------------------|---|---|---|---|---|----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very unlikely | | | | | | very likely |
| No chance of staying | | | | | | Will definitely stay |

18. How likely will you be in the same spousal relationship next year?

- | | | | | | | |
|----------------------|---|---|---|---|---|----------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| very unlikely | | | | | | very likely |
| No chance of staying | | | | | | Will definitely stay |

Psychological Outcomes

Below is a list of words that describe feelings people have. Please read each one carefully. Then fill in ONE number under the answer to the right which best describes HOW YOU HAVE BEEN FEELING DURING THE PAST FEW DAYS INCLUDING TODAY.

The number refer to these phrases

0=Not at all 1=A little 2=Moderately 3=Quite a bit 4=Extremely

Sample Items²⁰

2. Tense	0	1	2	3	4
7. Lively	0	1	2	3	4
14. Sad	0	1	2	3	4
27. Restless	0	1	2	3	4
29. Fatigued	0	1	2	3	4
33. Resentful	0	1	2	3	4
39. Bitter	0	1	2	3	4
43. Good natured	0	1	2	3	4
56. Full of pep	0	1	2	3	4
59. Forgetful	0	1	2	3	4

²⁰ Copyright, 1981 by Educational and Industrial Testing Service, San Diego, California. Items reproduced by permission.

Below is a list of physical troubles²¹. Please indicate how often each of these bothers you. Do this by circling the number to the right of each trouble which shows how often you are bothered by that trouble. Keep in mind that the LARGER the number the MORE OFTEN the trouble bothers you. Please DO NOT SKIP any troubles. You may take as much time as is necessary.

0 = ALMOST NEVER 2 = ABOUT ONCE A MONTH 4 = ABOUT TWICE A WEEK
1 = ABOUT ONCE A YEAR 3 = ABOUT ONCE A WEEK 5 = NEARLY EVERY DAY

1. Nausea (Feeling like throwing up).	0	1	2	3	4	5
2. Headaches.	0	1	2	3	4	5
3. Troubles with ears or hearing.	0	1	2	3	4	5
4. Neck aches or pains.	0	1	2	3	4	5
5. Feeling hot or cold regardless of the weather.	0	1	2	3	4	5
6. Arm or leg aches or pains.	0	1	2	3	4	5
7. Shakiness.	0	1	2	3	4	5
8. Swelling of arms, hands, legs, or feet.	0	1	2	3	4	5
9. Stuttering or stammering.	0	1	2	3	4	5
10. Difficulty sleeping.	0	1	2	3	4	5
11. Losing weight.	0	1	2	3	4	5
12. Backaches.	0	1	2	3	4	5
13. Intestinal or stomach trouble.	0	1	2	3	4	5
14. Difficulty with urination (Passing water).	0	1	2	3	4	5
15. Heart trouble.	0	1	2	3	4	5
16. Trouble with teeth.	0	1	2	3	4	5
17. Numbness, or lack of feeling in any part of the body.	0	1	2	3	4	5
18. Aches or pains in hands or feet.	0	1	2	3	4	5
19. Fainting spells.	0	1	2	3	4	5
20. Excessive perspiration.	0	1	2	3	4	5
21. Abnormal blood pressure	0	1	2	3	4	5
22. Paralysis (Unable to move part of the body).	0	1	2	3	4	5
23. Trouble with eyes or vision.	0	1	2	3	4	5
24. Burning, tingling or crawling feelings in the skin.	0	1	2	3	4	5
25. Skin trouble (Rashes, boils or itching).	0	1	2	3	4	5
26. Feeling tired.	0	1	2	3	4	5
27. Muscular weakness.	0	1	2	3	4	5
28. Dizzy spells.	0	1	2	3	4	5
29. Muscular tensions.	0	1	2	3	4	5
30. Any trouble with the senses of taste or smell.	0	1	2	3	4	5
31. Difficulty breathing (Short of breath, asthma, etc.).	0	1	2	3	4	5
32. Twitching muscles.	0	1	2	3	4	5
33. Poor health in general.	0	1	2	3	4	5
34. Excessive gas.	0	1	2	3	4	5
35. Difficulty swallowing.	0	1	2	3	4	5
36. Seizures (Convulsions or fits).	0	1	2	3	4	5
37. Gaining weight.	0	1	2	3	4	5

²¹ Items from the Wahler Physical Symptoms Inventory copyright, 1973 by Western Psychological Services. Reprinted for display purposes by permission of the publisher, Western Psychological Services, 12031 Wilshire Boulevard, Los Angeles, California 90025.

0 = ALMOST NEVER 2 = ABOUT ONCE A MONTH 4 = ABOUT TWICE A WEEK
 1 = ABOUT ONCE A YEAR 3 = ABOUT ONCE A WEEK 5 = NEARLY EVERY DAY

38. Difficulty with appetite.	0	1	2	3	4	5
39. Bowel trouble (Constipation or loose bowels).	0	1	2	3	4	5
40. Vomiting.	0	1	2	3	4	5
41. Chest pains.	0	1	2	3	4	5
42. Hay fever or other allergies.	0	1	2	3	4	5

APPENDIX E

INFORMED CONSENT

Informed consent is an essential prerequisite for participation in psychological research. The following measures will be used to ensure informed consent:

- a) The researcher will provide an outline of the study at meetings of participating units and answer questions as clearly as possible. The researcher will inform the subjects of the broad outlines of the study, but will avoid discussing specific hypotheses to that extent that results would be prejudiced.
- b) Participants will sign participation forms (See Appendix B) which emphasize the voluntary nature of their participation.
- c) All research forms will be clearly labeled as being part of the "Work/Family Project." They will clearly state that they are not part of the employee's regular work assignment, but part of their voluntary participation in this study. The researchers will explicitly inform participants at each stage of the study that they are free to withdraw their participation at any time.
- d) The study involves no deception of subjects. They will not be misled in any way about any part of the study. Research activities will proceed from the assumption that active, informed involvement of participants is a beneficial component.

Confidentiality

The researchers assure confidentiality of responses. The research is conducted under the direction of a clinical psychologist (Dr. Micheal Leiter) who is fully aware of and committed to ethical principles regarding confidentiality in research and clinical work. The researchers will use various procedures to ensure confidentiality:

- a) Questionnaires will be organized by codes. Participants' names will not appear on any forms at any time.
- b) Completed questionnaires will be kept in a locked room at the University (Dalhousie/Acadia). No questionnaires will be kept at the organization.

- c) The researchers will not discuss individual responses with anyone. Research reports will only report composite data. There will be no breakdowns by any small organizational unit.
- d) Participation is anonymous.
- e) The study requires no information about individual patients.
- f) Ideally, the organizations would like to be identified and thanked for its participation in the research publications resulting from this study. However, the organizations will always have the option of anonymity in written reports. The research reports will not identify the organizations unless the researchers receive written permission to do so from the organizations' administration.
- g) As with the other components of the study, data sheets will be organized by codes, but these codes will be provided by the researcher. Research personnel working with the data will only have access to the codes.

APPENDIX F
LETTERS AUTHORISING REPRODUCTION OF INSTRUMENTS



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3 September 93

Ms Josette Durup
Psychology Department
Dalhousie University
Halifax, NS B3H 4J1
Canada

Dear Ms Durup:

Thank you for requesting the inclusion of my scales in the manuscript of your dissertation. I hereby give you permission to reproduce the following scales:

Workload At Work
Interpersonal Conflict At Work
The Contact Rating Scale

Best wishes to you in your dissertation.

Please cite the appropriate journal references in your thesis.

Yours truly,

A handwritten signature in black ink, appearing to read "M. P. Leiter".

Michael P. Leiter, Ph.D.
Dean and Professor of Psychology

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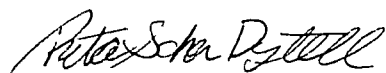
July 23, 1993

Ms. M J.R. Durup
Psychology Department
Dalhousie University
Halifax, Nova Scotia,
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Dear Ms. Durup:

Neala Schwartzberg and I grant you permission to reproduce and utilize our Role Overload subscale of the Family Stress Scale for you dissertation research. We trust that you will include the appropriate references for the scale and share your results with us.

Sincerely,



Rita Scher Dytell, Ph.D.
Associate Professor of Psychology

Marie Josette Rita DUCRUP
 Psychology Department,
 Dalhousie University,
 Halifax, Nova Scotia,
 Canada, B3H 4J1

19 July 1993

Dr Rudolf Moos,
 Social Ecology Laboratory,
 Department of Psychiatry and Behavioural Services,
 Stanford University Medical Centre,
 Palo Alto, California, 94305

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VI J R Durup

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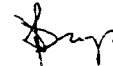
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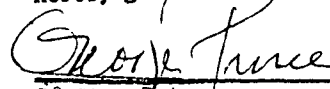
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4 August 1993

Dr. Mary Procidano,
Department of Psychology,
Fordham University,
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M. J. R. Durup

Dear Ms. Durup,
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JUL 23 1993

Marie Josette Rita DURUP
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19 July 1993

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P. 0

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September 15, 1993

To: Jo Durup
Fax No. 1-902-494-6585

I authorize you to include the items measuring Work Interference with Family (WIS) and Family Interference With work (FIW).

Barbara Gutek

Department of Psychology
Fairleigh Dickinson University
Teaneck, New Jersey 07666
August 11, 1993

Marie Josette Rita Durup
Psychology Department
Dalhousie University
Halifax, Nova Scotia
Canada, B3H 4J1

Dear Ms. Durup

Thank you for your continued interest in the Marital Coping Inventory. You are welcome to use this measure in your research provided that you cite Lydia L. Zborowski and William H. Berman as the authors on the scale. The full citation is

Zborowski, L. L. & Berman, W. H. (1990). Assessing the process of marital adaptation: The Marital Coping Inventory. Poster presented at the 98th Annual Convention of the American Psychological Association, Boston, Massachusetts, August 10-14.

Because the scale is still in the stages of development, we also request that a copy of the raw data gathered by the Marital Coping Inventory to be mailed to us at the Department of Psychology, Fairleigh Dickinson University. This will help further the standardization process of this instrument.

It might also be of interest to you that my dissertation research involves a revised version of the Marital Coping Inventory. I am currently in the process of gathering normative data for this scale, and would be happy to discuss with you the details of my work.

Best of luck with your dissertation! Please let me know if I could be of further assistance to you in the future.

Sincerely,

A handwritten signature in cursive script that reads "Lydia L. Zborowski, M.A.".

Lydia L. Zborowski, M.A.

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September 3, 1993.

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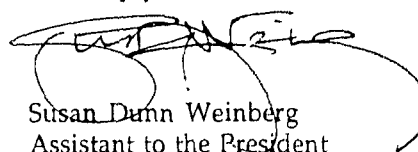
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APPENDIX G

STRUCTURAL EQUATIONS FOR FIGURE 1.

$$\begin{aligned} EE = & \gamma_{EE,WWL} WWL + \gamma_{EE,WIC} WIC + \gamma_{EE,WIF} WIF + \\ & \gamma_{EE,HWL} HWL + \gamma_{EE,HIC} HIC + \gamma_{EE,FIW} FIW + \\ & \gamma_{EE,SUP} SUP + \gamma_{EE,CWK} CWK + \gamma_{EE,ESC} ESC + \gamma_{EE,CON} CON + \\ & \gamma_{EE,FS} FS + \gamma_{EE,FMS} FMS + \gamma_{EE,CSACT} CSACT + \gamma_{EE,CSPAS} CSPAS + \zeta_{EE}. \end{aligned}$$

$$DP = \beta_{DP,EE} EE + \zeta_{DP}.$$

$$\begin{aligned} PA = & \beta_{PA,SAT} SAT + \\ & \gamma_{PA,SUP} SUP + \gamma_{PA,CWK} CWK + \gamma_{PA,ESC} ESC + \gamma_{PA,CON} CON + \\ & \gamma_{PA,FS} FS + \gamma_{PA,FMS} FMS + \gamma_{PA,CSACT} CSACT + \gamma_{PA,CSPAS} CSPAS + \zeta_{PA}. \end{aligned}$$

$$\begin{aligned} SAT = & \beta_{SAT,EE} EE + \beta_{SAT,PA} PA + \\ & \gamma_{SAT,HWL} HWL + \gamma_{SAT,HIC} HIC + \gamma_{SAT,FIW} FIW + \\ & \gamma_{SAT,SUP} SUP + \gamma_{SAT,CWK} CWK + \gamma_{SAT,ESC} ESC + \gamma_{SAT,CON} CON + \\ & \gamma_{SAT,FS} FS + \gamma_{SAT,FMS} FMS + \gamma_{SAT,CSACT} CSACT + \gamma_{SAT,CSPAS} CSPAS + \zeta_{SAT}. \end{aligned}$$

$$PSYC = \beta_{PSYC,EE} EE + \beta_{PSYC,SAT} SAT + \beta_{PSYC,PA} PA + \beta_{PSYC,PS} PS + \zeta_{PSYC}.$$

$$PS = \beta_{PS,EE} EE + \beta_{PS,SAT} SAT + \beta_{PS,PSYC} PSYC + \zeta_{PS}.$$

β = coefficient from endogenous to endogenous

γ = coefficient from exogenous to endogenous

ζ = Random error in structural equation

EE, PS, WWL, etc., are the variable abbreviations - see Table 15 for full names

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