THE ROLE OF THE WORK ENVIRONMENT IN THE PSYCHOLOGICAL WELL-BEING AND DISTRESS OF STRESSED FEMALE CLERICAL WORKERS

by

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Abstract

The purpose of this study was to examine the way the work environment contributes to clerical workers’ psychological well-being and distress. Given recent changes to clerical workers’ occupational context (e.g., increased workload, job insecurity), specific dimensions of the work environment were expected to predict both job satisfaction and depression.

Data were collected longitudinally on three occasions (1 month apart) from two samples (N=223; N=207, respectively) of stressed female clerical workers. Phase 1 established the factorial structure of the shortened version of the Work Environment Scale (Billings & Moos, 1982). The hypothesized two-factor structure (social resources, work demands) was not supported by Confirmatory Factor Analysis (CFA). Further Exploratory Factor Analysis and CFA revealed a three-factor structure: Organizational Support (job involvement, peer cohesion, supervisor support, autonomy, and work clarity), Work Pressure, and Managerial Control. The results partially supported Moos’s (1981) three-dimensional work environment model.

Based on the results of Phase 1, in Phase 2, I examined the extent to which Organizational Support, Work Pressure, and Managerial Control predicted job satisfaction and depression, statistically controlling for demographic variables and negative affectivity (only in Sample 2). Hierarchical multiple regression supported the hypotheses that Organizational Support predicted greater job satisfaction in both samples and less depression for Sample 1 only. Unexpectedly, Work Pressure and Managerial Control were not linearly related to job satisfaction or depression. Path analysis revealed that job satisfaction mediated the Organizational Support-depression relationship, but only for Sample 1, partially supporting the hypothesis. Exploratory analyses revealed that the moderating effects of
Organizational Support on the work demands-job satisfaction or depression relationships were not statistically significant. However, union membership was associated with greater job dissatisfaction.

Of note, components of the Organizational Support subscale reflect characteristics of the work environment that enhance clerical workers feelings of being valued and respected for their contributions to the workplace. Thus, creating opportunities for organizational support may be important to administrators who wish to design a psychologically healthy work environment for clerical workers. Finally, the role of job satisfaction in mediating the relationship between organizational support and depression is an important finding, and warrants further study.
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Chapter I: Introduction

The nature and extent to which the work environment impacts the psychological well-being and distress of employees experiencing ongoing work stress is not well known. For clerical workers, the work environment has undergone tremendous change in the last century and continues to be transformed, resulting in the erosion of clerical jobs and shifts toward part-time and contractual work or unemployment (Burke & Leitner, 2000; Cohen & White, 1987). As a consequence, the work environment has the potential to influence the psychological well-being (i.e., job satisfaction) or distress (i.e., depression) of clerical workers who are experiencing ongoing work stress. Despite the prevalence of research on the work environment and its potential effect on employees (e.g., Karasek et al., 1998; Moos, 1994), the work environment has not been examined systematically. Therefore, the purpose of the present study was to examine the role of the work environment in predicting job satisfaction and depression. In the present study, the term predicting is referred to in the statistical sense as opposed to the substantive sense. Female clerical workers who were experiencing ongoing work stress were the focus of this study.

In general, the work environment is defined as the confluence of both objective and social aspects of daily work life (Strong, Jeanneret, McPhail, Blakley, & D'Egidio, 1999). However, the results of studies that have examined the work environment’s influence on job satisfaction and depression have been confusing, in part, because the work environment has not been consistently operationalized. For example, work environment models or theoretical perspectives (e.g., Karasek et al., 1998; Moos, 1981) have focused on different aspects of the work environment (e.g., decision-latitude and
social support) and have often been assessed using unstandardized measures. Although some of these perspectives offer insight into how the work environment may influence job satisfaction and depression, there is little agreement regarding a conceptual definition of the work environment (Dewe, 2000; Strong et al., 1999).

According to Lazarus’s stress and coping framework (1991; Lazarus & Folkman, 1984), the work environment is not assumed to be stressful unless it has been appraised as such. As a consequence, in the present study, work stressors are considered distinct from the work environment. Studies have found that subjective perceptions of the work environment are better predictors of job satisfaction and depression than objective measures (Repetti, 1987). Moos (1981) developed the Work Environment Scale (WES), which is a subjective, standardized measure with items worded neutrally that do not confound work environment dimensions with work stressors. Therefore, in the present study, I examined the subjective aspects of the work environment using the WES, as well as objective dimensions, such as union membership and size of organization.

Although there is evidence of the validity of the WES as a measure of the work environment, its structure needs to be established for clerical workers who are experiencing ongoing work stress. In the present study, Billings and Moos’s (1982) shortened version of the WES (WES-S) was examined. The WES-S consists of two broad dimensions: social resources (i.e., job involvement, peer cohesion, and supervisor support) and work demands (i.e., autonomy, work pressure, work clarity, and managerial control). Moos and his colleagues have found that these dimensions predict job satisfaction and depression (e.g., Billings & Moos, 1982; Schaefer & Moos, 1993, 1996). However, this two-dimensional structure has not been examined using Confirmatory
Factor Analysis (CFA) for female clerical workers. Thus, in Phase 1 of the present study, CFA was expected to confirm that the WES-S consists of two dimensions, social resources and work demands. In order to determine if this two-factor model was the best fit for the data, it was contrasted with two other models (Moos, 1981 and Johnson, 1989). Moos (1981) theorized three broad dimensions of the work environment (i.e., relationship, personal growth, and system maintenance and change) based on the lengthier measure of the WES. In contrast, Johnson (1989) theorized that environmental dimensions (e.g., social resources and work demands) could characterize various aspects of an overarching construct, work control. To summarize, in Phase 1, CFA was used to test the hypothesized two-factor model, social resources and work demands, which was, in turn, contrasted with the two alternative models.

Based on the CFA results, in Phase 2, specific predictions regarding the relationships between social resources and work demands and job satisfaction and depression were made. Several studies have found the direct effects of social resources and work demands on job satisfaction and depression (e.g., Billings & Moos, 1982, 1984; Sargent & Terry, 1998; Schaefer & Moos, 1993, 1996). Therefore, greater social resources and less work demands were expected to predict greater job satisfaction and less depression.

Several cross-sectional studies have examined the moderating effects of social support on the work demands (e.g., decision-latitude) and job satisfaction and depression relationships, however, the results have been inconclusive (e.g., Karasek et al., 1998; Pelfrene et al., 2002; Schaubroeck & Fink, 1998). These inconsistent results may be due to the various ways in which social support and work demands have been operationalized
as well as gender differences, type of occupation, or unmeasured third variables, such as negative affectivity (NA). However, Billings and Moos (1982) broadened the conceptualization of social resources by including job involvement (i.e., committed to one’s job) and found that social resources buffered the negative effects of work demands on depression. Thus, although the moderating effects of social resources on the work demands-job satisfaction and depression relationships have been mixed, theoretically these relationships warrant research attention. In the present study, the buffering effects of social resources on the work demands and job satisfaction and depression relationships were examined from an exploratory perspective.

The relationship between the work environment and depression may be indirect, and may be accounted for by job satisfaction. Locke (1976) conceptualized job satisfaction as a positive emotional response to the work environment; and, given that positive emotions are assumed to interrupt negative rumination and increase morale, job satisfaction may serve as a barrier against depression (Folkman & Moskowitz, 2000). In Long, Kahn, and Schutz’s (1992) study of female managers, the latent construct, work environment, which was assessed one month earlier, predicted satisfaction (i.e., life and job satisfaction). In addition, greater satisfaction was directly related to less psychological distress (i.e., depression). Therefore, based on theory and empirical evidence, it was hypothesized that job satisfaction would mediate the social resources and work demands-depression relationship.

There is a paucity of research on the relationship between the objective work environment and job satisfaction and depression. Speculations have been made that employees who belong to unions may experience greater distress because of union
approaches to resolving interpersonal disputes (Gwartney-Gibbs & Lach, 1994) yet unions provide protection from sexual harassment and job security; which may, in turn, relate to less depression and greater job satisfaction (Cohen & White, 1987). Also, unions raise pay levels for employees that may lead to increased job satisfaction (Bryson, Capellari, & Lucifora, 2004). However, the benefits of higher pay (negotiated through collective bargaining) may be negated by a harsher work environment that follows as employers impose stricter standards of supervision and time keeping, which may result in increased job dissatisfaction and depression (Bender & Sloane, 1998). Size of the organization may also affect the employee. For example, employees in large organizations may experience greater depression because of the potential to feel alienated and disconnected from others (McKenna, 2000). Because there was no theoretical basis and limited empirical evidence, no hypotheses were posited regarding the extent to which union membership and the size of the organization were associated with job satisfaction and depression, however these relationships were examined for exploratory purposes.

Potential confounds are an area of concern in examining the work environment-job satisfaction-depression relationships. The relationships may be influenced by particular demographic variables or the personality trait, NA. For example, several researchers have found that older clerical workers (i.e., over 42 years of age) experience greater job satisfaction and less depression than younger employees (e.g., Schaefer & Moos, 1996); married working women are more depressed than single working women (e.g., Barnett & Brennan, 1995); and those with higher levels of education (i.e., 13 or more years in school) experience greater job dissatisfaction than those with lower levels of education (Carayon, 1993a). In addition, NA (i.e., a pervasive disposition to
experience negative emotions across situations and time) has the potential to inflate the relationships between the work environment and job satisfaction and depression (e.g., Brief, Burke, George, Robinson, & Webster, 1988; Spector, Chen, & O’Connell, 2000; Terry, Tonge, & Callan, 1995). Therefore, in the present study, relevant demographic variables and NA were statistically controlled for.

*The Present Study*

An important goal of the present study was to examine the structure of the work environment and to determine the role the work environment played in influencing job satisfaction and depression among female clerical workers who were experiencing ongoing work stress. For clerical workers who experience ongoing work stressors, their work context (i.e., the work environment) was expected to play an important role in their well-being or distress. Using a longitudinal design and archival data, I addressed four major research questions: (a) Is the two-factor model (social resources and work demands) the best fit of three models for female clerical workers? (b) To what extent do subjective (social resources and work demands) and objective (union membership and size of the organization) work environment dimensions predict job satisfaction and depression? (c) Do social resources buffer the relationship between work demands and job satisfaction or depression? and, (d) Does job satisfaction mediate the social resources and work demands-depression relationship?

To address these research questions, the present study proceeded in two phases. In the first phase, the factorial structure of the WES-S was established and cross-validated on a second sample of female clerical workers who were experiencing ongoing work stress. In the second phase, the role of the work environment in clerical workers’ job
satisfaction and depression was examined and replicated on a second sample of female clerical workers. Greater social resources and less work demands were expected to predict greater job satisfaction and less depression. The moderating (i.e., buffering) effect of social resources on the work demands and job dissatisfaction and depression relationships were examined from an exploratory perspective. Under conditions of high social resources (moderator), work demands are less likely to have a negative effect on job satisfaction and a positive effect on depression. The term “buffering” indicates that social resources will reduce the strength of the relationship between work demands and job dissatisfaction and depression. The mediating effect of job satisfaction on the work environment-depression relationship was also tested. Mediators indicate how or why effects occur. A mediator variable “may be said to function as a mediator to the extent that it accounts for the relationship between the predictor and the criterion” (Baron & Kenny, 1986, p.1176). Thus, job satisfaction was expected to account for the relationship between the work environment (social resources and work demands) and depression. Finally, the objective indicators of the work environment (union membership and organizational size) were examined for exploratory purposes.

The present longitudinal and cross-validation study has important implications for theory and practice by providing a greater understanding of the work environment’s association with job satisfaction and depression among female clerical workers who are experiencing ongoing work stress, while statistically controlling for demographic variables and NA. The results have important implications for organizations and administrators who wish to design a healthy work environment for their employees.
Chapter II: Literature Review

Clerical workers typically report being overworked and are encountering ongoing technological, economical, and social changes (Burke & Leitner, 2000; Cohen & White, 1987; Howe, 1977; Yoder, 1994). As a result, the work environment has the potential to affect clerical workers' psychological well-being or distress, particularly for those who experience ongoing work stressors regardless of the origin of the stressors. Despite the prevalence of research on the work environment and its potential psychological effects on employees (e.g., Karasek et al., 1998; Moos, 1994), the role of the work environment has not been examined systematically. This is partly because the work environment is not well understood. There is no agreed upon taxonomy of the work environment and frequently the work environment is confounded with work stressors and stress responses. Psychological well-being and distress have predominantly been examined in the workplace as job satisfaction and depression, respectively (e.g., Chu, Hsu, Price, & Lee, 2003). Much of what is known about the influence of the work environment on job satisfaction and depression is contradictory. Therefore, the focus of the present study was on the work environment and its role in contributing to the job satisfaction and depression of female clerical workers who were experiencing ongoing work stress. In the first phase of this study, I determined the factorial validity of the WES-S; and in the second phase, I examined the relationships between dimensions of the work environment established in Phase 1, and job satisfaction and depression.

In the following sections, I review the nature of clerical work and how it has changed, in particular, labor force changes. Then, I delineate conceptualizations of the work environment by examining theories of stress as applied to the workplace in order to
distinguish between indicators of the work environment versus work stressors. Next, I examine the subjective work environment and provide a rationale for the use of the WES-S. I then critique empirical research that focuses on the subjective and objective work environment, particularly among women, in order to offer some understanding of how the work environment may impact job satisfaction and depression for female clerical workers. Finally, I examine the potential influence of demographic variables (e.g., age) and NA (i.e., personality trait) in confounding the work environment-job satisfaction and depression relationship.

The Nature of Clerical Work

The nature of clerical work has changed dramatically in the last 100 years as a result of technological, economical, and social changes (Acker, 1992; Burke & Leitner, 2000; Snow, Swam, Raghavan, Connell, & Kleins, 2003). Therefore, in order to understand clerical workers’ work environment and the stress associated with clerical work, it is important to begin with a context that reveals: (a) the nature of clerical work, (b) changing trends in clerical work, (c) current economical trends, as well as (d) future economical trends.

The work tasks clerical workers perform are varied and may include word processing, answering telephones, record keeping, and coordinating schedules (Roe & Zijlstra, 2000; Statistics Canada, 1996). Social interactions at work generally include some degree of collaboration with supervisors, coworkers, and customers or clients in order to meet the goals of the organization (Acker, 1992). However, it is difficult to identify the specific tasks of clerical workers because this occupational group is very diverse.
Statistics Canada (1996) provides separate categories for secretaries and clerical occupations. Secretaries are defined as a major group that is primarily concerned with performing a variety of clerical and administrative tasks in offices, and recording or transcribing verbatim proceedings in courts, legislative assemblies, or committees. Clerical occupations are defined as a major group that is primarily concerned with performing general office work or specialized clerical tasks, such as administrative support, processing information related to personnel activities, and preparing routine financial records, just to name a few. However, within each category (i.e., secretary and clerical) there are subcategories, complete with definitions and titles that are somewhat similar. Therefore, in the present study, employees in secretarial and clerical occupations are referred to as clerical workers.

In the research literature reviewed, job titles used for clerical workers (e.g., secretary, administrative clerk, and receptionist) are sometimes used interchangeably, whereas other times they are distinct (Pringle, 1988). Among the job titles, there are different as well as overlapping duties, along with varied knowledge bases and responsibilities (Cohen & White, 1987; Pringle, 1988). An administrative assistant, for instance, may spend the majority of her time transcribing notes and word processing, compared with a medical secretary who may also type reports but spend more time doing receptionist work and interacting with patients. It is difficult to determine if or how much overlap exists between clerical positions. Therefore, in order to understand the nature of clerical work more clearly, it is important to examine how it has evolved historically.

Changing Trends of Clerical Work

In the 19th century, clerical work was performed mostly in small offices by men
who copied documents by hand and entered accounts in ledger books (Pringle, 1988). Relationships between the clerical worker and employer tended to be personal with the clerical worker acting as an apprentice or assistant to the employer (Balshem, 1988; Cohen & White, 1987; Shea, 1990). It was generally assumed that the clerical worker would eventually be involved in the administration of the business. However, since that time, clerical work has changed dramatically.

In the early part of the 20th century, businesses grew into larger and more complex organizations (Cohen & White, 1987; Snow et al., 2003). Clerical work became a distinct occupation for women with no guarantee of mobility into management positions. According to Cohen and White (1987), women were hired to do the jobs men did not want, the jobs where mobility was limited. However, women were attracted to clerical work because it paid better than other professions and they received relatively higher status than the factory or domestic work that was typically available to them at that time.

During the early 1900s, the structure of organizations started to take on the form of a hierarchy that has continued into the present. In larger organizations, the bottom of the hierarchy was the clerical worker whose work was characterized by routine jobs with few opportunities to move up the occupational ladder into more senior positions, such as personal secretary or manager (Cohen & White, 1987). Thus, the close personal relationship between the clerical worker and employer is no longer applicable to the large organizations of the 21st century. The choice left to clerical workers in these larger organizations is to seek work in smaller companies; however, advancement into more senior positions has continued to be unlikely.
Cohen and White (1987) claimed that by creating an elaborate job classification system with the personal secretary to the supervisor at the top of a hierarchy and the file clerk at the bottom, management could physically divide clerical workers from one another. The impending result was that a dynamic was set up for clerical workers to become more competitive with one another. For example, a word processor in a typing pool would compete with fellow coworkers so that she would be the one chosen for the next promotion. In addition, the physical separation from clerical workers in lower level positions (e.g., word processors) potentially encouraged personal secretaries to perceive themselves as having higher status than lower-level clerical workers. Therefore, interpersonal relationships in the workplace have been problematic.

Since the late 1960s there has been a surge of organized activity among women to improve work conditions and fairness for working women (Cohen & White, 1987). In Canada, between 1962 and 1981, women joined unions at four times the rate of men. In 1977, women represented 12% of total union membership and by 2003 their share had quadrupled to 48%. Union membership rose from 2.8 million in 1977 to over 4 million in 2003. Union membership has remained stable at just over 70% in the public sector during the last three decades for all employees. Unions have provided some protection for clerical workers by initiating parental leaves and have been instrumental in making sexual harassment a federal offence. Unions have also been able to win recognition for issues, such as equal pay for equal work, paid maternity leave, and affirmative action. Thus, unions may provide clerical workers with a sense of security by protecting them from discrimination.

Despite success in addressing several workplace issues, clerical workers remain
an undervalued occupation (Cohen & White, 1987; Yoder, 1994). Job descriptions of clerical work are usually organized around concrete machine-related skills, such as typing speed and accuracy, knowledge of routine office procedures, and filing. Management job descriptions, on the other hand, usually focus on a person's overall understanding of the work process, communication and organizational skills, and writing ability. Yet when it comes to completing work tasks, clerical workers also need to have an understanding of departmental policy and work processes. Communication skills are also necessary so they can deal with personnel who submit work that is illegible, incorrect, or late. They also need good organization skills to juggle the numerous demands that are made on their time. Sometimes these skills, referred to as invisible skills, are not easily measured and thus, are not traditionally recognized as part of clerical work.

In some instances, invisible skills are linked to job satisfaction for clerical workers. In Greenbaum's (1985) study of 212, mostly female clerical workers, invisible skills were characterized as diplomacy, having overall knowledge of the work process, and organizational skills. These clerical workers identified the use of invisible skills as crucial to their on-the-job satisfaction and as the most important skills to have in order to adequately perform their work. They also reported that these skills were unrecognized in terms of pay and status, which contributed to low job satisfaction.

In many senior-level clerical positions (i.e., personal secretary), coordinating and communicating with sales representatives, customers, or clients may be a major focus of work. Cohen and White (1987) claimed that the division of work tasks between a manager and a senior clerical worker is not always clear, yet clerical workers are paid and classified at a considerably lower level than managers.
Since the 1970s, new technologies have also changed the nature of clerical work. For example, what started with a standard typewriter and carbon paper has evolved into the use of computers (Aaras, Horgen, & Ro, 2000; Smith & Cohen, 1997). Typewriters, adding machines, and filing cabinets were the standard office equipment for the last 100 years. They have now been discarded and replaced by computers that perform many of the same functions as before but at a much faster rate with more versatility. In a sense, new technology has made clerical work easier.

However, new technologies have led employers to pressure employees to increase productivity and to monitor their work pace (Cohen & White, 1987; Heikkila, 1998). Higher error rates, low morale, and increased absenteeism have resulted from the increased emphasis on employee performance (Carayon, 1993ab; Cohen & White, 1987). In an article published in a 1987 issue of the Nine to Five Newsletter, produced by an organization of clerical workers in the United States, it was reported that when control over the pace of work (i.e., computerized pacing) was taken away from the clerical worker, error rates increased from 40% to 400% depending on the situation. It was also reported that in a particular Blue Cross Blue Shield San Francisco office, job performance ratings plummeted when claims processors were required to triple their output under a standardized and rigid computer system.

Cohen and White (1987) stated that as an approach to enhance work productivity, computers have been used to both replace clerical workers and deskill the work that remains. Deskilling occurs when decision-making has been transferred from the employee to the computer program. Rather than the clerical worker making a judgment based on his or her knowledge of the work, he or she is instead required to follow a set of
prescribed decision rules that had been programmed into the computer.

In contrast, Beechey (1987) argued that new technology has not always been used to replace and deskill employees, but rather required an upgrading of skills. At the same time as senior clerical positions were being upgraded, the qualifications for these jobs also increased (Acker, 1992; Appelbaum, 1990; Cohen & White, 1987). Educational levels increased to college education for high-level clerical positions with little opportunity for women in data entry jobs to move into these positions (Cohen & White, 1987).

In summary, the nature of clerical work changed from an apprenticeship model to a hierarchical ladder. Previously women who wanted to be promoted were able to move up the clerical hierarchy based on years of experience. Now, clerical workers are more likely to return to school for a year or more, at their own expense, before they can qualify for the new higher-skilled positions. In addition, the introduction of technology has changed the nature of everyday work. Some researchers speculated that the computerization of work made clerical work more routine and also more technically demanding (Burke & Leitner, 2000). Within this context, clerical workers are often overworked and undervalued. They are rarely recognized in terms of status and salary for their critical role in the smooth functioning of organizations.

Current Economical Trends in the Labour Force

According to the 1996 Canadian Census data, clerical work predominantly has been done by women, that is, approximately 76% of all clerical workers (e.g., secretaries, clerks, and word processors) are women (see Appendix A). Of the nearly 7 million women employed in the labour force, approximately 25% are classified as clerical
workers (Statistics Canada, 1996). With the exception of women working in sales and service occupations (31% of the female labour force), the prevalence of female clerical workers is substantially higher than the prevalence of women in other occupations, such as social science and education (9%), health (8%), or management (6%). However, the number of clerical positions is declining.

Based on the 1996 Canadian Census data, the decrease in the number of female clerical positions appears to be mostly within the secretarial category (Standard Occupational Code B21). However, the census data indicates that there is an increase in the number of women in sales and service occupations (up 1%), particularly in childcare, home support, and retail sales occupations. Thus, the majority of new jobs being created are part-time, low-paying jobs in the service sector that are less likely to be unionized or offer opportunities for advancement. The 1996 Canadian Census data also indicates that the highest proportion of female clerical workers are between the ages of 25 and 34 years (38%), followed by 18% who are between 45 and 54 years of age. The average annual salary for female clerical workers in 1996 was approximately $27,109 Canadian dollars.

Another current trend is that the structure of organizations is changing. Recently, organizations have been trying to find ways to make better use of the capacities of employees in order to become more efficient, productive, and competitive in the global market (Acker, 1992; Cohen & White, 1987). They are realizing that the old, top-down, hierarchical structure needs to be transformed into a flatter, more participatory organization. The goal is to involve employees in collaborative and creative problem solving by changing the organization of work and by paying attention to the unique qualities of individual employees. However, at the lowest level of the organization, where
fairly large numbers of women do routine clerical work, there remain few opportunities for worker participation in decision-making. In Canada, employers continue to decide how work will be organized and there are no laws and few collective agreements guaranteeing employees the right to participate in decisions (Cohen & White, 1987).

Restructuring the organization has resulted in attempts to reduce office costs through downsizing (Cohen & White, 1987; Seppala, 2001). Lower-level clerical positions are either being eliminated or converted to part-time or contractual work. In a recent issue of the Nine to Five Newsletter (2002), it was reported that there is a growing trend of unpaid overtime and off-the-clock work. One clerical worker reported that the unspoken rule was to put in as many hours as it took to get the job done, even though one would only be paid for the 20 hours he or she signed on for. Thus, clerical workers are not only vulnerable to economic changes but also job insecurity has become a significant concern.

Future Economical Trends

In 1992, Acker predicted that future trends for clerical workers were less than optimistic. There were signs of recession in the future as well as government cutbacks. Acker claimed that unless the economy turned upward, jobs would continue to be either eliminated or decreased to part-time or contractual work. Her predictions have come true. According to the Business Council of British Columbia (released January, 2002), the job losses in December 2001 all occurred in the full-time category (-22,800), whereas, part-time employment increased by 12,000 jobs for employees in all job categories. The total number of jobs in British Columbia declined by 59,000 from the previous year’s (2000) levels.
Acker (1992) also predicted that with less government funding, some organizations would face bankruptcy. Among the organizations that would survive, they would likely encounter further downsizing. A downturn in the economy forces organizations to restructure and let staff go. A Statcan’s business conditions survey (Babad, Globe and Mail, February 4, 2002) showed that 21% of the organizations polled planned to cut their work forces over the next 3 months. Thus, clerical workers remain in a vulnerable position.

In addition, the state of the economy may have further threatened the loss of jobs. The American economy was officially in a recession in March 2001, and the Canadian economy had just barely avoided one (Babad, Globe and Mail, February 4, 2002). Babad (2002) stated that although Canada was not technically in a recession according to the official definition of the term (i.e., an economic decline in the GDP in two consecutive quarters), the rate of unemployment jumped to 8% from 7.5% in December 2001, which corresponded to about 18,000 jobs lost. With the exception of the strong economies in Alberta, Ontario, and New Brunswick, other provinces in Canada, such as British Columbia expected a steeper decline in GDP growth and about 50,000 more jobs to be lost. Thus, current trends and future projections raise concerns about the work environment for clerical workers.

In conclusion, clerical workers have encountered technological, economical, and social changes (Acker, 1992; Burke & Leitner, 2000). New technology resulted in the necessity for clerical workers to continually upgrade their office skills, often at their own expense. The social structure of organizations also changed in offering few opportunities for advancement into more senior-level positions unless post-secondary education or
advanced training was attained. Unions have won recognition for issues, such as equal pay for equal work, paid maternity leave, affirmative action, and sexual harassment. However, clerical workers remain overworked and undervalued in organizations. Economically, Canada was dealing with recession-like conditions in the early 2000s. Governments have been cutting back their funding in an attempt to reduce their deficits, organizations have been downsizing, and unemployment rates have been increasing. As a result, there may be less flexibility for clerical workers when faced with potential lay-offs or shifts to part-time work. Projections for the future, such as the continual movement toward part-time and contractual work and continued downsizing may further reinforce the fears and concerns held by clerical workers today. As a result of the changing work environment, many clerical workers may find their work environment contributes to their well-being or distress.

Distinguishing Between the Work Environment and Work Stress

One of the main areas of confusion in the research literature is the distinction between the work environment and work stress. Often the work environment is confounded with work stress in part because definitions of work stress proliferate and differ from study to study (e.g., Dewe, 2000; Kasl, 1998; Lazarus & Folkman, 1984; Turnage & Spielberger, 1991; Vagg & Spielberger 1998). For example, work stress has been defined as a transaction between the employee and his or her work environment, as a stimulus (i.e., stressor), or as a response (e.g., strain). One theory of stress that is frequently drawn upon in work stress research is that proposed by Lazarus (1991; Lazarus & Folkman, 1984). Lazarus’s generic theory of stress is elaborate in terms of the variables involved (i.e., stressors, appraisals, coping, and psychological stress responses).
Lazarus's Transactional Theory of Stress

Lazarus and his colleagues take a cognitive-transactional-relational approach to conceptualizing stress (Lazarus, 1991, 1993, 1999, 2000; Lazarus & Folkman, 1984, 1987). Lazarus and Folkman (1984) posited that stress is not assumed to be a property of the person or of the environment, but arises when there is a transaction between a particular kind of person and a particular kind of environment, that leads to an appraisal of threat, harm, or loss. Stress is viewed as a paradigm that is process-oriented, contextual, and made up of distinct interdependent variables: stressors (i.e., stress episodes), cognitive appraisals, coping strategies, and stress responses (e.g., Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Lazarus, 2000).

Cognitive appraisals are defined as "an evaluative process that determines why and to what extent a particular transaction or series of transactions between the person and the environment is stressful" (Lazarus & Folkman, 1984, p.19). Appraisals are based on complex, cognitive activities. The meaning or subjective appraisals of the work environment may vary substantially across individuals and may not be normatively independent of individual characteristics (Lazarus, 1999).

Lazarus (1991) asserted that appraisals integrate personal agendas (e.g., goals and beliefs) brought to the transaction and the environmental demands. He stated that because personal agendas vary from person to person and that the environment is often complex and ambiguous, individuals attend selectively to what is happening and evaluate the environment in diverse ways: Although there may be some consistency, it is assumed that a great deal of variation exists in the appraisals people make in response to demands in the same environmental context.
Consistent with Lazarus’s theory, Breznitz and Goldberger (1993) defined work stressors as events, demands, or situations that are appraised as troublesome. However, work stressors have often been confounded with the work environment. Some researchers have assumed that certain dimensions of the work environment are normatively stressful, such as the lack of control (e.g., Karasek et al., 1988; Karasek et al., 1998; Karasek & Theorell, 1990). This conclusion is based on the assumption that all clerical workers experience work conditions similarly, an assumption that is generally not directly examined. It is likely that low control, for example, is stressful for many clerical workers but researchers cannot be certain. According to Lazarus and Folkman’s (1984) stress theory, the work environment is stressful only if the clerical worker appraises it as a threat, harm, or loss. In the present study, appraised work stressors and the work environment were kept distinct.

In summary, Lazarus’s stress framework distinguishes between interdependent variables (e.g., stressors, appraisals, and stress responses), thus reducing the confusion around what is meant by stress. Of importance to the present study, Lazarus posits that demands or potential stressful events are not normatively stressful. In the present study, a neutrally worded measure of the work environment was used and thus was distinct from work stressors.

The Work Environment

In general, the work environment is defined as the confluence of both objective and social aspects of daily work life and represents the context in which clerical workers perform their daily work tasks and have relationships with co-workers and supervisors (Strong et al., 1999). However, there is no agreed upon taxonomy of work environment
dimensions and only a few researchers have attempted to delineate or define them (e.g., Kasl, 1991; Moos, 1981). Moreover, some measures confound work stressors with particular work environment dimensions (Karasek et al., 1998). Finally, some researchers tend to focus on the subjective work environment (e.g., Billings & Moos, 1982; Moos, 1987; Schaefer & Moos, 1993, 1996; Repetti, 1987, 1993a), whereas others focus on the objective work environment, such as union membership (Gwartney-Gibbs & Lack, 1994; McKenna, 1995) and organizational size (Newton & Keenan, 1985; Sparks & Cooper, 1999). So far, no single orientation has succeeded in dominating the field. Focusing on each approach contributes important, yet different information regarding the relationship between the work environment and job satisfaction and depression.

Subjective Work Environment

Subjective perceptions of the work environment are assessed with self-report questionnaires; however, the terms subjective and self-reports are not synonymous. For example, if an employee indicates on a self-report that he or she belongs to a union, the response is considered to reflect objective reality. On the other hand, if the employee indicates that he or she perceives the work environment as demanding then the response would qualify as a subjective response. Subjective perceptions of the work environment may be distinct from stress appraisals. Subjective perceptions reflect an individual’s experience rather than an evaluative process (i.e., appraisal).

Subjective perceptions, however, have potential limitations such as method variance (e.g., central tendency, acquiescence effect, halo effect), overlap in content between the independent and dependent measures, and unmeasured third variables (e.g., personality traits or the tendency to complain), which can influence both independent and
dependent variables (Frese & Zapf, 1988; Kasl, 1998). However, on a practical note, if job satisfaction and depression are idiosyncratic and related solely to an employee's subjective perceptions, it is less likely that the organization will respond by redesigning working conditions (Frese & Zapf, 1988, 1999). As a result, the potential for blaming the employee for psychological distress would be greatly reduced if aspects of the objective work environment were associated with job satisfaction and depression. Yet, despite the potential limitations, subjective perceptions of the work environment have been found to be better predictors of job satisfaction and depression than objective assessments (Repetti, 1987; Repetti & Cosmas, 1991). In the present study, the limitations of subjective assessments were addressed through (a) the use of a longitudinal research design, (b) both subjective and objective indicators of the work environment, and (c) the relationships between the work environment and job satisfaction and depression were replicated on a second sample of female clerical workers.

Of note, a balance between objective and subjective assessment is lacking in work environment research. Kasl (1998) recommended that researchers accommodate these conflicting perspectives, while being sensitive to the possibility that in any particular study, either objective or subjective assessments may need to dominate. Therefore, in the present study, the imbalance regarding the use of objective or subjective assessments of the work environment was partially resolved by assessing both the objective work environment (i.e., union membership and size of the organization) and the subjective work environment. However, the choice of an appropriate subjective work environment measure is of concern because there is no agreed upon work environment measure that contains work environment dimensions that are particularly associated with job
satisfaction and depression.

*Work Environment Scale (WES).* Based on empirical evidence gathered from structured interviews with employees in administrative (including clerical workers), financial, health service, and sales occupations, Moos (1981) developed the WES using five psychometric criteria (i.e., that no more than 80% of respondents answer an item in one direction, items correlate more highly with their own subscale, each subscale has an equal number of items, the subscales have low to moderate intercorrelations, and each subscale discriminates significantly among work settings). The WES uses neutral items to assess employees’ subjective experience of the work environment (e.g., “There is constant pressure to keep working”). As a result, the neutral items prevent the work environment from being confounded with work stressors. See Appendix B for a sample of the items.

The WES has distinguished between occupational groups and settings and has identified potential predictors of job satisfaction and depression (Billings & Moos, 1982, 1984; Long et al., 1992; Moos, 1994). However, a major criticism of the WES is that specific evidence regarding construct, discriminant, and predictive validity was not provided in the 1994 WES manual (Mueller, 2000, Mental Measurements Yearbook). Conversely, Moos and his colleagues claimed that support for the construct validity of the WES has been established through 20 studies (e.g., Holahan & Moos, 1987; Moos, 1994). Furthermore, subsequent studies have indicated that the WES subscales have good construct, discriminant, and predictive validity among many employed populations (Docker, Fraser, & Fisher, 1989; Moos, 1994; Schaefer & Moos, 1996).

To my knowledge, the factor structure of the WES-S for clerical workers has not
been established. Kasl (1998) claimed that the establishment of higher-order dimensions of the work environment was necessary in order to make meaningful predictions. However, factor analytic dimensions identified in different studies depend on the diversity of the specific sample (Moos, 1994). Researchers who have factor analyzed the WES subscales have identified between two and seven factor dimensions (e.g., Constable & Russell, 1986; Hershberger, Lichtenstein, & Knox, 1994; Nicholson, 1985). For example, in a study of male and female clinical staff in two social service agencies, Brookings, Chacos, Hightower, Howard, and Weiss (1985) identified two factors. Nicholson (1985) obtained two somewhat different factors using data from male and female supermarket employees. Three studies focusing on mostly female nurses and human service workers identified three factors (Constable & Russell, 1986; Flood, 1988; Yarne, 1983); however, the factors in each study were defined by high loadings on somewhat different sets of WES subscales than those established by Moos (1981). Finally, in a study of Navy enlisted men and women, Booth, Norton, Webster, and Berry (1976) identified seven factors. Therefore, although a number of researchers have explored the factorial structure of the WES, what is needed is an analysis of the theoretical basis of the WES-S using CFA.

Billings and Moos (1982) theorized that the work environment was comprised of two major dimensions: social resources and work demands. They theorized that 3 of the original 10 WES subscales represent social resources. Social resources are defined as being highly involved in one’s work (the involvement subscale), having cohesive relationships with coworkers (the peer cohesion subscale), and having a supportive supervisor who encourages job involvement through work innovation and participation in
decision-making (the supervisor support subscale). They also theorized that there are four subscales that represent potential work stressors (i.e., lack of autonomy, work pressure, lack of clarity, and managerial control). However, in the present study, these four work subscales are considered to be neutral and collectively are referred to as work demands.

In support of Billings and Moos's (1982) two-dimensional theory, Moos and his colleagues found that employees in administrative, financial, health, and sales positions who perceive greater social resources (i.e., job involvement, and peer and supervisor support) and fewer work demands (i.e., low work pressure, low managerial control, autonomy, and work clarity) tended to experience greater job satisfaction and less depression (Billings & Moos, 1982; Schaeffer & Moos, 1993). Therefore, based on theory and empirical research, I expected that social resources and work demands would be confirmed as two higher-order dimensions of the work environment.

However, Moos (1981) also theorized that there are three broad dimensions of the work environment: relationship, personal growth, and system maintenance and change, assessed on the 10 subscale version of the WES (see Appendix C). The relationship dimension (i.e., job involvement, peer cohesion, and supervisor support subscales) is conceptualized as the extent to which employees are committed to their jobs, supportive of one another, and supervisors are supportive of employees. The personal growth dimension (i.e., autonomy, task orientation, and work pressure subscales) reflects the underlying goals toward which work demands are oriented, for example, the extent to which employees are encouraged to be self-sufficient and make their own decisions. Finally, the system maintenance and change dimension (i.e., clarity, managerial control, innovation, and physical comfort subscales) is conceptualized as the amount of structure,
clarity, and openness to change that is reflected in the work setting (e.g., the extent to which employees know what to expect in their daily routines and how explicitly rules and policies are communicated). Thus, Moos and his colleagues introduced two different models of the work environment. In the present study, Moos’s three-factor model was contrasted with Billings and Moos’s (1982) two-factor model, social resources and work demands, even though only the seven WES-S subscales were used in the present study.

In contrast, the WES-S also could be construed as measuring a single overarching dimension of the work environment: work control. Johnson (1989) claimed that work control operates at different levels and has different meanings. Employees may have varying degrees of control over their general resources and work demands. That is, employees may, to some extent, have control over seeking out social support (similar to the WES peer cohesion and supervisor support subscales), as well as how involved and committed they want to be with the job (similar to the WES job involvement scale). Employees may be able to exert control over work tasks (similar to the WES autonomy subscale) or conversely, be controlled by their supervisors (similar to the WES managerial control subscale). Employees may have control over work tasks but perhaps not over work pace (similar to the WES work pressure subscale). Furthermore, work clarity (e.g., knowing what to do and what to expect at work) may be conceptualized as potential control over how to perform a task (similar to the WES clarity subscale). Thus, the WES-S subscales may be characterizing multiple aspects of work control. Therefore, in the present study, Johnson’s single factor model was also contrasted with Billings and Moos’s (1982) two-factor model.

In summary, one goal of the present study was to establish the factorial structure
of the WES-S for female clerical workers in order to make meaningful predictions of job satisfaction and depression. A two-factor model (social resources and work demands) was hypothesized and contrasted with Moos's (1981) three-factor model and Johnson's (1989) single-factor structure in Phase 1 of the present study, in order to determine if the two-factor model was the best fit of the three models for clerical workers. The results of Phase 1 were used to make predictions about job satisfaction and depression in Phase 2 of the present study.

Responses to the Work Environment

Among the various responses to the work environment that have been examined in the occupational stress research, job satisfaction and depression predominantly have been examined (e.g., Chu et al., 2003; Steinhardt, Dolbier, Gottlieb, & McCalister, 2003; Wang, 2004).

Job satisfaction. The classic definition of job satisfaction is that proposed by Locke (1976). Locke claimed that, "job satisfaction is what results from the perception that one's job fulfills or allows the fulfillment of one's important job values" (p. 1307). Locke proposed that if job values are perceived as being fulfilled, the employee will experience the pleasurable emotion of satisfaction. In contrast, if job values are perceived as being frustrated, the employee will experience the negative emotion, dissatisfaction. Thus, job satisfaction is considered an emotional response to a work environment that supports the fulfillment of clerical workers' job values and was examined in the present study as a consequence of the work environment.

In order to understand the relationship between the work environment and job satisfaction, Hackman and Oldham's (1976) Job Characteristics Model (JCM) is
examined in more depth because it aims to identify characteristics of the work environment that potentially serve as determinants of job satisfaction. Job satisfaction is assumed to be reinforcing to the employee and serves as an incentive to continue trying to perform well in the future.

At the most general level, the JCM is posited to contain five work environment dimensions (i.e., autonomy, skill variety, task identity, task significance, and feedback) that prompt three psychological states (i.e., meaningfulness of work tasks, responsibility for work task outcomes, and knowledge of the results), which, in turn, lead to internal work motivation and job satisfaction. Some researchers have asserted that the greatest contribution the JCM has to offer is that it emphasizes the role of the work environment as a potential determinant of job satisfaction (e.g., Jackson & Schuler, 1985). Several reviews of more than 30 studies designed to test Hackman and Oldham’s (1976) model generally support the conclusion that high levels of autonomy (i.e., control over work tasks) are associated with high levels of job satisfaction but provide less support for the other dimensions (i.e., skill variety, task identity, task significance, and feedback; Loher, Noe, Moeller, & Fitzgerald, 1985; Spector, 1986). Therefore, based on the JCM, greater autonomy was expected to predict higher job satisfaction.

The JCM has received criticism because it does not account for social relationships, in particular, social support from supervisors (e.g., Vagg & Spielberger, 1998). Given that knowledge of results, characterized by feedback, is considered a predictive component of job satisfaction, one would assume that the value of social relationships with supervisors would need to be taken into consideration. The growing literature on social relationships, notably by Hobfoll (1988, 1989), Moos (Billings &
Moos, 1982, 1984; Holahan & Moos, 1987) and Repetti (1987, Repetti & Cosmas, 1991) in the past two decades provide empirical evidence that social support is associated with job satisfaction.

*Depression.* Depression has also been examined as a response to the work environment. According to the Canadian Mental Health Association (2004), 1 in 20 employees experience depression. Jick and Mitz (1985) claimed that compared with men, female employees tend to react to work stressors with negative emotions such as depression. Women generally have been found to exhibit nearly twice the incidence of depression than men (Fujita, Diener, & Sandvik, 1991).

According to Stoppard (2000), depression refers to a condition that encompasses a set of experiences which include feelings of sadness, hopelessness or despair, coupled with extremely pessimistic thoughts about one’s self, situation, and future prospects. Sometimes depression is marked by a lack of interest or pleasure in activities that were usually engaged in, along with social withdrawal. Various bodily complaints associated with depression have included aches and pains, difficulty sleeping, fatigue, and loss of appetite (or sometimes overeating). In some cases, suicidal thoughts or actions have occurred.

Depression, however, is distinct from NA in that NA is a pervasive personality trait whereas depression is distress disorder (Clark, Watson, & Mineka, 1994; Spector et al., 2000). Although NA subsumes emotions such as depression, it is considered a more general trait of somatopsychic distress than depression and other affective dispositions because of its broad range of subjective complaints and reported physical symptoms (Chen & Spector, 1991; Spector et al., 2000).
Social feminist models of depression have proposed that women are more likely than men to become depressed because of their lower status in society (Nolen-Hoeksema, 1990). Clerical work has often been described as a low status position and clerical workers have often reported being undervalued at work (Burke & Leitner, 2000; Cohen & White, 1987; Yoder, 1994). Therefore, clerical workers may be a risk for depression. Another explanation proposed for higher rates of depression in women than men is in terms of gender-related differences in coping (McGrath, Keita, Strickland, & Russo, 1990). Women are more likely than men to respond to work stress by ruminating (a passive coping style); whereas, men are more likely to take an active coping approach. Stoppard (2000) argued that understanding the meaning of depression among women depended to a large extent on the socio-political context that shapes women’s lives. From her feminist and social constructionist perspective, Stoppard claimed that aspects of the work environment, such as pay, employment inequities, and the lack of adequate childcare services would likely be potential sources of depressive experiences, emphasizing structural conditions. Thus, given the nature and status of clerical work, the work environment was expected to effect clerical worker’s experience of depression.

Social Resources, Job Satisfaction, and Depression

Some researchers have focused primarily on employees’ subjective perceptions of social resources at work, in particular social support from coworkers and supervisors in predicting job satisfaction and depression (e.g., Baruch-Feldman, Brondolo, Ben-Dayan, & Schwartz, 2002; Hobfoll & Vaux, 1993; Repetti, 1987, 1993a; Repetti & Cosmas, 1991). Many researchers have claimed that supportive, nonconflictual social interactions at work have the potential to directly enhance psychological well-being by meeting basic
human needs for affiliation, approval, and a sense of belonging (e.g., Repetti, 1993b). Because most employed people spend about half of their life at work, it is reasonable to expect that coworkers and supervisors play an important role in the satisfaction of these needs.

Several studies have found that social support has direct effects on job satisfaction (e.g., Cummins, 1989; Repetti & Cosmas, 1991; Wong & Cheuk, 2000). For example, Repetti and Cosmas (1991) examined the relationship between social support and job satisfaction among 299 mostly female (93%) bank tellers and customer service representatives. The Social Environment Survey (developed by Repetti, 1987) was designed to assess the common (i.e., the general consensus) and individual (i.e., the individual’s subjective perception) social climate at work. The common social work environment was measured with two WES subscales, peer cohesion and supervisor support (Insel & Moos, 1974). In addition, the coworker and supervisor support subscales of the Work Social Support Scale (WSSS; Caplan, Cobb, French, Harrison, & Pinneau, 1975) were used to assess perceived instrumental and emotional support an employee received through personal relationships at work. Job satisfaction was measured using the Job Satisfaction Scale of the Job Diagnostic Survey (Hackman & Oldham, 1975, 1980).

The results of hierarchical multiple regression (HMR) indicated that perceived supervisor support and the common social work climate scores were the two strongest predictors of job satisfaction ($b=.19$ and $b=.49$, respectively). The results also indicated that perceived supervisor support ($b=.19$) was a stronger predictor of job satisfaction than perceived peer cohesion ($b=.11$). Thus, positive interpersonal relationships at work, especially with supervisors appears to be an important contributor to job satisfaction.
Repetti (1987) also examined the relationship between social support and depression among the 299 bank tellers and customer service representatives examined in the Repetti and Cosmas (1991) study. The common and individual social work climates were assessed using the same measures and item wording as in the 1991 study. Psychological distress was assessed as depression (CES-D; Radloff, 1977) and anxiety.

The results of HMR indicated that although both the common and the individual social work climates were directly related to depression, the latter was a stronger predictor than the former ($b = -.23$ and $b = -.58$, respectively). That is, subjective perceptions of social relationships at work were better predictors of depression than subjective perceptions of the general social work climate. Repetti (1987) concluded that an employee's perceptions of social interactions at work have a greater impact on his or her psychological well-being than does the general social work climate. Therefore, in the present study, perceived social support from peers and supervisors was examined as predictors of job satisfaction and depression. It was expected that perceived peer and supervisor support would relate positively to job satisfaction and negatively to depression.

*Work Demands, Job Satisfaction, and Depression*

Although some work demands may be objectively measured (e.g., quantitative workload), in general, they have been subjectively assessed in order to examine their relationship with job satisfaction and depression (e.g., Billings & Moos, 1982; DeRijk, LeBlanc, Schaufeli, & DeJonge, 1998; Long et al., 1992). Work demands have included subjective perceptions of quantitative work overload (too much to do; Barnett & Brennan, 1998), work pressure (the press of work and time urgency; Billings & Moos,
1982; Carayon, 1993ab), work role conflict (the extent to which conflicting demands at work are experienced; Barnett & Brennan, 1998; Westman, 1992); decision-authority or work control over the organizing and pacing of work tasks (Hammer, Saksvik, Nytro, Torvatn, & Bayazit, 2004; Karasek, 1979, 1990), and work role clarity (knowing what to expect in one’s daily routine; Carayon, 1993ab; Schaefer & Moos, 1996). Although there are inconsistencies in research studies regarding which narrow dimensions make up the broad work demands dimension, some dimensions have been found to relate to job satisfaction and depression (e.g., Hammer et al., 2004; Long et al., 1992; Snow et al., 2003).

Significant associations between work demand dimensions and job satisfaction have been found for clerical workers (e.g., Long et al., 1992; Sargent & Terry, 1998; Visweswaren & Deshpande, 1998). For example, Sargent and Terry (1998) examined the relationship of work control and job demands on job satisfaction among 20 male and 115 female administrative staff (75% were administrative assistants and the remainder were administrative officers). Work control referred to perceived levels of control over task organization, decision-making, and work scheduling and was assessed using a measure developed by the authors. Job demands included role ambiguity and role conflict (assessed using a measure developed by Rizzo, House, & Lirtzman, 1970), and quantitative work overload that was assessed using Caplan et al.’s (1980) scale. Job satisfaction was assessed using Caplan et al.’s (1980) scale. The results of HMR indicated that task control was a significant positive predictor of job satisfaction ($b=.30$, $p<.05$) and role conflict was a significant negative predictor ($b=-.19$, $p<.05$). That is, control over task organization and role conflict were directly related to job satisfaction.
Sargent and Terry (1998) examined different aspects of work control (i.e., task organization, decision-making, and work scheduling) and found that task control in particular was a significant predictor of job satisfaction for administrative staff. However, their study was limited in that they used contemporaneous measurements of the independent variables (i.e., job demands and work control). Role ambiguity, role conflict, and quantitative work overload were subsumed under a job demands index and thus, it is uncertain whether each of the dimensions contributed equally to job satisfaction. Moreover, it is uncertain whether the same results would have been obtained using a standardized measure of work demands.

Several studies also have found significant relationships between work demand dimensions and depression (e.g., Carayon, 1993ab; Leicester, Dollard, Winefield, A., Winefield, H., & DeJonge, 2000). For example, in Schaefer and Moos's (1996) study of 405 mostly female (91%) hospital staff (i.e., 97 registered nurses, 74 vocational nurses, 179 nursing assistants, and 55 non-nursing staff, such as physicians and social workers) in 14 facilities, the relationship between the social climate at work and depression and job satisfaction was examined.

The social work climate included three dimensions of the work environment (i.e., relationship, personal growth, and system maintenance and change) originally theorized by Moos (1981), and was assessed using three WES subscales: Peer cohesion, a relationship dimension, referred to how friendly and supportive employees were of each other. Autonomy, a personal growth dimension, referred to how much employees were encouraged to be self-sufficient and make their own decisions; and, clarity, a system maintenance and change dimension, referred to how much employees knew what to
expect in their daily routine and how explicitly rules and policies were communicated. Job satisfaction was assessed using items developed by the authors and items adapted from Hackman and Oldham (1980) and the Institute for Social Research (1973). Depression referred to how sad the employee felt and was assessed using items created by the authors. The results of HMR indicated that peer cohesion and clarity were significant positive predictors of job satisfaction ($b=.17, p<.01, b=.12, p<.05$, respectively) and autonomy was a significant negative predictor of depression ($b=-.12, p<.01$), after controlling for work stressors (i.e., job tasks, patient care tasks, workload and scheduling, problems stemming from interactions with supervisors and physicians).

Although Schaefer and Moos (1996) found direct relationships between peer cohesion, autonomy, and clarity and job satisfaction and depression, it is uncertain to what extent the results generalize to clerical workers. In addition, the wording of the WES instrument was changed somewhat to address a hospital context. Also, only three WES subscales were used. No explanations were given regarding why the remainder of the WES subscales were not included in the study. Thus, it is difficult to determine whether other WES subscales would have predicted job satisfaction and depression as well. Finally, Schaefer and Moos’s study did not test whether peer cohesion was a buffer to the relationships between work demands (i.e., autonomy and clarity) and job satisfaction or depression.

In Narayanan, Menon, and Spector’s (1999) study of clerical workers ($n=133$ women), university professors ($n=70$ men, $n=54$ women), and sales associates ($n=79$ men, $n=51$ women), stressful work events and psychological distress were examined. Stressful work events or work stressors were defined as encounters that employees
subjectively perceived as stressful, reflecting his or her evaluations of the stressful experience. Participants were administered open-ended questionnaires and asked to describe a concrete event at work that had occurred over the past month that they perceived as stressful. Psychological distress was assessed by descriptions of their emotional reactions to the work stressor.

The results of chi-square analysis indicated that subjective perceptions of interpersonal conflicts and work overload were consistent work stressors for all groups. Compared with university professors and sales associates, clerical workers' perceived the lack of control over the speed and rate of work tasks and work overload as the greatest source of psychological distress (e.g., anger, annoyance, frustration, disappointment, anxiety or tension). Professors and sales associates, on the other hand, reported interpersonal conflicts as major work stressors. Narayanan and his colleagues (1999) suggested that one reason for the differences in salient work stressors between clerical workers and other occupations may be due to broader issues of power and politics surrounding the gendered nature of clerical work.

Narayanan and his colleagues' (1999) results demonstrated that work stressors may be occupation specific. Although interpersonal conflicts were stressful for all employees, the greatest source of distress for clerical workers was work overload and the lack of control over work tasks. Although clerical workers are a diverse group, they are different from other occupational groups (e.g., managers) in terms of power and prestige. However, Narayanan and his colleagues' study was limited in that social resources were not examined.

Carayon (1993a) examined the relationships of work demands and work content
on psychological distress and the mediating role of work control, among men (n=50) and women (n=120) public sector office workers, made up of clerical workers (n=111), managers (n=17), and professionals (n=42). A work demands index was used to refer to workload, speed of work, and cognitive load; and was assessed using neutral items from the Work Pressure scale developed by Insel and Moos (1974) and items from two workload scales developed by Caplan et al. (1975), and Smith, Cohen, and Stammerjohn (1981). A work content index was used to refer to skill use, work clarity, and repetitiveness of work tasks. The work content index was assessed using items from the Variety scale developed by Insel and Moos (1974) and Underutilization of Skills scales (Caplan et al., 1975; Smith et al., 1981). Work control referred to perceptions of power, mastery, or influence over one’s work environment; and was assessed using the Autonomy scale (Insel & Moos, 1974), and items from the Participation scale (Caplan et al., 1975; Smith et al., 1981). Psychological distress was assessed using the Profile of Mood States (McNair, Lorr, & Droppleman, 1971) and the NIOSH Health Checklist (Smith et al., 1981). Both measures were designed to assess psychological responses, such as depression and anxiety, and were summed for a total score for psychological distress.

Path analysis revealed that work demands (i.e., workload, speed of work, and cognitive load) and work content (i.e., skill use, work clarity, and repetitiveness) were directly related to work control for all groups. Moreover, work demands were positively related to instrumental control (i.e., control over work pace) but not to conceptual control (i.e., control or influence on company policies). Work demands did not directly relate to distress for clerical workers nor did work control; whereas, for managers and
professionals, the work demands-distress relationship was mediated by work control.

Carayon's (1993a) study demonstrated that clerical workers tend to experience a different work demand-psychological distress relationship than managers and other professionals. That is, work demands (i.e., work pressure and workload) were directly related to work control but not to psychological distress for clerical workers. However, explanations were not given as to why clerical workers and managers differed. This study was also limited in that work clarity and work pressure were subsumed under global indices (i.e., work content and work demands, respectively). Hierarchical factor analysis or CFA was not conducted to determine whether work content and work demands were higher-order dimensions. Furthermore, the results of Carayon's cross-sectional study revealed that work control did not relate to psychological distress for clerical workers. This is contrary to Westman's (1992) study comparing managers and clerical workers, where work control was related to depression for both clerical workers and managers. The inconsistency of findings between Carayon and Westman's studies may be due to gender differences between occupations. Perhaps the work demands were not perceived as stressful, or that work control being a broad construct masked the effects of other work demand variables. Another explanation may be that the influence of demographic variables, such as age were not statistically controlled for. For example, older working women have been found to experience greater job satisfaction and less depression (Barnett & Brennan, 1995; Carayon, 1993ab).

In summary, social resources and work demands have been found to relate to job satisfaction and depression (e.g., Amatea & Fong, 1991; Barnett & Brennan, 1998; Carayon, 1993ab). In particular, social resources, such as job involvement, peer cohesion,
and supervisor support have been found to relate positively to job satisfaction and negatively to depression (e.g., Billings & Moos, 1982; Repetti, 1987; Repetti & Cosmas, 1991). Similarly, work demands (i.e., lack of autonomy, lack of work clarity, work pressure, and managerial control) have been found to relate negatively to job satisfaction and positively to depression for administrative employees that included clerical workers (e.g., Billings & Moos, 1982; Sargent & Terry, 1998). However, studies examining the relationships between social resources and work demands and job satisfaction or depression have been limited in that many studies tend to examine only one or two work demands within a particular study (e.g., Narayanan et al., 1999) or examine a set of dimensions within global indices (e.g., Mausner-Dorsch & Eaton, 2000; Sargent & Terry, 1998). Rarely are the same work demands examined in relation to job satisfaction and depression and because of the lack of an agreed upon taxonomy of work demands, it is difficult to determine whether the same demands that contribute to job satisfaction also contribute to depression.

Therefore, in the present study, subjective perceptions of social resources (i.e., job involvement, peer cohesion, and supervisor support subscales) and work demands (i.e., work pressure, lack of autonomy, lack of work clarity, and managerial control subscales), assessed by the WES-S were expected to predict job satisfaction and depression. Social resources were expected to relate to greater job satisfaction and to less depression; and, work demands were expected to relate to less job satisfaction and to greater depression.

Buffering Effect of Social Resources on Work Demands, Job Dissatisfaction, and Depression

There are several reasons to examine the buffering effects of social resources on
the work demands-job dissatisfaction and depression relationships. According to Hobfoll’s (1988, 1989, 1998) conservation of resources (COR) theory, resources are important aspects of the work environment. Hobfoll’s COR theory proposed that individuals strive to obtain, retain, protect, and foster those things that they value especially in an environment that is perceived as threatening. Resources refer to a constellation of one’s personal strengths, social attachments, and cultural belonging in order to survive. Hobfoll suggested that stress follows from loss and that resources must be spent to cope with stress. Thus, employees who have social resources (e.g., social support) are less likely to be vulnerable to work demands (e.g., low control over work tasks) and less likely to experience job dissatisfaction and depression.

Hobfoll posited that resources may buffer the negative effects of work demands on depression and theorized that people use resources to offset the loss of other resources or to enhance gain, such as job satisfaction. Social support from coworkers and supervisors are important for incorporating an enduring network of relationships that the employee can link to other essential resources, such as emotional support, tangible assistance, and informational guidance. Therefore, in the present study, social support from coworkers and supervisors was examined as a buffer for the relationship between work demands and job dissatisfaction and depression.

Many cross-sectional studies have examined the buffering effect of social support on work demands, such as work pressure (Ankarlo, 1998; Beehr, King, & King, 1990; Jayaratne & Chess, 1984; Schaubroeck & Fink, 1998). Schaubroeck and Fink found that social support, assessed using the WSSS (Caplan, et al., 1975), buffered the negative effects of work demands on psychological distress. LaRocco, House, and French (1980)
found (among men and women employed in a variety of occupations) that peer cohesion buffered the effects of work pressure on depression, but found little evidence for the buffering effect of supervisor support. Conversely, Ankarlo (1998) failed to find evidence among male and female employees in the mental health profession that coworker and supervisor support buffered the effects of work pressure on depression. These studies have either failed to find any reliable evidence that the effects of various work demands on depression are moderated by social support from coworkers and supervisors, or have found only weak evidence.

The inconsistent results regarding the buffering effect of social support on work demands-job dissatisfaction or depression relationships may be due to a number of reasons, such as how social support and work demands are operationalized, gender differences, type of occupation, or unmeasured third variables, such as NA (Ankarlo, 1998). For example, some researchers have claimed that NA may influence perceptions of social interactions at work, such as the perception of the availability of social support (Cohen, Towbes, & Flocco, 1988; McKenna, 2000).

It is also possible that social support is not sufficient to buffer the negative effects of work demands on depression. In Billings and Moos's (1982) study of 294 male and female employees in a variety of occupations including clerical workers, social resources included job involvement and social support from coworkers and supervisors. HMR was used to determine the moderating effects of social resources (i.e., job involvement, peer cohesion, and supervisor support) and work demands (i.e., work pressure, lack of autonomy, lack of clarity, and managerial control) on depression. The amount of variance accounted for in depression due to the social resource by work demand interaction
variable increased significantly after the main effects were included in the regression ($R^2 = .12, p < .05$). Thus, when social resources were broadened to include job involvement, they buffered the negative effects of work demands, thus reducing depression for both men and women.

Several studies have found that employees who perceive themselves as involved and committed to their jobs are more satisfied and successful at their jobs (e.g., Babin & Boles, 1996). Job involvement is an employee's willingness to exert effort on the job. When employees are involved and committed to their jobs, Babin and Boles theorized that they are sometimes more persistent when faced with stressful work demands and their turnover and absenteeism rates are lower than less involved workers. Price (2001) believed that highly involved employees exert more effort and receive greater rewards for this effort, which, in turn, results in increased job satisfaction. Thus, job involvement is an important resource that may help to sustain employees in times of difficulty. However, although several studies have found direct results between job involvement and job satisfaction, few studies have found an interaction effect between social resources (that included job involvement) and work demands on job satisfaction (Riipinen, 1997; Schaefer & Moos, 1993). Therefore, in the present study, because theoretical claims and empirical evidence for the buffering effect of social resources have been mixed, the buffering effect of social resources on the work demands-job dissatisfaction and depression relationship was examined from an exploratory perspective.

The Mediating Effect of Job Satisfaction on the WES-S – Depression Relationship

There is some theoretical and empirical evidence to suggest that job satisfaction may account for the relationship between the social resources and work demands and
depression. Experiencing positive emotions associated with job satisfaction may help employees sustain difficult times. Folkman and Moskowitz (2000) claimed that positive emotions may provide relief and interrupt negative rumination, increase morale, and serve as a barrier against depression. For example, positive emotions may broaden an individual’s attentional focus and behavioral repertoire and, as a consequence, replenish resources (e.g., social, intellectual, and physical) that have been depleted by stressors. Moreover, Isen, Johnson, Mertz, and Robinson (1985) suggested that positive emotions promote creativity and flexibility in thinking and problem solving. Therefore, job satisfaction could be construed as a manifestation of positive emotions that could account for the relationship between the work environment and depression. Thus, based on theory, job satisfaction may mediate the relationship between the WES-S variables (e.g., work demands or the lack of social resources) and depression.

According to Baron and Kenny’s (1986) steps to test mediating effects, in order to support job satisfaction as a mediating variable, first there must be evidence that the work environment is associated with depression. Evidence of that was found in Billings and Moos (1982) and Repetti (1987). The second criteria to establish mediation is that there must be evidence that the work environment is associated with job satisfaction. Evidence of the second criteria was found in Billings and Moos, and Repetti and Cosmas (1991). Third, it is also necessary to show that job satisfaction is related to depression. In Long et al.’s (1992) study, a direct relationship was found between job satisfaction and depression. In her study of 249 managerial women, a latent variable that included work demands and social resources (WES-S) was examined in association with a satisfaction latent variable (that included job satisfaction) and a distress latent variable (that included
depression). The Structural Equation Modelling (SEM) results indicated that among managers, positive perceptions of the work environment related to greater satisfaction. Moreover, the work environment was indirectly related to distress. There was a significant path coefficient between the work environment and satisfaction, which in turn, predicted distress, suggesting that job satisfaction mediated the work environment-distress relationship.

However, the use of latent variables may impose limitations. For example, work demands and social resources were investigated as latent variables and yet not all dimensions contributed equally to satisfaction and distress. In addition, a test of the mediating effect of job satisfaction on the work environment-psychological distress relationship was not conducted. However, in the present study, based on theoretical claims and empirical evidence, I hypothesized that job satisfaction would mediate the relationship between social resources and work demands and depression.

In addition to examining the direct, moderating, and mediating relationships between the subjective work environment and job satisfaction and depression, it was also important to examine the objective work environment’s relationship to job satisfaction and depression.

Objective Work Environment

Objective dimensions of the work environment are work environment dimensions that can be operationally defined, are potentially perceivable by others, and independent of any one employee’s cognitive and emotional processes. Both union membership and size of the organization are objective work environment indicators that may be related to job satisfaction and depression and particularly important for clerical workers. Union
membership has the potential to impose demands and constraints on employees (e.g., McKenna, 2000; Viswesvaran & Deshpande, 1998). For example, Gwartney-Gibbs and Lach (1994) examined how interpersonal conflicts were dealt with in union and non-union organizations, using semi-structured in-depth interviews with 34 male and female clerical workers from large organizations of over 3000 employees. The employees were asked to describe the interpersonal conflicts and disputes they encountered at work. Almost 40% of the clerical workers reported that interpersonal conflicts, particularly disputes with supervisors over how work tasks were to be accomplished, were a frequent work stressor. However, what unionized clerical workers could do about interpersonal conflicts was constrained by their union’s dispute resolution forum.

Gwartney-Gibbs and Lach (1994) found that unionized clerical workers were required to adhere to a union-negotiated grievance procedure when disputes occurred; whereas, the organizations that employed non-union clerical workers had an “open-door” policy. The union-negotiated grievance procedure was described as formal with the union steward representing the employee and strategic positions being defended. Expressions of emotion were discouraged and the nature of the dispute was not reviewed unless it was considered extreme by the union steward (e.g., harassment or insubordination). Clerical workers often reported that it was difficult to resolve interpersonal conflicts through formalized channels and instead resulted in lateral transfers. In contrast, the “open-door” policy found in non-unionized organizations was described as informal and team spirit was emphasized. The employee would represent him or herself. The expression of emotion was allowed and sometimes encouraged and the nature of any dispute was discussed. Outcomes for the employee often involved an abeyance to the complaints and
lateral transfers were not allowed until the dispute was resolved.

Gwartney-Gibbs and Lach's (1994) examination of interpersonal conflicts demonstrated that how grievances are dealt with (unions versus non-union) may potentially affect how the objective work environment relates to job satisfaction and depression for clerical workers. However, the results of their study do not allow any assertions that unions or union-grievance procedures better serve clerical workers (or impair psychological well-being) than an open-door policy commonly found in non-union organizations. On the other hand, unions have the potential to provide employees with more job security and protection against sexual harassment or being fired for unfounded reasons that also may relate to less depression and greater job satisfaction (Cohen & White, 1987). Thus, it is uncertain to what extent union membership impacts job satisfaction and depression.

McKenna (1995) examined the prevalence of perceived work stressors and psychological distress among union workers in a variety of occupations and found that fatigue and insomnia (considered symptoms of depression in the Diagnostic and Statistical Manual of Mental Disorders, Text Revision; American Psychiatric Association, 2000) were experienced 41% of the time. When asked what they believed were the causes of their distress, 28% attributed it to workload, 21% reported conflicts with supervisors, and 11% reported conflicts with clients. However, the results were based on a small Australian sample (N=112 men and women) and it is not known whether the same level of prevalence occurs among Canadian female clerical workers. Also, male and female responses were combined. Without a separate analysis, it is possible that the results of union membership are masked by gender differences.
Furthermore, the types of occupations surveyed were not specified, thus it is unknown whether the prevalence of perceived work stressors and psychological distress occurred more in one occupation than another, potentially distorting the percentage rates. In addition, McKenna claimed that unions are generally present in larger-sized organizations. Statistics Canada (1999) indicated that employees in the public sector were almost four times as likely as their private sector counterparts to belong to a union (70.5% versus 18.1%). Thus, there may be considerable overlap between union membership and public sector employment.

Some studies have found that unionized employees from a variety of occupations tend to experience greater job dissatisfaction (e.g., Bender & Sloane, 1998; Bryson et al., 2004; Hersch & Stone, 1990). Freeman and Medoff (1984) posited that one reason for the relationship between union membership and job dissatisfaction was the exit-voice hypothesis. They argued that unions reduce turnover by creating desirable working conditions and by providing discontented employees with a voice, an alternative to quitting. The exit-voice model states that in order for organizations to hear the workers effectively, the employees must express themselves loudly. However, they claimed that the dissatisfaction was not genuine in the sense that it led to quitting one’s job, but instead was a device through which the union could tell the organization that its employees were unhappy and were demanding more. Thus, in reality, unionized employees may not be genuinely dissatisfied with their jobs.

Bryson and his colleagues (2004) examined the relationship between unionized employees and job satisfaction among employees in all occupations except agriculture and found that after demographic variables (e.g., gender, age, and education), job
characteristics (e.g., wages and occupation), and workplace characteristics (e.g., size of organization) were statistically controlled for, union membership was associated with greater job dissatisfaction. However, when they controlled for the industrial relations climate (i.e., the relationship between the employees and employer), the relationship between union membership and job dissatisfaction was no longer significant. They concluded that job dissatisfaction was due to the employees' perception that the industrial relations climate was strained rather than because they belonged to a union. However, the results were based on the 1998 British Workplace Employee Relations Survey and it cannot be determined whether the results generalize to Canadian female clerical workers. Also, the value of unions may differ from country to country.

The size of organization is another objective work environment indicator that may be related to job satisfaction and depression. In Newton and Keenan's (1985) study of 162 male and female engineers, situational variables (e.g., size of organization, union membership, work environment climate) were examined in association with coping behaviours. Employees were administered a questionnaire and asked to describe a concrete work event that occurred within the last 14 days, appraised as personally stressful. The Stress Incident Record (Kerlinger, 1964) was also used to assess psychological distress, such as anger, frustration, and anxiety. Objective measures were developed by the authors to obtain information on the size of the organization, field of engineering, and union or non-union membership. Two subscales of the Litwin and Stringer Scale (1968) were also included to assess the work environment climate. Perceived work climate referred to the degree of warmth and support existing in the organization. Coping behaviours (i.e., talking to others, direct action, preparatory action,
withdrawal, and helplessness/resentment) were assessed by asking the employee how he or she handled the work stressor.

Analysis of variance was used to test whether the independent variables (i.e., size of the organization, union membership, and work environment climate) were significantly associated with coping responses. The results indicated that in larger organizations (the number of employees was not specified) the most commonly reported coping strategy was to talk with the immediate supervisor when a work stressor was encountered. In smaller organizations, however, the engineers were more likely to cope by taking direct action to resolve the problem that had arisen. Union membership was not associated with any of the coping behaviours.

Newton and Keenan (1985) concluded that in larger organizations it was not surprising that an employee turned to their supervisor, who was both proximal and senior in authority and who was familiar with their work, when attempting to cope with a work stressor. For employees working in smaller organizations, they speculated that employees may be granted greater decision-making control over work tasks than their counterparts in larger organizations, as indicated by their greater use of taking direct action.

However, although it is plausible that size of the organization may relate to job satisfaction and depression, the results of Newton and Keenan’s study (1985) were limited in that this relationship was not directly examined. In addition, the sample was engineers and it is uncertain to what extent the results generalize to clerical workers. Yet, in large organizations that consist of large pools of clerical workers, it is possible that they may experience a lack of connection to others and may need to rely on supervisors more. Another limitation was that the size of the organization was not specified.
According to Statistics Canada (2002), smaller-sized organizations are made up of 0 to 99 employees, medium-sized organizations have 100 to 499 employees, and larger-sized organizations have 500 or more employees. Therefore, in the present study, large-sized organizations (over 500 employees) were contrasted with smaller-sized organizations (less than 499 employees) and their relationship to depression and job satisfaction was examined from an exploratory perspective.

In summary, union membership and size of organization may be important for clerical workers and may potentially contribute to their job satisfaction and depression. Union membership may be linked to job satisfaction in that it provides job security, such as protection for employees against sexual harassment, and a voice that gives them an alternative to quitting. Unions also adhere to more formalized conflict resolution procedures that may be helpful to some employees but may be less helpful to others. In addition, when the industrial relations climate is accounted for, union membership is not associated with job dissatisfaction. However, the impact of the union on employees may be confounded by organizational size because employees in larger organizations tend to belong to unions. The results of Newton and Keenan’s (1985) study suggested that the size of the organization may impact job satisfaction and depression by placing constraints and limitations on employees. However, the direct relationship between union membership and size of organization and job satisfaction and depression has not been examined. Thus, it is uncertain to what extent union membership and size of organization contribute to job satisfaction and depression. Therefore, in the present study, the extent to which these variables contribute to job satisfaction and depression were examined from an exploratory perspective and specific hypotheses were not made.
An equally important consideration in understanding the relationship between the work environment and job satisfaction and depression is the potential impact of relevant demographic variables and NA.

**Demographic Control Variables**

Demographic variables, such as age, education, and marital status have been found to relate to job satisfaction and depression among working women (Barnett & Brennan, 1995; Carayon, 1993ab; Long et al., 1992). For example, previous studies have found that married working women are more depressed than single working women (e.g., Barnett & Brennan, 1995); older clerical workers (i.e., over 42 years of age) experience greater job satisfaction and less depression than younger employees (Schaefer & Moos, 1996); and those with higher levels of education (i.e., 13 or more years in school) experience greater job dissatisfaction than those with lower levels of education (Carayon, 1993ab). Thus, in order to achieve a clearer understanding of the impact the work environment has on job satisfaction and depression, relevant demographic variables (i.e., age, education, and marital status) were statistically controlled for in the present study.

**Negative Affectivity as a Confound**

The personality trait, NA, may potentially confound the relationship between the work environment and job satisfaction and depression. NA is defined as a unidimensional, pervasive disposition to experience negative emotions across situations and time that “includes subjective feelings of nervousness, tension, and worry...affective states, such as anger...self-dissatisfaction...a sense of rejection, and... sadness” (Watson & Clark, 1984, p. 465). The NA construct has often been operationalized as different affective constructs, such as neuroticism or trait anxiety (Terry et al., 1995; Watson &
Clark, 1984; Watson & Pennebaker, 1989). However, NA is a broad construct and is considered a more general trait of somatopsychic distress than depression and other affective dispositions because of its broad range of subjective complaints and reported physical symptoms (Chen & Spector, 1991; Spector et al., 2000).

The hypothesized role of NA on employees' perceptions of and reactions to work demands, job satisfaction, and depression, has been dominated in recent years by two views. Some researchers have argued that NA biases self-report measures of work demands and affective psychological responses (Brief et al., 1988; Brief & Weiss, 2002; Judge & Larsen, 2001; Watson, Pennebaker, & Folger, 1987). Others, however, have questioned the biasing effect, and have suggested a substantive role in which NA is related to underlying constructs frequently studied in the work environment (Judge, Erez, & Thoresen, 2000; Schonfeld, 1992, 1996; Spector et al., 2000). The debate revolves around the role played by NA and whether it is a bias in need of statistical control.

For example, in Brief and his colleagues' (1988) study of 497 managers and professionals, NA considerably inflated the relationship between work stressors (subjectively assessed) and psychological well-being (i.e., job satisfaction), and psychological distress (i.e., depression) and was considerably reduced when NA was partialled out. Work stressors referred to troublesome events that occurred at work in the last 3 years, and were identified using the Psychiatric Epidemiology Research Interview (Dohrenwend, Krasnoff, Askenasy, & Dohrenwend, 1978). Job satisfaction was assessed using the Minnesota Satisfaction Questionnaire (Weiss, Dawis, England, & Lofquist, 1967) designed to assess how the employee presently felt about his or her job. Depression was measured using the CES-D (Radloff, 1977) designed to assess depressive symptoms.
that occurred in the last week. NA was measured using Taylor’s (1953) Personality Scale of Manifest Anxiety. Brief and his colleagues concluded that NA was a potential nuisance variable that might produce spurious relations between work stressors and job satisfaction and depression. As a result, many researchers have begun to routinely treat NA as a biasing factor to be statistically controlled for in their studies (Brief et al., 1988; Burke, Brief, & George, 1993; Payne, 1988).

However, a number of other researchers have noted the non-bias or substantive role of NA on work stressor-psychological response relationships (Moyle, 1995; Schaubroeck, Ganster, & Fox, 1992; Ganster & Fusilier, 1989; Spector & O’Connell, 1994). For example, Spector and his colleagues have argued that NA should not be considered a bias in need of statistical control (e.g., Schonfeld, 1996; Spector, 1987; Spector, Fox, & Van Katwyk, 1999; Spector, Zapf, Chen, & Frese, 2000). They suggested that NA plays a substantive role in work environment-psychological response relationships in that NA may partially explain why two variables are related. For example, suppose an individual performs work tasks poorly because of high NA. This could result in a punitive supervisor response and the constant negative behavior of the supervisor might produce ongoing psychological distress. One might observe that NA correlates with employee’s reports of their supervisor’s punitive behavior, as well as with psychological distress. In this case NA’s role is substantive. Meehl (1971) claimed that partialling out variables could lead to erroneous inferences. For example, the partialling procedure or using related statistical techniques may lead to removing the effects of the specified variables one wishes to examine.

Spector and his colleagues (2000) acknowledged that NA may inflate correlations
between social relationships, work demands, and psychological distress but also argued that these inflations were modest at best. Several studies have found only weak NA effects on psychological distress (Agho, Price, & Mueller, 1992; Chen, O’Connell, & Spector, 1993; Moyle, 1995; Parkes, 1990; Portello & Long, 2001). For example, Williams, Gavin, and Williams (1996) used both partial correlations and SEM to test for NA bias between work demands (subjective perceptions of role ambiguity, role conflict, role overload, and job complexity) and psychological distress and well-being (i.e., job satisfaction and affective commitment). None of the partialling or SEM results revealed that NA was a serious biasing or confounding variable in measurement. They estimated that on average 57% of the relations between work demands and psychological distress was attributable to substantive factors and only 5% was attributable to NA. They suggested that even if NA was a bias, it did not inflate correlations among variables excessively.

Chen and Spector (1991) argued that the biasing effect of NA may be particularly problematic when items assessing variables within the work environment-psychological response relationship (e.g., work demands, appraisals, coping, job satisfaction, and depression) are affective in tone. For example, Chen and Spector analyzed the self-report measures of ongoing work demands (e.g., role ambiguity, role conflict, interpersonal conflict, and work overload), and psychological strain (i.e., overall job satisfaction, anger, and perceived frustration) among 400 working men and women.

Partial-order correlations revealed that NA was responsible for not only reductions but also suppressor effects. They found that the biasing effect of NA was high when the items used in work demand and psychological strain measures were evaluative
and affective in tone and low when the items were descriptive and non-affective. When
the partialling procedure (first and second-order partial correlations) was used, there was
little evidence to support the idea that NA accounted for a large amount of the
relationship between ongoing work demands and strains. In almost all instances,
partialling out NA reduced a relatively constant but small amount of shared variance that
became proportionally smaller as the relationship between work demands and strains
increased. Thus, on the basis of current evidence, NA inflates observed relationships
between ongoing work demands and psychological well-being and distress when items
are affective in tone. Therefore, in the present study, the work environment was assessed
by neutrally toned items. In addition, NA was statistically controlled for, however, as a
means of clarifying the role of NA, an additional analysis was conducted without
statistically controlling for NA.

Moreover, some researchers have claimed that the potential for NA to confound
work environment-job satisfaction and depression relationships could be addressed
through longitudinal designs (e.g., Schonfeld, 1992; Spector et al., 2000). These
researchers argued that if NA is a stable personality characteristic that inflates
correlations between work demands and depression then NA should show the same
amount of influence over time. Schonfeld (1992) found in his study of female nurses that
NA did not consistently inflate correlations between subjectively assessed work demands
and depression over a 1-year period. In the present study, the work environment and other
outcomes, job satisfaction and depression, were assessed 1-month apart.

In summary, it has been argued that NA biases self-report measures of social
support, work demands, job satisfaction, and depression, by inflating the work
environment-psychological well-being and distress relationship (Brief et al., 1988).

However, other studies have indicated that the inflation is minimal and if NA is statistically controlled for, it is likely that the effects of the variables under examination may be removed rather than a bias effect, thus leading to erroneous conclusions regarding the actual relationship between subjectively assessed work environment dimensions and psychological well-being and distress (Spector et al., 2000). Studies also have revealed that NA is most problematic when items assessing the work environment are affective in tone. However, NA is less problematic when ongoing work demands are examined in relation to job satisfaction and depression.

Therefore, to address these issues in the present study, Billings and Moos’s (1982) WES-S was used to assess two work environment dimensions: social resources and work demands. None of the WES-S items are affective or evaluative in tone (see Appendix B for a sample of the items). The design was longitudinal in that social resources and work demands were assessed one month prior to job satisfaction and depression. Although NA has been found to relate positively to less social resources, greater work demands, job dissatisfaction, and depression, it was unclear whether NA would significantly inflate the relationships between social resources, work demands, job satisfaction, and depression. Therefore, in the present study, the influence of NA in the relationship between the WES-S variables and job satisfaction and depression was statistically controlled for because it may be a potential confound; but NA as a control variable, was also removed to further explore its effect on the relationship between social resources and work demands and job satisfaction and depression.
The Present Study

Although work environment dimensions have been found to relate to job satisfaction and depression (e.g., Billings & Moos, 1982; Repetti, 1987), the role of the work environment has not been examined systematically for female clerical workers. Using a longitudinal design and archival data, the present study addressed four major research questions that were carried out in two phases. First, do the two major dimensions of the WES-S (social resources and work demands) proposed by Billings and Moos (1982) provide the best fit of the data for female clerical workers? Thus, in the first phase of the present study, the factorial structure of the WES-S was examined. I expected to find support for the two-factor model proposed by Billings and Moos (1982). Using CFA, social resources and work demands were expected to be two higher-order dimensions of the subjective work environment and was contrasted with Moos’s (1981) three-factor model and Johnson’s (1989) single-factor model in order to determine if the two-factor model was a better fit for clerical workers who were experiencing ongoing work stress. The results of the CFA were used to predict job satisfaction and depression in Phase 2.

In the second phase of the present study, the WES-S dimensions found in Phase 1 were expected to predict job satisfaction and depression and addressed the three remaining research questions: Do subjective (i.e., social resources and work demands) and objective (i.e., union membership and size of organization) work environment variables predict job satisfaction and depression? Several cross-sectional studies have found that social resources (i.e., social support and job involvement) and work demands (i.e., lack of autonomy, work pressure, lack of work clarity, and managerial control) were directly related to job satisfaction and depression (e.g., Billings & Moos, 1982; Repetti &
Cosmas, 1991). Therefore, greater social resources were expected to relate positively to job satisfaction and negatively to depression. Greater work demands were expected to relate negatively to job satisfaction and positively to depression.

In addition, I addressed the question do social resources buffer the negative effects of work demands on job satisfaction and depression? Because there were somewhat limited and conflicting results regarding the moderating effect of social resources and work demands, the interaction between social resources and work demands on job satisfaction and depression, was examined from an exploratory perspective.

The question, does job satisfaction account for the social resources and work demands-depression relationship was also tested. Locke (1976) defined job satisfaction as a positive emotion. Folkman and Moskowitz (2000) claimed that positive emotions may provide relief and interrupt negative rumination, increase morale, and serve as a barrier against depression. Therefore, based on theoretical claims and empirical evidence, job satisfaction was expected to mediate the social resources and work demands-depression relationship.

Finally, the relationship between the objective work environment (i.e., union membership and size of organization) and job satisfaction and depression was explored. Because empirical evidence was limited and there was no theoretical basis for predicting specific hypotheses, the relationship between the objective work environment and job satisfaction and depression was examined for exploratory purposes.

However, an important consideration is that the work environment-job satisfaction and depression relationships may be influenced by NA and demographic variables. Therefore, in the present study, using a longitudinal design and archival data,
NA was statistically controlled for when examining the extent to which the subjective and objective work environment predicted job satisfaction and depression, the extent to which social resources buffered the negative effects of work demands on job dissatisfaction and depression, and the extent to which job satisfaction mediated the social resources and work demands-depression relationship. To further explore the role of NA, the analyses were repeated without NA in the model.
Chapter III: Hypotheses

The following hypotheses and their derivatives were based on theoretical tenets (e.g., Folkman & Moskowitz, 2000; Moos, 1994; Repetti, 1993ab) and empirical evidence. Phase 1 of the present study was aimed at establishing the factorial structure of the WES-S (i.e., seven WES subscales) and based on these results, using a longitudinal design, Phase 2 was aimed at testing the relationships between the work environment and job satisfaction and depression on two samples of female clerical workers (N=223 and N=207).

Phase 1: The Factorial Structure of the WES-S

_Hypothesis 1._ There would be two distinct dimensions of the WES-S: social resources and work demands (see the two-factor model illustrated in Figure 1).

Billings and Moos (1982) claimed that the work environment consisted of two major dimensions (i.e., social resources and potential work stressors, referred to in the present study as work demands) that could have deleterious effects on employees’ job satisfaction and depression. They theorized that the quality of relationships in the workplace (i.e., social resources) is based on job involvement, peer cohesion, and supervisor support. Work demands encountered by employees in their daily routines consist of the lack of autonomy, lack of work clarity, work pressure, and managerial control. These two dimensions (i.e., social resources and work demands) were explored using EFA in studies examining nurses and Navy personnel (e.g., Booth et al., 1976; Constable & Russell, 1986). The lack of consistency across occupational groups is consistent with Moos’s (1994) claim that the factor structure of the work environment would be different for different occupational groups.
Model 1: Two-Factor Model

Model 2: Three-Factor Model

Model 3: Single-Factor Model

Figure 1. Three models used to test alternative structures of the shortened version of the WES (Billings & Moos, 1982). SR=Social Resources Dimension; JI=Job Involvement; CS=Peer cohesion; SS=Supervisor Support; WD=Work Demands Dimension; LAU=Lack of Autonomy (items 1 to 4); LAUU= Lack of Autonomy (items 5 to 9); WP=Work Pressure; LCL=Lack of Work Clarity (items 1 to 4); LCLL=Lack of Work Clarity (items 5 to 9); MC=Managerial Control; REL=Relationship Dimension; PG=Personal Growth Dimension; SMC=System Maintenance and Change Dimension; AU=Autonomy; CL=Work Clarity.

* In the three-factor model, it was necessary to split the Lack of Autonomy and Lack of Clarity subscales into two subscales in order to minimize Heywood cases.
Studies have found that social resources and work demands, subsumed under global indices or latent constructs, were relevant to the job satisfaction and depression of clerical workers (e.g., Carayon, 1993ab). Therefore, based on theoretical and empirical support, the structure of the WES-S was expected to include two distinct dimensions, social resources and work demands. A three-factor model (Moos, 1981) and a single-overarching model (Johnson, 1989) of the WES-S (illustrated in Figure 1) were also tested to determine if the two-factor model best fit the data. However, should the results of the CFA indicate that none of the proposed models are a good fit of the data, then Exploratory Factor Analysis (EFA) would be carried out to determine if the WES-S consists of a different factor structure.

Phase 2: Work Environment, Job Satisfaction, and Depression Relationships

Based on the expected results of Phase 1 (i.e., the WES-S consists of two higher-order dimensions – social resources and work demands), two hypotheses predicting job satisfaction and depression, and one hypothesis predicting the mediating effect of job satisfaction on the WES-S dimensions-depression relationship were proposed and tested on two independent samples of clerical workers.

Hypothesis 2. Singly or in combination, there would be a significant linear relationship between the WES-S dimensions (e.g., social resources and work demands) and job satisfaction, after controlling for relevant demographic variables (i.e., age and education) and NA (in Sample 2 only). Specifically, WES-S dimensions would significantly increase the amount of variance accounted for in job satisfaction, after controlling for demographic variables. Greater social resources would relate positively to job satisfaction; whereas, greater work demands would relate negatively.
Hypothesis 3. Singly or in combination, there would be a significant linear relationship between WES-S dimensions and depression, after controlling for relevant demographic variables (i.e., age and marital status) and NA (in Sample 2 only). That is, the WES-S dimensions would significantly increase the amount of variance accounted for in depression, after controlling for age, marital status, and NA (only in Sample 2). Greater social resources would relate negatively to depression; whereas, greater work demands would relate positively.

Repetti (1987) theorized that social resources help employees influence environmental circumstances in ways that could enhance job satisfaction and ameliorate depression. Social resources may provide employees with a sense of belonging and affiliation, provide relief from losses, such as time spent and energy, and contribute to enhanced status and self-esteem. Repetti and her colleagues found that coworker and supervisor support were directly related to job satisfaction (Repetti & Cosmos, 1991) and depression (Repetti, 1987) among mostly female bank tellers and customer service representatives. On the other hand, Ganster (1989) posited that greater work demands, such as work pressure and managerial control had the potential to impinge on the employee in ways that could make work less rewarding and more threatening. Billings and Moos (1982) found that the lack of autonomy and work clarity, and greater work pressure and managerial control were associated with less job satisfaction and greater depression in their study of employees from a variety of occupations, including clerical workers.

Exploratory Question 1. Do social resources buffer the effects of work demands in predicting depression and job dissatisfaction, while controlling for age, marital status,
and NA (in Sample 2 only)? Moos (1981) theorized that a supportive work environment marked by perceptions of supervisor and peer cohesion, and being highly involved with one's work would buffer the negative effects of work demands, reducing the impact on depression. Billings and Moos (1982) found that job involvement, peer cohesion, and supervisor support, grouped under a social resource dimension buffered the relationship between work demands (i.e., lack of autonomy, work pressure, lack of work clarity, and managerial control) and depression for employees in a variety of occupations that included clerical workers. However, the results of research examining the interaction between social resources and work demands on depression and job dissatisfaction have been mixed, in part because the dimensions had been defined differently and assessed with unstandardized measures (e.g., Karasek et al., 1998). Therefore, in the present study, no specific hypotheses were proposed. Instead, the buffering effects of social resources on the work demands-job dissatisfaction and depression relationships were examined from an exploratory perspective using the WES-S factor structure derived from the CFA or EFA.

Hypothesis 4. Job satisfaction would mediate the social resources and work demands-depression relationship, while controlling for age, education, marital status, and NA (only in Sample 2).

According to Locke (1976) job satisfaction is an emotional response to a value judgment made by an individual worker. If job values are perceived as being fulfilled, the employee will experience the pleasurable emotion of satisfaction; if they are perceived as being frustrated, the employee will experience the negative emotion of dissatisfaction. Positive emotions have been assumed to interrupt negative rumination, increase morale,
and serve as a barrier against depression (Folkman & Moskowitz, 2000). Thus, positive emotions associated with job satisfaction could provide relief from work demands and help reduce the ruminative spiral into depression. Therefore, based on theory, the mediating effect of job satisfaction in the social resources and work demands-depression relationship was hypothesized.

**Exploratory Question 2.** Do unionized clerical workers experience greater job dissatisfaction and depression than non-unionized clerical workers? Gwartney-Gibbs and Lach (1994) posited that conflict resolution in unions follows structured procedures, which create distress and are not very satisfactory to clerical workers. However, unions have been found to provide job security and policies that protect employees from sexual harassment, which may relate to less depression and greater job satisfaction (Cohen & White, 1987). Because empirical evidence is limited and there is no theoretical basis for predicting specific hypotheses for the relationship between union membership, depression, and job satisfaction, these effects were also examined for exploratory purposes. Zero-order correlations between union membership, job satisfaction, and depression were also examined.

**Exploratory Question 3.** Do clerical workers who work in larger organizations (i.e., 500 or more employees) experience greater job dissatisfaction and depression than clerical workers who work in smaller organizations (i.e., less than 499 employees)? McKenna (2000) speculated that clerical workers in larger organizations experience greater psychological distress because there is a greater potential to feel alienated and disconnected from others. However, because empirical evidence is limited and there is no theoretical basis for predicting specific directional relationships between the size of
organization and job satisfaction and depression, these effects were examined for exploratory purposes. Zero-order correlations between size of organization, job satisfaction, and depression were also examined.
Chapter IV: Method

The data for the present study were drawn from two archival data sets. The first sample (collected from 1989 to 1991) consisted of 223 clerical workers (Long, 1998). Long compared a structural model previously developed for female managers, with female clerical workers. The data for the second sample (collected from 1996 to 1998) were drawn from an independent sample of 207 clerical workers aimed at testing a structural equation model of the stress process. In both studies, data were collected over three time periods, assessed one month apart.

Sample 1: Participants and Procedures

Participants in Sample 1 were 223 female clerical workers who were recruited through the media in a large urban city in Western Canada. Criteria included that they work at least 20 hours a week, have no supervisory duties, and experience work stress on a regular basis. Media announcements for recruiting participants advertised for female clerical workers who were experiencing ongoing work stress. After telephone screening, participants were mailed three questionnaire packages (in three waves) and detailed instructions for completing the packages. Of the 286 participants who were mailed the packages at Time 1, 55 dropped out for an attrition rate of 19% (47 withdrew because of a lack of time, 8 no longer met the study criteria). In addition, 8 were excluded from the analyses because they identified personal rather than work-related stressors at Time 2, leaving 223 cases for analysis. Chi-square analyses and ANOVAs of demographic variables between participants and those who dropped out were not statistically significant (Long, 1998; Morris & Long, 2002).

The mean age of the participants was 39.77 years (SD=9.46, range = 22 to 63
years). Fifty-three percent of the clerical workers were married, 22% were single, and 
25% were divorced, separated, or widowed. Fifty-four percent were parents. Household 
incomes ranged from less than $25,000 per year (23.4%) to over $61,000 per year 
(27.5%). Twenty-eight percent had a high school education or less, 43% had special 
technical training (e.g., secretarial, clerical), 17% had college education (2 years post-
secondary), 11% had a university degree, and 1% had post-university education. The 
major industries represented were education (31%), service (35%), utilities and public 
administration (12%), manufacturing and transportation (10%), and other (8%). Job 
classifications included clerks (25%), secretaries-stenographers (23%), administrative 
assistants (34%), and others (18%). On average the women had been in the workforce for 
17.02 years (SD=8.74, range = 1 to 42 years), with their organizations for 5.94 years 
(SD=6.07, range = less than 1 to 29 years), and in their present positions for 4.63 years 
(SD=5.67, range = less than 1 to 32 years). The majority of women were employed in 
organizations of over 500 employees (54%). Sixty-three percent belonged to unions. 
Ninety-eight percent of the sample was Caucasian. See Table 1 for participant 
characteristics.

Three waves of data were collected 1 month apart in order to address 
methodological concerns in identifying causal links between stress and health outcomes 
(e.g., the effects of contemporaneous measurement). Although at the present time there is 
no agreed upon period of time within which one can expect to find such relationships, 
Long (1998; Long et al., 1992) provided support for 1-month assessment periods. 
Participants were asked to describe, in detail, what stressor(s) they were experiencing, for 
how long they were experienced, and whether it would be ongoing. To be included in the
Table 1

*Characteristics of Female Clerical Workers in Sample 1 (N=223) and Sample 2 (N=207). Values in Parentheses Apply to the Female Clerical Workers in Sample 2

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>39.77 (41.97)</td>
<td>9.46 (9.36)</td>
<td>22-63 (21-63)</td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td></td>
<td></td>
<td></td>
<td>53 (60)</td>
</tr>
<tr>
<td>Single/Divorced/Separated/Widow</td>
<td></td>
<td></td>
<td></td>
<td>47 (40)</td>
</tr>
<tr>
<td>Parental Status*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No children</td>
<td></td>
<td></td>
<td></td>
<td>46 (65)</td>
</tr>
<tr>
<td>One</td>
<td></td>
<td></td>
<td></td>
<td>20 (25)</td>
</tr>
<tr>
<td>Two or more</td>
<td></td>
<td></td>
<td></td>
<td>34 (18)</td>
</tr>
<tr>
<td>Household Income (Annual)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Less than $24,999</td>
<td></td>
<td></td>
<td></td>
<td>23 (16)</td>
</tr>
<tr>
<td>More than $25,000</td>
<td></td>
<td></td>
<td></td>
<td>77 (84)</td>
</tr>
<tr>
<td>Educational Background*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High School</td>
<td></td>
<td></td>
<td></td>
<td>28 (23)</td>
</tr>
<tr>
<td>College and University Education</td>
<td></td>
<td></td>
<td></td>
<td>29 (18)</td>
</tr>
<tr>
<td>Special Technical Training (e.g., secretarial, legal, medical)</td>
<td></td>
<td></td>
<td></td>
<td>43 (59)</td>
</tr>
<tr>
<td>Number of years in the Workforce*</td>
<td>17.02 (21.17)</td>
<td>8.74 (9.11)</td>
<td>1-42 (3-45)</td>
<td></td>
</tr>
<tr>
<td>Number of years with Organization*</td>
<td>5.94 (8.62)</td>
<td>6.07 (6.78)</td>
<td>&lt;1-29 (&lt;1-41)</td>
<td></td>
</tr>
<tr>
<td>Number of years in Present Position</td>
<td>4.63 (5.70)</td>
<td>5.67 (4.72)</td>
<td>&lt;1-32 (&lt;1-20)</td>
<td></td>
</tr>
</tbody>
</table>
Table 1 (continued)

<table>
<thead>
<tr>
<th>Demographic Variable</th>
<th>$M$</th>
<th>$SD$</th>
<th>Range</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size of Organization</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 499</td>
<td>46</td>
<td>35</td>
<td>46</td>
<td>46 (35)</td>
</tr>
<tr>
<td>Over 500</td>
<td>54</td>
<td>65</td>
<td>54</td>
<td>54 (65)</td>
</tr>
<tr>
<td>Union Membership*</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Yes</td>
<td>63</td>
<td>83</td>
<td>63</td>
<td>63 (83)</td>
</tr>
<tr>
<td>No</td>
<td>37</td>
<td>17</td>
<td>37</td>
<td>37 (17)</td>
</tr>
</tbody>
</table>

Note. The values that are not in parentheses apply to the female clerical workers in Sample 1.
* Cultural background (ethnicity) was assessed differently for each sample.
*Statistically significant difference, $p<.01.$
study, they had to have experienced a stressor for at least one month and did not expect it to end during the course of the study. At Time 1, participants completed the informed consent form and the first questionnaire booklet that consisted of demographic questions and trait measures. Between Time 1 and Time 2, participants were required to identify a salient work stressor. One month after the first questionnaire booklet was completed (Time 2), a research assistant contacted the participants and prompted them to recall their most salient work stressor of the past month. After the work stressor was briefly recorded in their questionnaire booklet, participants were requested to focus on the specific work stressor while completing the appraisal and coping instruments of the questionnaire. At this time, the WES-S (Billings & Moos, 1982) was completed. Participants were then asked to mail back the second questionnaire booklet. Follow-up with the participants occurred if the booklet was not received after 10 days. Between Time 2 and Time 3, participants were again required to identify a salient work stressor. The same procedure described at Time 2 was repeated at Time 3 where a third questionnaire booklet included the WES-S and other outcome measures.

Measures

Only the measures used in the present study are described here.

Demographic information. At Time 1, each participant was asked to provide information regarding age, ethnicity, marital status, parental status (i.e., number of children), education, household income, total years employed, years in organization, years in current position, size of organization (i.e., number of employees in the company or organization), classification of organization (e.g., manufacturing and education), and union membership.
Work environment. At Time 2 and 3, clerical workers’ perceptions of their work environment were assessed using the WES-S (Billings & Moos, 1982). In order to determine the factor structure of the WES-S, data were drawn from Time 2 and Time 3. The WES-S consisted of 7 of the 10, 9-item WES subscales that related to the social resources and work demand dimensions of the work environment. Participants were asked to indicate the extent to which each statement was true or false (0=definitely false and 1=definitely true) of their immediate work environment, rather than to the company or organization in general.

The social resource dimension of the work environment included three subscales of the WES-S: Job Involvement, Peer Cohesion, and Supervisor Support. The Job Involvement subscale assesses the extent to which employees are concerned and committed to their job (e.g., “The work is really challenging”). The two social support subscales reflect reciprocal emotional support and instrumental assistance. Specifically, the Peer Cohesion subscale assesses the extent to which workers are friendly and supportive of each other (e.g., “People go out of their way to help a new employee feel comfortable”); and, the Supervisor Support subscale assesses the extent to which management is supportive of workers and encourages workers to be supportive of each other (e.g., “Supervisors usually compliment an employee who does something well”). Scores ranged from 0 to 9 for each subscale, with higher scores reflecting the perception of greater social resources in the work environment.

The social resources measure (a summed score made up job involvement, peer cohesion, and supervisor support) has been related to traditional social support measures and to instruments assessing depression and psychosomatic symptoms (Holahan & Moos,
Moos (1994) reported acceptable psychometric properties, such as moderate Cronbach's alpha coefficients for internal consistency, ranging from .69 to .84 for the three subscales, with 1-month test-retest reliabilities of .83 (Job Involvement), .71 (Peer Cohesion), and .82 (Supervisor Support). In the present study, Cronbach's alpha coefficients for internal consistency of the three subscales ranged from .69 to .79 (assessed at Time 2) and from .74 to .75 (when assessed at Time 3). One-month test-retest reliabilities were .77 (Job Involvement), .75 (Peer Cohesion), and .73 (Supervisor Support).

Work demand dimensions were assessed using four subscales of the WES-S: Autonomy, Work Pressure, Clarity, and Managerial Control. The Autonomy subscale assesses the extent to which employees are encouraged to be self-sufficient and to make their own decisions (e.g., "Employees have a great deal of freedom to do as they like"). The Work Pressure subscale assesses the extent to which the pressure of work and time urgency dominates the work environment (e.g., "There is constant pressure to keep working"). The Clarity subscale assesses the extent to which employees know what to expect in their daily routine regarding the work and criteria for adequate performance, and how explicitly rules and policies are communicated (e.g., "Activities are well planned"). The Managerial Control subscale assesses the extent to which management uses rules and pressures to keep employees under control (e.g., "There's a strict emphasis on following policies and regulations"). The Clarity and Autonomy subscales were reversed scored for the CFA in Phase 1 so that all work demand subscales were scored in the same direction. Scores ranged from 0 to 9 for each subscale, with higher scores reflecting the perception of greater work demands in the work environment.
Moos (1994) reported moderate Cronbach’s alpha coefficients for the internal consistency of the four work demand subscales, ranging from .73 to .80, with acceptable 1-month test-retest reliabilities of .77 (Autonomy), .76 (Work Pressure), .69 (Clarity), and .79 (Managerial Control). In the present study, Cronbach's alpha coefficients for internal consistency ranged from .74 to .81 for the four subscales assessed at Time 2, and from .73 to .80 when assessed at Time 3, with 1-month test-retest reliabilities of .76 (Autonomy), .81 (Work Pressure), .74 (Clarity), and .75 (Managerial Control).

A number of studies have supported the criterion-related and construct validity of the WES (Holahan & Moos, 1987; Moos, 1994). Studies have also found that the WES has good discriminant validity (Carlisle, Baker, Riley, & Dewey, 1994; Docker et al., 1989). For example, Docker and his colleagues compared teachers’ perceptions of their work environment from four types of schools (i.e., Elementary K-6, High 7-10, District K-10, and Secondary College 11-12). Differences between the elementary schools and the other schools were found for the following subscales: involvement, autonomy, clarity, task orientation, innovation, physical comfort, and work pressure. Thus, although the wording of the WES items were changed somewhat to address a teaching context, the results of Docker et al.'s study provided support for the discriminative validity of the WES. The WES subscales also discriminated between the work environments of midwives and nurses (Carlisle et al., 1994) as well as between managers and clerical workers (Long, 1998).

In addition, studies have found that the WES has good predictive validity (Holahan & Moos, 1987; Schaefer & Moos, 1996). That is, the WES (modified for use in hospital settings) predicted depression and job satisfaction. In Schaefer and Moos’s
(1996) study of hospital staff (i.e., 97 registered nurses, 74 vocational nurses, 179 nursing assistants, and 55 non-nursing staff such as physicians and social workers) in 14 facilities, the WES subscales of autonomy, clarity, and peer cohesion made a unique contribution to job satisfaction and depression, even after controlling for work stress. Thus, although the other WES subscales were not included in the study and the wording in this instrument was changed somewhat to address a hospital context, the results of Schaefer and Moos's study provided support for the predictive validity of these particular WES subscales. However, the hierarchical two-factor structure of the WES-S has not been confirmed for female clerical workers.

Job satisfaction. Job satisfaction was assessed at Time 2 and 3 using the Hoppock Job Satisfaction Scale (HJSS; McNichols, Stahl, & Manley, 1978). Only data assessed at Time 3 were used because job satisfaction was considered an outcome. The HJSS was designed to measure the respondent’s satisfaction with their present job. Respondents were asked to choose the numbered response that described most accurately how satisfied or dissatisfied they felt about their current job. The HJSS contained four items that specifically asked how satisfied respondents were with their job on a seven-point scale ranging from (1) never to (7) all of the time; how well they like their job from (1) I hate it to (7) I love it; how they feel about changing jobs from (1) I would quit this job at once if I could to (7) I would not exchange my job for another; and, how they think they compare with other people from (1) No one dislikes her job more than I dislike mine to (7) No one likes her job better than I like mine. Scores ranged from 4 to 28 with higher scores indicating greater job satisfaction.

Hierarchical factor analysis on the four items of the HJSS yielded a single factor
with loadings from .65 to .92 (McNichols et al., 1978). The HJSS shows high internal consistency with a Cronbach's alpha coefficient of .81 and a test-retest reliability of .74 over 2 weeks (McNichols et al., 1978). In Sample 1, the Cronbach’s alpha coefficient for the HJSS was .73 and in Sample 2, it was .90. The HJSS has been found to correlate with other self-report job satisfaction scales and is significantly correlated with all five of the Job Descriptive Index subscales (JDI; Smith, Kendall, & Hullin, 1969), in which the JHSS strongly correlated with the work satisfaction subscales of the JDI ($r=.73$).

**Depression.** Depression was assessed at Time 2 and 3 using the 13-item subscale from the Symptom Checklist 90 – Revised (SCL-90-R; Derogatis, 1983), a frequently used scale in work stress research. Only data assessed at Time 3 were used in the present study. Respondents indicated on a five-point scale ranging from (0) *not at all* to (4) *extremely* the extent to which they felt distress “during the past week, including today” by specific symptoms. Scores ranged from 0 to 52, with higher scores representing greater levels of depression.

Principal dimensions factor analysis on the 90 items of the SCL-90 yielded 10 factors with loadings ranging from .35 to .77 for the Depression subscale (Derogatis & Cleary, 1977). Derogatis and Cleary (1977) reported high internal consistency for the Depression subscale with a Cronbach’s alpha coefficient of .90 and test-retest reliabilities ranging from .75 to .84 over 10 weeks (Derogatis & Melisaratos, 1983). In Sample 1, the Cronbach’s alpha coefficient was .92. The Depression subscale was found to correlate significantly with other self-report depression scales, such as the Hamilton Rating Scale for Depression (Hamilton, 1967) and the Centre for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977). Support for the convergent validity of the SCL-90-R was
also found with the clinical scales derived from the Minnesota Multiphasic Personality Inventory (Derogatis, 1983). The SCL-90-R was found to discriminate effectively between depressed and non-depressed individuals (Raskin, Schulterbrandt, Reatig, & McKeon, 1969). Research has indicated that the SCL-90-R should be regarded as a general distress measure, especially when used with non-clinical populations (for a review, see Cyr, McKenna-Foley, & Peacock, 1985).

Sample 2: Participants and Procedures

The participants in Sample 2 consisted of 207 clerical workers recruited through the media from the same large Western Canadian city as Sample 1. Criteria for inclusion in the study were the same as what was stipulated for Sample 1. Of the 273 who met the criteria for inclusion, 57 dropped out for an attrition rate of 21% (46 dropped out because of the lack of time to participate, 7 no longer met the criteria because of promotion, unemployment, or leave of absence from work, such as being in an accident or illness, and 4 moved away). In addition, 9 were excluded from the analyses because they identified personal rather than work-related stressors at Time 2, leaving 207 cases for analysis. Chi-square analyses and analysis of variance (ANOVA) were used to examine demographic differences between dropout and retained participants. The clerical workers who dropped out of the study were not significantly different than those who remained in the study on any of the demographic variables, except for educational level. Those who dropped out were more likely to have technical training, such as secretarial, legal, or medical training, $\chi^2 (2, N=229) = 14.01, p<.03$.

The mean age of the participants was 41.97 ($SD=9.36$, range = 21 to 63 years). The mean number of years of education was 13.92 ($SD=2.19$, range = 10 to 23 years).
Sixty percent of the clerical workers were married and 40% were single, divorced, separated, or widowed. Thirty-five percent were parents. Household annual incomes ranged from less than $25,000 per year (16%), $25,001 to $60,000 (60%), to over $60,001 per year (24%). The major industries represented were education (37%), service (38%), utilities and public administration (12%), manufacturing and transportation (3%), construction (1%), finance, insurance, and real estate (7%) and other (2%). Job classifications of the retained participants included clerks (19%), secretaries (35%), administrative clerks (19%), and others (27%). On average the women had been in the workforce for 21.17 years ($SD=9.11$, range = 3 to 45 years), with their organizations for 8.62 years ($SD=6.78$, range = less than 1 to 41 years), and in their present positions for 5.7 years ($SD=4.72$, range = less than 1 to 20 years). The majority of women were employed in organizations of over 500 employees (65%) and 35% were employed in organizations of fewer than 499 employees. The majority of women belonged to unions (83%). Although the sample was made up of Canadian clerical workers, their cultural (heritage) background was 34% British, 21% Canadian, 9% Asian, and 36% were other. See Table 1 for participant characteristics.

**Comparison of Sample 1 and Sample 2**

Chi-square analyses and ANOVA were used to examine demographic differences between the two samples of clerical workers on key demographic characteristics for descriptive purposes only. Given the large sample size (>400), a conservative probability level was used ($p<.01$). The clerical workers in Sample 1 were not statistically different from the clerical workers in Sample 2 on mean age ($Ms=39.77$ and 41.97, respectively; and, $SDs=9.46$ and 9.36, respectively), $F(1, 428)=5.86$, $p<.02$. However, there was a
significant difference between the number of years with the organization (Ms=5.94 and 8.62, respectively; and, SDs=6.07 and 6.78, respectively), $F(1, 428)=18.70, p<.01$; and the total number of years employed in the workforce (Ms=17.02 and 21.17, respectively; and, SDs=8.74 and 9.11, respectively), $F(1, 428)=23.25, p<.01$. Chi-square analyses were not significant for marital status by group, $X^2 (1, N=430) = 1.87, p>.05$; household annual income, $X^2 (1, N=430) = 3.91, p>.05$; or size of organization, $X^2 (1, N=430) = 5.34, p<.02$, but there were significant differences for number of children, $X^2 (2, N=430) = 23.07, p<.01$, education, $X^2 (2, N=430) = 28.74, p<.01$, and union membership, $X^2 (1, N=430) = 21.09, p<.01$. In summary, compared to the clerical workers in the first sample ($N=223$), clerical workers in the second sample ($N=207$) had worked more years in the work force (21.17 vs. 17.02), had more years with their organization (8.62 vs. 5.94), were less likely to have children (65% vs. 46% had no children), were more likely to have technical training (e.g., additional secretarial, medical, or legal training; 59% vs. 43%), and were more likely to belong to a union (83% vs. 63%).

The data collection procedures for Sample 2 followed that of the first sample (i.e., data were collected on three occasions approximately 1 month apart). Three waves of data were collected 1 month apart in order to test the structural equation model of the stress process. At Time 1, participants initially met with a research assistant, completed the informed consent form, and the first questionnaire booklet that consisted of demographic questions, job satisfaction, depression, and trait measures. One month after the first questionnaire package was completed, a research assistant contacted all participants (Time 2). At Time 2, participants were engaged in a short telephone interview in which they were asked to recall their most salient work stressor of the past
month. After the work stressor was recorded and briefly described in the questionnaire booklet, participants were asked to focus on the specific work stressor while completing the remainder of the questionnaire; including the WES-S (Billings & Moos, 1982). They were then asked to mail back the second questionnaire booklet. Follow-up with the participants occurred if the booklet was not received after 10 days. Between Time 2 and Time 3, participants were again required to identify a salient work stressor. The same procedure described at Time 2 was repeated at Time 3 where a third questionnaire booklet included the WES-S and other outcome measures.

Measures

Only the measures used in the present study are referred to here.

Demographic information. Demographic data were assessed at Time 1 and consisted of the same information requested from Sample 1, however, cultural background was assessed differently.

Work environment. The work environment measure was assessed at Time 2 and 3 using the WES-S. The data assessed at Time 2 were used to examine the relationship between the WES-S and job satisfaction and depression assessed at Time 3. The WES-S items were the same as those administered to the first sample, however, the response format was modified to a four-point scale ranging from (1) definitely true to (4) definitely false, indicating the extent to which each statement was true or false of their immediate work environment. The WES-S subscale items in Sample 1 were assessed using a True/False scoring method, however, this forced choice approach is unappealing to some participants when the answer to a test item is not clear. Yet, the True/False scoring method may force items to be answered in a way that is closer to Moos’s (1981) theory of
Moos recommends a True/False format because it avoids problems stemming from personal styles, such as preferences for middle-of-the-road, undecided, extreme, or deviant responses.

In contrast, a four-point rating scale permits participants to answer test items more accurately. According to Moos (1994), some investigators have used a four-point rather than a two-point (True/False) response format for the WES (e.g., Abraham & Foley, 1984) and regardless of which format was used, the psychometric characteristics of the WES subscales remained relatively unchanged. The four-point rating scale may be preferred because it provides more variability and may be more sensitive to capturing the factorial structure of the WES-S for clerical workers. Therefore, although the WES-S items were the same as those administered to the first sample, the response format for Sample 2 was modified to a four-point scale.

Similar to Sample 1, the Clarity and Autonomy subscales were reversed scored for the CFA so that all work demand subscales were scored in the same direction. Scores on each subscale ranged from 9 to 36, with higher scores reflecting the perception of greater social resources and work demands in the work environment.

In Sample 2, the psychometric properties of the WES-S subscales were moderate. The Cronbach’s alpha coefficients for internal consistency for the three social resources subscales (job involvement, peer cohesion, and supervisor support) ranged from .77 to .84 (assessed at Time 2) and from .81 to .84 (assessed at Time 3). One-month test-retest reliabilities were .81 (Job Involvement), .82 (Peer Cohesion) and .83 (Supervisor Support). The Cronbach’s alpha coefficients for internal consistency for the four work demand subscales (autonomy, work pressure, clarity, and managerial control) ranged
from .71 to .81 (assessed at Time 2) and from .71 to .84 (assessed at Time 3) with 1-month test-retest reliabilities of .72 (Autonomy), .81 (Work Pressure), .79 (Clarity), and .71 (Managerial Control).

**Job satisfaction.** Job satisfaction was assessed at Time 1, 2, and 3 using the HJSS (McNichols et al., 1978). Only data assessed at Time 3 were used because job satisfaction was considered an outcome.

**Depression.** Depression was assessed at Time 1, 2, and 3 using the CES-D (Radloff, 1977). Only data assessed at Time 3 were used in the present study. The CES-D contains 20 items designed to measure depressive symptoms in the general population. Respondents rated how often in the past week they experienced various depressive symptoms (e.g., “I thought my life had been a failure”) on a four-point rating scale ranging from (0) rarely or none of the time/less than one day per week to (3) most or all of the time/5-7 days a week. The scores ranged from 0 to 60 with higher scores indicating more severe depression.

Previous research found that the CES-D yielded internally consistent scores (.84 and .90), test-retest reliabilities that ranged from .51 to .67, and correlated with several other self-report depression scales (correlations ranged from .55 to .63; Radloff, 1977). Sheehan, Fifield, Reisine, and Tennen (1995) assessed convergent validity through CFA and found that the structure was stable over a 2-year period. The CES-D was found to discriminate effectively between depressed and non-depressed individuals (Radloff, 1977). Another study found that the CES-D was a better predictor of depressive symptoms than the Beck Depression Inventory in a college sample (Santor, Zuroff, Ramsay, Cervantes, & Palacios, 1995).
Negative affectivity. Negative Affectivity (NA) was assessed at Time 1, 2, and 3, using the 20-item Trait Anxiety scale (Form Y-2) of the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983). Only the data assessed at Time 1 were used in order to control for NA’s influence on the WES-S dimensions-depression and job satisfaction relationships. The STAI has been widely used and validated. Spielberger et al. (1983) described trait anxiety as a relatively stable individual difference in one’s tendency to perceive stressful situations as dangerous and to respond to such events with increased state anxiety. Watson and Clark (1984) viewed this scale as an acceptable measure of the NA construct and a number of researchers have incorporated the measure in studies that have examined the influence of NA in work environment-psychological distress relationships (e.g., Chen & Spector, 1991; Schaubroeck et al., 1992).

The 20-item Trait Anxiety scale of the STAI requires respondents to indicate how they generally feel by rating the frequency of their feelings of anxiety on a four-point scale ranging from (1) almost never to (4) almost always. Nine anxiety-absent items (e.g., “I feel content”) responses were reversed scored. Scores ranged from 20 to 80 with higher scores indicating a greater level of trait anxiety or NA. Test-retest reliabilities over 20-day periods for the Trait Anxiety scale ranged from .76 to .86 and internal consistency coefficients for working adults’ ranged from .89 to .96 (Spielberger et al., 1983).

**Data Analysis: Phase 1 CFA and EFA of WES-S**

Descriptive data (e.g., missing data, outliers, and distributions) were screened prior to analysis to ensure an accurate analysis of the data. For each of the samples, responses were checked on each of the measures to determine the extent and pattern of
missing data. The total amount of missing data for the sample was less than .20% and missing data on any one measure for the entire sample was less than .30%. No consistent pattern of missing data was found and, where appropriate, missing values were substituted with group means. In addition, the assumptions for using CFA and EFA (e.g., normality, independence, linearity, and homoscedasticity) were tested and met.

The analyses carried out in Phase 1 were tested on Sample 1 (N=223) and Sample 2 (N=207) as a form of cross-validation because the two samples contained the same measures but differed in terms of scoring methods used to assess the WES-S (i.e., True/False and four-point rating scale, respectively), NA (assessed only in Sample 2), and depression scale (i.e., SCL-90-R and CES-D, respectively).

The factorial structure of the WES-S (Moos, 1981) was tested in three steps. Step 1 consisted of using CFA to test the hypothesized two-factor structure of the WES-S (i.e., social resources and work demands) proposed by Billings and Moos (1982). In order to determine whether the hypothesized two-factor model (i.e., social resources and work demands) provided the best representation of the factorial structure of the WES-S for clerical workers, it was contrasted with two alternative models: (a) a three-factor structure (i.e., relationship, personal growth, and system maintenance and change; Moos, 1981); and (b) a single overarching structure (i.e., work control; Johnson, 1989). In order to avoid Heywood cases (i.e., too few indicators per latent construct) in the three-factor structure, the lack of autonomy and lack of clarity subscales were split in two. See Figure 1. Post-hoc analyses consisted of using EFA and further CFA to determine whether the 63 WES-S items adequately reflected the WES-S subscales that Moos (1981) had originally proposed.
Step 2 consisted of using EFA to explore the underlying factor structure of the WES-S (Billings & Moos, 1982) for female clerical workers. Step 3 consisted of using CFA to test the factor structure identified in Step 2, on two samples (N=223 and N=207), across two time periods (i.e., at Time 2 and Time 3, assessed one month apart).

Data Analysis: Phase 2

Descriptive data (e.g., missing data, outliers, and distributions) were screened prior to analysis. In addition, the assumptions for using HMR (e.g., normality, linearity, homoscedasticity, and independence) were tested and met.

Based on the results of Phase 1, in Phase 2 specific directional hypotheses were tested with HMR and aimed at examining the relationships between the higher-order dimensions of the WES-S and job satisfaction and depression (i.e., Hypotheses 2 and 3). For exploratory purposes, the extent to which social resources buffered the effects of work demands on job dissatisfaction and depression and relationships between the objective work environment (i.e., size of organization and union membership) and job satisfaction and depression were also examined.

Using HMR in SPSS 9.0 (1998), the variables were entered simultaneously as blocks. For Sample 1, age and education were entered in Step 1 as control variables for job satisfaction. For Sample 2, age, education, and NA were entered in Step 1. For both samples, union membership and size of organization were entered in Step 2 for exploratory purposes. Next, the WES-S variables established in Phase 1 (i.e., Organizational Support, Work Pressure, and Managerial Control) were entered in Step 3. Finally, in order to explore the buffering effect of social resources on the relationship between work demands and job dissatisfaction, two multiplicative terms (Organizational
Support by Work Pressure, and Organizational Support by Managerial Control) were entered in Step 4. Similar procedures were carried out for the criterion variable, depression, except different demographic variables were statistically controlled for (i.e., age and marital status).

Phase 2 also consisted of using path analysis (LISREL 8.30; Jöreskog & Sörbom, 1999) to test the mediating effect of job satisfaction on the WES-S dimensions-depression relationship (Hypothesis 4) for both samples. Age, education, marital status, and NA (only in Sample 2) were statistically controlled for in the path analysis. Descriptive data (e.g., missing data, outliers, and distributions) were screened prior to analysis. In addition, the assumptions for using path analysis were examined and met (i.e., the relationships among the variables in the model were linear, additive, and causal; each residual was not correlated with other variables in the model; there was a one-way causal flow in the system; and, the variables were measured on an interval scale).

The approach for assessing the mediation effect of job satisfaction on the WES-S dimensions-depression relationship was based on the method developed by Kenny and his colleagues (Baron & Kenny, 1986; Judd & Kenny, 1981; Kenny, Kashy, & Bolger, 1998). The mediation effects were substantiated by meeting four conditions: (a) the path from the predictor variable (e.g., social resources and work demands) to the criterion variable (depression) was statistically significant, labeled Path c; (b) the path from the predictor variable to the mediator variable (job satisfaction) was statistically significant, labeled Path a; (c) the path from the mediator to the criterion variable was statistically significant, labeled Path b; and, (c) after statistically controlling for Paths a and b, the previously significant relationship between the predictor variables and the criterion
variable became nonsignificant, labeled Path $c'$ (see Figure 2). The strongest case of mediation would occur if Path $c'$ became zero, suggesting that one dominant mediator operated in the causal model (i.e., complete mediation rather than partial mediation).
A.

Predictor Variables
(Organizational Support, Work Pressure, and Managerial Control)

Path c

Criterion Variable
(Depression)

B.

Path c'

Predictor Variable
(Organizational Support, Work Pressure, and Managerial Control)

Path a

Mediator Variable
(Job Satisfaction)

Path b

Criterion Variable
(Depression)

Figure 2. Diagram of paths in the mediation model, statistically controlling for age, education, marital status, and NA (only in Sample 2).
Chapter V: Results

A brief summary of the results revealed that in Phase 1, the CFA and EFA results uncovered a three-factor structure of the WES-S (i.e., Organizational Support, Work Pressure, and Managerial Control). Based on these results, in Phase 2 the results of the HMR revealed that Organizational Support consistently predicted job satisfaction for both samples but predicted depression only for Sample 1. There was no evidence of a buffering effect of Organizational Support on either the Work Pressure or Managerial Control relationship with job satisfaction or depression, for either sample. In addition, as expected, job satisfaction mediated the Organizational Support-depression relationship, but only for Sample 1. Finally, non-union membership was associated with greater job satisfaction but not depression in both samples.

Descriptive Results

The means, standard deviations, and Cronbach’s alphas of the measured variables assessed in Sample 1 (N=223) and Sample 2 (N=207) are presented in Tables 2 and 3. The variables were normally distributed in both samples. Tables 4, 5, 6, and 7 contain the correlation matrices of the measured variables for both samples across two time periods. The variables correlated in the expected directions according to the WES manual (Moos, 1981) and the research literature (see Table 5), except for the relationships between managerial control and the other WES-S variables. That is, in Sample 1 (N=223) managerial control was more strongly correlated with the other WES-S variables (assessed at Time 2 and Time 3) except for lack of clarity, compared with the correlations reported by Moos (1981) for N=1,045 general and health care work groups. In Sample 2 (N=207), the pattern of relationships between managerial control and the other WES-S
Table 2

Means, Standard Deviations, and Cronbach’s Alpha for Work Environment, Job Satisfaction, and Depression Variables for Sample 1 (N=223)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Time 2</th>
<th></th>
<th></th>
<th></th>
<th>Time 3</th>
<th></th>
<th></th>
<th></th>
<th>Alpha</th>
</tr>
</thead>
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<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>Alpha</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Job Involvement</td>
<td>5.33</td>
<td>2.64</td>
<td>5.15</td>
<td>2.66</td>
<td>.79 (.75)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peer Cohesion</td>
<td>5.30</td>
<td>2.30</td>
<td>5.06</td>
<td>2.51</td>
<td>.69 (.75)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Supervisor Support</td>
<td>4.25</td>
<td>2.66</td>
<td>4.14</td>
<td>2.62</td>
<td>.79 (.74)</td>
<td></td>
<td></td>
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<tr>
<td>Lack of Autonomy</td>
<td>3.73</td>
<td>2.48</td>
<td>3.99</td>
<td>2.49</td>
<td>.76 (.76)</td>
<td></td>
<td></td>
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<tr>
<td>Lack of Autonomy (items 1 to 4)</td>
<td>1.54</td>
<td>1.39</td>
<td>2.35</td>
<td>1.45</td>
<td>.71 (.74)</td>
<td></td>
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<tr>
<td>Lack of Autonomy (items 5 to 9)</td>
<td>2.18</td>
<td>1.40</td>
<td>2.67</td>
<td>1.30</td>
<td>.55 (.46)</td>
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<tr>
<td>Work Pressure</td>
<td>6.26</td>
<td>2.49</td>
<td>6.23</td>
<td>2.46</td>
<td>.81 (.80)</td>
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<tr>
<td>Lack of Clarity</td>
<td>4.54</td>
<td>2.53</td>
<td>4.30</td>
<td>2.43</td>
<td>.74 (.72)</td>
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<tr>
<td>Lack of Clarity (items 1 to 4)</td>
<td>2.31</td>
<td>1.37</td>
<td>1.59</td>
<td>1.32</td>
<td>.65 (.62)</td>
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<tr>
<td>Lack of Clarity (items 5 to 9)</td>
<td>2.22</td>
<td>1.50</td>
<td>2.71</td>
<td>1.41</td>
<td>.57 (.48)</td>
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<tr>
<td>Managerial Control</td>
<td>4.76</td>
<td>2.46</td>
<td>4.92</td>
<td>2.40</td>
<td>.75 (.73)</td>
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<tr>
<td>Organizational Support</td>
<td>24.62</td>
<td>9.87</td>
<td>23.64</td>
<td>10.02</td>
<td>.92 (.92)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Job Satisfaction</td>
<td>--</td>
<td>--</td>
<td>17.93</td>
<td>4.75</td>
<td>-- (.73)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Depression (SCL-90-R)</td>
<td>--</td>
<td>--</td>
<td>11.43</td>
<td>9.14</td>
<td>-- (.88)</td>
<td></td>
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</table>

**Note.** The values that are not in parentheses apply to the variables assessed at Time 2. The values that are in parentheses apply to the variables assessed at Time 3. A dash indicates that data were not obtained. 

*a* = Assessed at Time 2 using the True/False Scoring Method; *b* = Lack of Autonomy is the total subscale score. Lack of Autonomy was split into two scales: Lack of Autonomy items 1 to 4 and Lack of Autonomy items 5 to 9 to minimize Heywood cases for the CFA. Similarly, Lack of Clarity is the total scale. Lack of Clarity was split into two scales: Lack of Clarity items 1 to 4 and Lack of Clarity items 5 to 9 for the CFA.
Table 3

*Means, Standard Deviations, Score Ranges, and Cronbach’s Alpha for Negative Affectivity*, *Work Environment*, *Job Satisfaction*, and *Depression Variables for Sample 2 (N=207)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Time 2</th>
<th></th>
<th>Time 3</th>
<th></th>
<th>Alpha</th>
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</thead>
<tbody>
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<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td></td>
</tr>
<tr>
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<td>40.91</td>
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*Note.* The values that are not in parentheses apply to the variables assessed at Time 2. The values that are in parentheses apply to the variables assessed at Time 3. A dash indicates that data were not obtained.

*Assessed at Time 1; ^*Assessed at Time 2 using the four-point rating scale. *~* = Lack of Autonomy is the total subscale score. Lack of Autonomy was split into two scales: Lack of Autonomy items 1 to 4 and Lack of Autonomy items 5 to 9 to minimize Heywood cases for the CFA. Similarly, Lack of Clarity is the total scale. Lack of Clarity was split into two scales: Lack of Clarity items 1 to 4 and Lack of Clarity items 5 to 9 for the CFA.
Table 4

Zero-Order Correlations of the Demographic, Work Environment, and Criterion Variables for Female Clerical Workers in Sample 1 (N=223)

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</table>

*Note. MS=Marital Status (0=not married, 1=married); ED=Highest Educational Qualification (1=High School incomplete, 2=High School, 3=Secretarial-Clerk training, 4=Legal or medical training, 5=College, 6=University, 7=Post-University); SZ=Size of Organization (0=less than 499, 1=more than 500); Union=Union Membership (0=no, 1=yes); JI=Job Involvement; CS=Peer cohesion; SS=Supervisor Support; LA=Lack of Autonomy; LAU=Lack of Autonomy (items 1 to 4); LAUU=Lack of Autonomy (items 5 to 9); WP=Work Pressure; LC=Lack of Work Clarity; LCL=Lack of Work Clarity (items 1 to 4); LCLL=Lack of Work Clarity (items 5 to 9); MC=Managerial Control; OS=Organizational Support; JSat=Job Satisfaction; Dep=Depression.

<sup>a</sup>=Assessed at Time 1; <sup>b</sup>=Assessed at Time 2 using the True/False Scoring Method; <sup>c</sup>=Assessed at Time 3; <sup>d</sup>=Lack of Autonomy is the total scale. Lack of Autonomy was split into two scales: Lack of Autonomy items 1 to 4 (LAU) and Lack of Autonomy items 5 to 9 (LAUU) to minimize Heywood cases for the CFA. Similarly, Lack of Clarity is the total scale. Lack of Clarity was split into two scales: Lack of Clarity items 1 to 4 (LCL) and Lack of Clarity items 5 to 9 (LCLL) for the CFA.

There was approximately one-month difference between Time 1 and Time 2 and between Time 2 and Time 3.

Decimals in correlations have been omitted (critical value for $r$, $p<.05$, two-tailed=.13; critical value for $r$, $p<.01$, two-tailed=.18)
Table 5

Zero-Order Correlations of the Work Environment Variables Assessed at Time 3 for Female Clerical Workers in Sample 1 (N=223) and Moos's (1981) Zero-Order Correlations of the Work Environment Variables for N=1,045 Employees in General and Health Care Work Groups

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Note. Values in parentheses are the correlation coefficients for the WES subscales provided by Moos (1981). JI=Job Involvement; CS=Peer cohesion; SS=Supervisor Support; LA=Lack of Autonomy, WP=Work Pressure; LC=Lack of Work Clarity; MC=Managerial Control.

*a* Work Environment Variables were assessed at Time 3, using True/False Scoring Method. Decimals in correlations have been omitted (critical value for *r*, *p*<.05, two-tailed=.13; critical value for *r*, *p*<.01, two-tailed=.18).
Table 6

Zero-Order Correlations Between the Demographic, Work Environment, and Criterion Variables for Female Clerical Workers in Sample 2 (N=207)

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Note. MS=Marital Status (0=not married, 1=married); Education=Years of Education; NA=Negative Affectivity; Size=Size of Organization (0=less than 499, 1=more than 500); Union=Union Membership (0=no, 1=yes); JI=Job Involvement; CS=Peer cohesion; SS=Supervisor Support; LA=Lack of Autonomy, LAU=Lack of Autonomy (items 1 to 4); LAUU=Lack of Autonomy (items 5 to 9); WP=Work Pressure; LC=Lack of Work Clarity; LCL=Lack of Work Clarity (items 1-4); LCLL=Lack of Work Clarity (items 5 to 9); MC=Managerial Control; OS=Organizational Support; JSat=Job Satisfaction; Dep=Depression.

<sup>a</sup>=Assessed at Time 1; <sup>b</sup>=Assessed at Time 2 using the four-point rating scale; <sup>c</sup>=Assessed at Time 3; <sup>d</sup>=Lack of Autonomy is the total scale. Lack of Autonomy was split into two scales: Lack of Autonomy items 1 to 4 (LAU) and Lack of Autonomy items 5 to 9 (LAUU) to minimize Heywood cases for the CFA. Similarly, Lack of Clarity is the total scale. Lack of Clarity was split into two scales: Lack of Clarity items 1 to 4 (LCL) and Lack of Clarity items 5 to 9 (LCLL) for the CFA.

There was approximately one-month difference between Time 1 and Time 2 and between Time 2 and Time 3.

Decimals in correlations have been omitted (critical value for \( r, p<.05 \), two-tailed=.14; critical value for \( r, p<.01 \), two-tailed=.20
Table 7  
*Zero-Order Correlations of the Work Environment Variables Assessed at Time 3*\(^a\) for Female Clerical Workers in Sample 2 (N=207)*

<table>
<thead>
<tr>
<th>Variable</th>
<th>JI</th>
<th>CS</th>
<th>SS</th>
<th>LA</th>
<th>WP</th>
<th>LC</th>
<th>MC</th>
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</table>

*Note.* Decimals in correlations have been omitted (critical value for *r*, \(p<.05\), two-tailed=.14; critical value for *r*, \(p<.01\), two-tailed=.20).

\(JI=\text{Job Involvement; CS=}\text{Peer cohesion; SS=}\text{Supervisor Support; LA=}\text{Lack of Autonomy, WP=}\text{Work Pressure; LC=}\text{Lack of Work Clarity; MC=}\text{Managerial Control.}\)

\(^a\)= Assessed at Time 3 using the four-point rating scale.
variables and with Moos’s (1981) correlations was more variable but was closer to Moos’s sample than to Sample 1. That is, managerial control was more strongly correlated to supervisor support, lack of autonomy, and work pressure than what was found in Moos’s correlation matrix. At Time 3, the correlations between managerial control and job involvement and peer cohesion were closer to Moos’s correlations. Thus, in Sample 2, the pattern of relationship between managerial control and other WES-S variables is not as clear as that of Sample 1.

Phase 1: The Factorial Structure of the WES-S

The first phase of the present study tested the factorial validity of the WES-S (Billings & Moos, 1982) and was carried out in three steps. Step 1 consisted of CFA to test the hypothesized two-factor structure of the WES-S (i.e., social resources and work demands). The model was contrasted with two alternative models: (a) a three-factor structure (i.e., relationship, personal growth, and system maintenance and change); and (b) a single overarching structure (i.e., work control). See Figure 1. None of the three models tested yielded an adequate fit of the data. As a result, Step 2 consisted of using EFA and CFA to determine whether another factor structure best fit the data; and, Step 3 consisted of using CFA to test the derived factor structure across two time periods on both samples.

Step 1: CFA to Test Three Models

Assumptions for using CFA were examined. Data were available for each female clerical worker. There was no missing data in either of the samples (N=223 or N=207). Although normality of all linear combinations of variables is not testable, Tabachnick and Fidell (1989) suggested that normality among single variables be assessed by skewness
and kurtosis. For Sample 1, six of the seven WES-S subscales were normally distributed with skewness values ranging from -.41 (peer cohesion) to .41 (lack of autonomy). Work pressure was negatively skewed (-.87), however, when the ratio between the skewness value and standard error (.16) was calculated (5.43), the work pressure distribution was still within the normal range (e.g., less than 10). The Kolmogorov-Smirnov test of normality also yielded the same results. The distribution was negatively skewed but still in the normal range. The kurtosis values were in the normal range for all seven variables (ranging from -1.09 to -.13). Thus, no transformations were made. For Sample 2, the seven WES-S subscales were normally distributed (i.e., skewness ranged from -.22 for supervisor support to .39 for work pressure; and kurtosis ranged from -.64 for supervisor support to -.26 for managerial control). The lack of skewness among the variables suggested that the relationships among pairs of variables were linear. Examining the scatterplots of the pairs of variables also indicated that the assumption of linearity was met.

Multivariate outliers (e.g., scores greater than 3 standard deviations from the mean) among the cases were also examined. There were no outliers for any of the variables, except for work pressure in Sample 1. Work pressure contained eight outliers, each having a value of zero. For exploratory purposes, the outliers were eliminated to check if skewness and kurtosis values would change. There was no significant difference in skewness values (i.e., skewness changed from .87 when outlier items were retained to .77 when outlier values were removed). Thus, the eight outliers were retained and not deleted from the analyses. Therefore, although the distribution for work pressure was slightly negatively skewed and contained some outliers, it was still within the normal
CFA was used to determine the degree of relationship between underlying (latent) constructs and multiple observed indicators (i.e., the seven WES subscales). Consistent with CFA, a model was specified a priori that described the relationships among the WES-S subscales and was based on prior empirical and theoretical work. By comparing the sample covariance matrix with the covariance matrix implied by the CFA model, the goodness-of-fit of the models to the observed data was judged. CFA was conducted on the seven WES-S subscales on sample sizes greater than 200. Thus, the sample sizes in this study were sufficient to detect meaningful and generalizable results (Tinsley & Tinsley, 1987).

The LISREL 8.30 (Jöreskog & Sörbom, 1998) program was used to conduct the CFA and the maximum likelihood (ML) estimation procedure was used because it provides consistently efficient estimation under the assumption of multivariate normality and is relatively robust against moderate departures from it (Diamantopoulos & Siguaw, 2000). The ML procedure was used to test Hypothesis 1: There will be two distinct dimensions of the WES-S – social resources and work demands.

Each subscale was restricted to loading on only one factor because one goal of these analyses was to identify factors that could be used in later analyses. The factors/dimensions were allowed to correlate. Through a process of iterative model respecification and reestimation, a final number of subscales were determined for each factor. The correlation matrices of all variables used for testing the higher-order factor structure of the WES-S (Billings & Moos, 1982) for both samples are presented in Table 4 and Table 6.
To interpret the results of the CFA, the chi-square statistic ($X^2$) and an associated $p$ value were used to indicate the probability of error in rejecting the null hypothesis of no difference between the covariance matrix implied by the model and the sample covariance matrix. That is, in order to determine the probability that the matrix of fitted residuals generated by the model was different from zero, a nonsignificant $p$ value was desired (Bryant & Yarnold, 1995). The variance-covariance matrix was analyzed because it provides less biased estimators of $p$.

The $X^2$ to degrees of freedom ratio ($Q$), the Goodness of Fit Index (GFI), Bentler’s (1990) Comparative Fit Index (CFI), and the Non-Normed Fit Index (NNFI) were examined because $X^2$ is influenced by sample size (Kline, 1994). The comparative fit indices (i.e., GFI, CFI, and NNFI) reflect how much better the given factor model fits the data relative to the most restrictive model, the null model, which specifies there are no common factors and that sampling error alone explains the covariances (Tanaka, 1993). The GFI is the most reliable measure of absolute fit because it indicates the amount of variance and covariance accounted for by the model and shows how closely the model comes to perfectly reproducing the observed covariance matrix (Diamantopoulos & Siguaw, 2000). Hu and Bentler (1995) suggested that a value of 1.00 indicates a perfect fit; values over .95 indicate a good fit; and .90 is considered the minimal acceptable level for a fit. However, $Q$ is more resistant to sample size effects. $Q$ values of 1 indicate a perfect fit and values between 2 and 3 are acceptable and considered an indication of a plausible model (McIver & Carmines, 1981).

In addition, the standardized Root Mean Square Residual (RMR) and the Root Mean Square Error of Approximation (RMSEA) indices were examined. The
standardized RMR is based on the residual matrix and represents the average difference between the sample covariance and the fitted covariance (i.e., implied by the model). Values below .05 indicate a close fit and a value of zero would indicate a perfect fit. The RMSEA is regarded as one of the most informative fit indices because it takes the model’s complexity into account. It also focuses on the discrepancy between the sample covariance and the implied covariance matrix but per degree of freedom. That is, RMSEA shows how well the model, with unknown but optimally chosen parameter values, fit the population covariance matrix if it were available. A value of zero would indicate a perfect fit. Values less than .05 are indicative of a good fit, between .08 and .10 a mediocre fit, and greater than .10 a poor fit (Brown & Cudeck, 1993).

In order to determine whether the hypothesized two-factor model provided the best representation of the factorial structure of the WES-S for clerical workers, it was contrasted with two alternative models: (a) a three-factor structure; and (b) a single overarching structure (illustrated in Figure 1). To compare the fit of the two nested models with the hypothesized two-factor model, the Akaike’s Information Criterion (AIC) and Expected Cross-Validation Index (ECVI) were assessed. The AIC incorporates the issue of model parsimony in the assessment of model fit by taking the number of estimated parameters into account. The ECVI focuses on the overall error (i.e., the discrepancy between the fitted covariance matrix in the sample and the expected covariance matrix that would be obtained in another sample of equivalent size). The ECVI and AIC assess whether a model is likely to cross-validate across samples of the same size from the same population. According to Diamantopoulos and Siguaw (2000), the ECVI and AIC with the lowest values provide a better potential for replicability.
Diamantopoulos and Siguaw (2000) claimed that the different fit indices assess fit in different ways and to reach a judgment concerning the overall fit of a model, one must rely on multiple criteria. That is, there is no one index that serves as a definite criterion for testing a hypothesized model because an ideal fit index does not exist. For practical purposes, they suggest that the results of the \(X^2\) test used in conjunction with the standardized RMR, RMSEA, GFI, NNFI, CFI, and ECVI should be more than sufficient to reach an informed decision concerning the model's overall fit.

**Model 1: Two-factor model.** A two-factor model was hypothesized (i.e., social resources and work demands). The indicators of the social resources dimension included job involvement, peer cohesion, and supervisor support; and, the indicators of the work demands dimension included lack of autonomy, work pressure, lack of work clarity, and managerial control (see Figure 1).

The majority of the fit indices indicated a poor model fit (see Model 1 in Table 8). For example, \(X^2 (13, N=223) = 109.62, p<.01\); and the \(Q\) ratio was larger than 3 \((Q=8.43)\). The NNFI and CFI were below acceptable levels (less than .90), however, GFI was .90 suggesting a possible fit. The standardized RMR and RMSEA values were too large to be considered acceptable (.09 and .16, respectively).

Because the goodness of fit statistics indicated a poor fitting model, the reliability and validity of the indicators were examined. The Squared Multiple Correlations \((R^2)\) examines the validity of the measures and shows the amount of variance in the indicators that is explained by the underlying latent construct. \(R^2\) values less than .30 indicate a small amount of variance has been accounted for by the indicators; values ranging from .30 to .50 indicates a moderate amount of variance has been accounted for; and, values
Table 8

CFA Fit Indices for the Models Tested in Phase 1

<table>
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<tr>
<th>Models</th>
<th>$\chi^2 (Q)$</th>
<th>RMSEA</th>
<th>RMR</th>
<th>NNFI</th>
<th>GFI</th>
<th>CFI</th>
<th>AIC</th>
<th>ECVI</th>
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<tr>
<td>Model 1a</td>
<td>109.62* (8.43)</td>
<td>.16</td>
<td>.09</td>
<td>.72</td>
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<td>Model 1b</td>
<td>151.51* (11.65)</td>
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<td>.76</td>
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<td>Model 1c</td>
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<td>.93</td>
<td>.76</td>
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<td>0.49</td>
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<td>.09</td>
<td>.71</td>
<td>.90</td>
<td>.82</td>
<td>114.15</td>
<td>0.51</td>
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<td>Model 2: Three-Factor Model</td>
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<tr>
<td>Model 2a</td>
<td>163.40* (6.81)</td>
<td>.14</td>
<td>.14</td>
<td>.72</td>
<td>.89</td>
<td>.82</td>
<td>171.10</td>
<td>0.41</td>
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</table>
| Model 2b                | 108.92* (4.52) | .75   | .72 | .32  | .88  | .54  | 2846.00  | 13.82
| Model 2c                | 82.23* (3.43)  | .10   | .09 | .80  | .93  | .86  | 116.91   | 0.53 |
| Model 2d                | 152.06* (6.34) | .14   | .12 | .73  | .89  | .82  | 166.65   | 0.75 |
| Model 3: Overarching Single Factor Model |
| Model 3a                | 114.94* (8.21) | .16   | .09 | .74  | .89  | .83  | 120.55   | 0.54 |
| Model 3b                | 188.47* (13.46) | .25   | .13 | .54  | .79  | .69  | 220.79   | 1.07 |
| Model 3c                | 78.82* (5.63)  | .15   | .09 | .62  | .91  | .75  | 107.84   | 0.49 |
| Model 3d                | 105.48* (7.53) | .15   | .09 | .73  | .90  | .82  | 111.88   | 0.50 |
| Organizational Support |
| Model 4c                | 11.29* (2.26) | .07   | .03 | .97  | .98  | .99  | 30.02    | 0.14 |
| Model 4d                | 18.51* (3.70)  | .09   | .03 | .94  | .97  | .97  | 35.74    | 0.16 |
| Model 4e                | 45.21* (9.04)  | .19   | .05 | .84  | .92  | .92  | 61.76    | 0.30 |
| Model 4f                | 44.62* (8.94)  | .19   | .05 | .85  | .93  | .93  | 60.82    | 0.30 |

Note. $Q$=Chi-square to degrees of freedom ratio; RMSEA=Root Mean Square Error of Approximation; RMR=standardized Root Mean Square Residual; NNFI=Non-Normed Fit Index; GFI=Goodness of fit index; CFI =Comparative Fit Index; AIC=Akaike’s Information Criterion; ECVI=Expected Cross Validation Index.

Models 1: Two-factor model (Social Resources and Work Demands)
Models 2: Three-factor model (Relationships, Personal Growth, System Maintenance and Change)
Models 3: One-factor model (Work Control Latent Construct)
Models 4: Organizational Support Latent Construct made up of items from the job involvement, peer
Table 8 (continued)

cohesion, supervisor support, autonomy and clarity subscales.

a Seven subscales assessed at Time 2 using the True/False scoring method (N=223); b Seven subscales assessed at Time 2 using the four-point rating scale (N=207); c Subscales assessed at Time 2 using the True/False scoring method and made up of 3 items each (N=223); d Subscales assessed at Time 2 using the True/False scoring method with items removed based on the modification indices derived from CFA (N=223); e Organizational Support assessed at Time 2 using the True/False scoring method (N=223); f Organizational Support assessed at Time 3 using the True/False scoring method (N=223); g Organizational Support assessed at Time 2 using the four-point rating scale (N=207); h Organizational Support assessed at Time 3 using the four-point rating scale (N=207).

*p<.05
above .50 indicate a high amount of variance has been accounted for (Diamantopoulos & Siguaw, 2000). The most reliable measure of social resources was supervisor support \((R^2=.72)\) and the least reliable was job involvement \((R^2=.53)\). The construct reliability for job involvement, peer cohesion, and supervisor support was .82. Values greater than .50 are desirable.

Thus, as a set, these three indicators of social resources provided a reliable measurement of the dimension. This was supported by the average variance extracted value of .60, which suggested that a higher amount of variance in the indicators was accounted for by social resources than by measurement error.

For work demands, the most reliable indicator was lack of autonomy \((R^2=.64)\). The least reliable indicators were work pressure \((R^2=.03)\), lack of clarity \((R^2=.20)\), and managerial control \((R^2=.17)\). The amount of variance in work pressure, lack of clarity, and managerial control did not seem to be greatly explained by the work demand dimension. The construct reliability value for lack of autonomy, work pressure, lack of clarity, and managerial control was .53. Thus, as a set, these four indicators of work demands did not provide a reliable measurement of the dimension. This was supported by the average variance extracted value of .26, which suggested a higher amount of variance in the indicators seemed to be accounted for more by measurement error than by the work demands dimension.

To determine if the indicators were valid measures of their respective dimensions, the unstandardized parameter estimates were examined. T-values were calculated for all the parameter estimates in the model to determine if the parameter estimate was significantly different from zero. T-values greater than 1.96 in the absolute sense, \(p<.05\),
are considered significant (Bollen, 1989). All of the parameter estimates were significantly different from zero, meaning each parameter had a significant impact on its respective latent construct. None of the error variances associated with the parameter estimates were negative so there were no unreasonable estimates. This provided evidence in favor of the validity of the indicators used to represent the dimensions, social resources and work demands.

Based on the evidence (i.e., goodness of fit indices, $R^2$, construct reliabilities, average variance extracted, and unstandardized parameter estimates), the two-factor model (i.e., social resources and work demands) did not fit the data. Modification indices and standardized residuals were examined, however, because the model was not exploratory in nature, modifications were not performed. See Appendix D for the modification indices and standardized residuals for Model 1. Thus, Hypothesis 1 was not supported, indicating that the factorial structure of the WES-S was not made up of two distinct dimensions: social resources and work demands. Alternate models were tested in order to further understand the structure of the WES-S.

Model 2: Three-factor model. CFA was used to determine if the WES-S was made up of three dimensions: Relationship, Personal Growth, and System Maintenance and Change (SMC), proposed by Moos (1981; see Figure 1). The three indicators of the Relationship dimension included job involvement, peer cohesion, and supervisor support; the two indicators of the Personal Growth dimension included lack of autonomy and work pressure; the two indicators of the SMC dimension included lack of work clarity and managerial control. In order to avoid Heywood cases, lack of autonomy and lack of work clarity were each split into two separate subscales. That is, the first four items of the
lack of autonomy subscale constituted one subscale and the following five items constituted a second subscale. The lack of work clarity subscale was divided in the same way.

The majority of the fit indices suggested another poor fitting model (see Model 2a in Table 8). For example, $X^2 (11, N=223) = 163.40, p<.01, \chi^2/df=6.81$, The NNFI, GFI, and CFI were below the acceptable levels and the standardized RMR and RMSEA were greater what would be tolerable.

Based on the evidence (i.e., goodness of fit indices, $R^2$, construct reliabilities, average variance extracted, and unstandardized parameter estimates), the three-factor model (i.e., relationships, personal growth, and SMC) did not fit the data. See Appendix E for the modification indices and standardized residuals. The results suggested that the factorial structure of the WES-S was not made up of three distinct dimensions: relationship, personal growth, and SMG as originally proposed by Moos (1981).

**Model 3: Single-factor model.** CFA was used to determine if the WES-S was made up of one overarching factor structure: Work Control (see Figure 1). Work Control included job involvement, peer cohesion, and supervisor support, autonomy, work pressure, work clarity, and managerial control.

The majority of the fit indices indicated a poor model fit (see Model 3a in Table 8). For example, $X^2 (14, N=223) = 114.94, p<.01$. The $Q$ value was larger than 8, the NNFI, GFI, and CFI were below acceptable levels. Also, the standardized RMR and RMSEA were too large (>0.05 and >0.10, respectively). The modification indices and standardized residuals are described in Appendix F. Thus, the results suggested that the factorial structure was not made up of one overarching factor structure.
For model 2, the ECVI (.41) was lower than the ECVI in Model 1 (.53) and Model 3 (.54), suggesting that Model 2 had the greatest potential for replicability. However, the AIC (171.10) was higher than the AIC in Model 1 (117.70) and Model 3 (120.55), suggesting a poorer fitting model. Thus, when comparing the models, the ECVI and AIC values produced inconsistent results regarding the plausibility of a good fitting model.

Summary of CFA

In summary, three models were tested (i.e., one-factor model, two-factor model, and three-factor model) and based on the $X^2$ and goodness of fit indices, none of the models provided an adequate fit of the data. Even when comparing the ECVI and AIC indices, it could not be determined which model was the better fitting model. The lack of a good fit could be due to the scoring method in which the items were assessed. Thus, CFA (Models 1, 2, 3) was carried out on the second sample of female clerical workers ($N=207$) where the same WES-S subscale items were scored on a four-point rating scale. Based on the results of the $X^2$ and goodness-of-fit indices, none of the models were an adequate fit of the data (see Table 8, Model 1$^b$, Model 2$^b$, and Model 3$^b$). Thus, it seems that one scoring method is not more valid than another (i.e., True/False versus four-point rating scale) for this population.

Post-Hoc Analyses

The lack of a good fit could be due to a number of reasons. One reason may be that the items representing each subscale are outdated or vague and do not adequately represent their respective subscales. The WES was first developed in 1981 among a general group of employees that included clerical workers. Thus, the items may not
discriminate as well for female clerical workers. However, the item frequencies were examined and although some items were weak, they discriminated well enough. In addition, each item correlated significantly with its respective subscale \( p<.05 \).

Post-hoc EFA and CFA were carried out to determine whether the 63 WES-S items adequately reflected the WES-S subscales Moos (1981) had originally proposed. First, EFA was done to force the 63 WES-S items into seven factors. Although seven factors were found, there were some aberrant items. Three items with the greatest loadings for each factor \( >.30 \) were used to create purer measures of the WES-S. Then the three models were tested again using CFA. Another approach to determine whether the WES-S items loaded on the respective scales included examining the modification indices using CFA. Items that also contributed to other scales were systematically removed and new scales were created. Using CFA, the three models were tested again. See Appendix G for the EFA and CFA results of the 63 WES-S items and Appendix H for the list of the three items with the highest EFA loadings on each of the WES-S subscales. The EFA and CFA results suggested that whether the WES-S subscales contained all of the respective items or not, none of the models provided an adequate fit of the data.

Another reason for the poor model fit may be that another constellation of variables for each latent construct makes up the WES-S for female clerical workers. According to Moos (1994), each work group varies in terms of the quality of relationships, the relative emphasis on a set of goals, and organizational structure. As such, it would not be unusual to obtain a different factor structure for each work group studied. Thus, it is possible that another factor structure best fits the data for female
clerical workers who are experiencing ongoing work stress suggesting that further exploratory analyses are necessary. As a result, EFA was carried out in Step 2 in order to determine the possibility of a factor structure underlying the WES-S.

**Step 2: EFA on the WES-S**

EFA was used to determine the possibility of a factor structure underlying the WES-S. Using SPSS 9.0 (1988) and the WES-S subscales, factors were extracted from the data using the ML procedure in order to define a set of factors that maximized the amount of common variance that could be accounted for by the factors and to identify the one underlying factor model that would best fit the data (Bryant & Yarnold, 1995). The oblim factor rotation procedure was used to identify an interpretable oblique factor solution. Because the WES-S subscales were expected to correlate (Moos, 1981), the oblique rotation was expected to yield a better representation of the work environment than an orthogonal rotation procedure, such as varimax. In addition, the correlation matrix was examined. Eigenvalues larger than 1.00 were used to determine whether dimensions loaded on a particular factor (Bryant & Yarnold, 1995). The scree plot was also examined as another way to identify factors. In addition, the amount of variance accounted for by the factors was examined.

The results of the WES-S (assessed at Time 2, using the True/False scoring method on Sample 1, N=223) indicated that the various indicators of factorability were good (i.e., eigenvalues >1) and the residuals indicated that the solution was a good one (i.e., small residuals <.10; Brace, Kemp, & Snelgar, 2003). Also, Bartlett's (1950) Test of Sphericity indicated that the data were probably factorable, $X^2=588.77$, $df=21$, $p<.01$.

Three factors with an eigenvalue of greater than 1.00 were found; the scree plot
also indicated three factors. The three factors represented the three dimensions proposed by Moos (1981): Relationship, Personal Growth, and SMC. However, the WES-S subscales that loaded on these three factors were somewhat different than what Moos proposed (see Table 9). Factor 1 consisted of job involvement, peer cohesion, supervisor support, autonomy, and managerial support. Factor 2 consisted of Work Pressure and Factor 3 consisted of Clarity.

Together the three extracted dimensions explained approximately 79% of the variance. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy tests the amount of variance that can be explained by the factors. The KMO=.75 is considered good (.50 is considered poor; .60 is acceptable; and 1.0 is better). The amount of variance in each variable explained by the analysis ranged from 42% (managerial control) to 99% (work pressure and lack of clarity). The KMO values for each indicator ranged from .39 (work pressure) to .86 (peer cohesion). Brace and his colleagues (2003) suggested dropping the indicators with KMO values below .50 from the analysis. Work pressure is the only indicator that fell below .50. However, upon examining the factor loadings after rotation, work pressure made up the second factor and had a strong loading (.94).

Based on the EFA results, five variables loaded on one factor (i.e., job involvement, peer cohesion, supervisor support, autonomy, and managerial control) and the other two variables loaded on their own factors (i.e., work pressure and clarity). However, it was uncertain whether this accurately reflected the constellation of factors that make up the work environment for female clerical workers who were experiencing ongoing work stress or whether this result occurred by chance. Thus, EFA was performed again on three other data sets that assessed the same WES-S subscales but at different
Table 9

Factor Loadings greater than .50 of the WES-S Subscales that Loaded Predominantly on One Factor, Using True/False and Four-Point Rating Scales

<table>
<thead>
<tr>
<th>Subscale</th>
<th>True/False Scale</th>
<th>Four-Point Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T₂</td>
<td>T₃</td>
</tr>
<tr>
<td>Job Involvement</td>
<td>.77</td>
<td>.83</td>
</tr>
<tr>
<td>Peer Cohesion</td>
<td>.72</td>
<td>.68</td>
</tr>
<tr>
<td>Supervisor Support</td>
<td>.79</td>
<td>.77</td>
</tr>
<tr>
<td>Autonomy</td>
<td>.82</td>
<td>.64</td>
</tr>
<tr>
<td>Work Pressure</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Clarity</td>
<td>--</td>
<td>.69</td>
</tr>
<tr>
<td>Managerial Control</td>
<td>.49</td>
<td>--</td>
</tr>
</tbody>
</table>

*Note.* Dashes indicate loadings <.50. The WES-S subscales assessed at Time 2 and Time 3 using the True/False scoring method were derived from Sample 1, N=223. The WES subscales assessed at Time 2 and Time 3 using the four-point rating scale were derived from Sample 2, N=207.
times and using different scoring methods (i.e., WES-S subscales were assessed at Time 3 using the True/False scoring method from Sample 1, N=223; WES-S subscales were assessed at Time 2 and Time 3 using the four-point rating scale derived from Sample 2, N=207). Using the ML extraction method with oblim rotation, all four data sets were analyzed by SPSS 9.0 (1988). See Table 9 for the rotated pattern matrix for all four data sets.

For the second data set, the items that made up the WES-S subscales were assessed at Time 3 using the True/False scoring method from Sample 1, N=223. The results suggested that the various indicators of factorability were good (i.e., eigenvalues >1) and the residuals indicated that the solution was a good one (i.e., residuals <.10). Bartlett’s Test of Sphericity indicated that the data were probably factorable, $X^2=591.58$, df=21, $p<.01$. Three factors with eigenvalues greater than 1.00 were extracted; the scree plot also indicated three factors. Factor 1 consisted of job involvement, peer cohesion, supervisor support, autonomy, and clarity. Factor 2 consisted of Work Pressure and Factor 3 consisted of Managerial Control.

Together the three extracted factors in the second data set (i.e., assessed at Time 3, True/False scoring method) explained approximately 79% of the variance. The KMO measure of sampling adequacy was good (KMO=.73). The amount of variance in each variable explained by the analysis ranged from 22% (work pressure) to 99% (job involvement and managerial control). The KMO values for each indicator ranged from .36 (work pressure) to .86 (autonomy). The work pressure subscale was not dropped from the analysis because it loaded on it’s own factor with a factor loading after rotation of .43.

For the third data set, the items that made up the WES-S subscales were assessed
at Time 2 using the four-point rating scale, derived from Sample 2, $N=207$. The results suggested that the various indicators of factorability were good (i.e., eigenvalues $>1$) and the residuals indicated that the solution was a good one (i.e., residuals $<.10$). Bartlett’s Test of Sphericity indicated that the data were probably factorable, $X^2=654.59$, $df=21$, $p<.01$. Two factors with eigenvalues greater than 1.0 were extracted. The scree plot also indicated two factors. Similar to what was found in the second data set (i.e., Time 3, True/False method, Sample 1), Factor 1 consisted of job involvement, peer cohesion, supervisor support, autonomy, and clarity. Factor 2 consisted of work pressure and managerial control. Together the two factors explained approximately 68% of the variance. The KMO measure of sampling adequacy was good (KMO=.75). The amount of variance in each variable explained by the analysis ranged from 17% (managerial control) to 99% (job involvement). The KMO values for each indicator ranged from .43 (work pressure) to .85 (peer cohesion). Work pressure was not dropped from the analysis because after rotation it loaded on the second factor (i.e., factor loading $= .62$).

For the fourth data set, the items that made up the WES-S subscales were assessed at Time 3 using the four-point rating scale on Sample 2, $N=207$. The results suggested that the various indicators of factorability were good (i.e., eigenvalues $>1$) and the residuals indicated that the solution was a good one (i.e., residuals $<.10$). Bartlett’s Test of Sphericity indicated that the data were probably factorable, $X^2=685.18$, $df=21$, $p<.01$. Two factors with eigenvalues greater than 1.00 were extracted; the scree plot also indicated two factors. Similar to what was found in the second and third data sets (i.e., Time 3, True/False scoring method, Sample 1; Time 2, four-point rating scale Sample 2, respectively), Factor 1 consisted of job involvement, peer cohesion, supervisor support,
autonomy, and clarity. Similar to what was found in the third data set (i.e., Time 2, four-point rating scale, Sample 2), Factor 2 consisted of work pressure and managerial control.

Together the two extracted factors in the fourth data set (i.e., assessed at Time 3, using four-point rating scale from Sample 2) explained approximately 70% of the variance. The KMO measure of sampling adequacy was good (KMO=.77). The amount of variance in each variable explained by the analysis ranged from 24% (managerial control) to 85% (supervisor support). The KMO values for each indicator ranged from .53 (work pressure) to .88 (peer cohesion).

In conclusion, a stable factor structure emerged across the four data sets. In the first data set (i.e., assessed at Time 2 using True/False scoring method in Sample 1), Factor 1 was made up of five subscales: job involvement, peer cohesion, supervisor support, autonomy, and managerial control. Moreover, in the next three data sets (i.e., Time 3, True/False; Time 2, four-point; and, Time 3, four-point), Factor 1 was consistently made up of the same subscales (see Table 9 for the factor loadings). These subscales correlated moderately to highly with each other (e.g., ranging from .45 to .91). Work pressure and managerial control on the other hand varied across the four data sets. That is, work pressure sometimes loaded with managerial control on one factor (i.e., data sets 3 and 4) and other times, it made up its own separate factor (i.e., data sets 1 and 2). Also, when managerial control did not load with work pressure on a factor, it loaded with job involvement, peer cohesion, supervisor support, and autonomy (i.e., data set 1) or its own factor (i.e., data set 2). In general, work pressure and managerial control did not correlate well with the other variables across the four data sets. Therefore, Work Pressure and Managerial Control were treated as separate factors and job involvement, peer
cohesion, supervisor support, autonomy, and clarity were considered a factor, Organizational Support. These five subscales represented social resources more broadly than what was previously proposed by Billings and Moos (1982). As a result, Step 3 was carried out using CFA to determine whether Organizational Support was a stable factor structure from which further predictions could be made.

**Step 3: CFA on the WES-S**

Step 3 consisted of using CFA to test the factor structure identified in Step 2. That is, CFA was used to determine if the Organizational Support latent construct, made up of job involvement, peer cohesion, supervisor support, autonomy, and work clarity indicators consistently provided an adequate fit of the data. CFA was used to test the single factor model across the same four data sets (i.e., Time 2 and Time 3, using the True/False scoring method on Sample 1; and, Time 2 and Time 3, using the four-point rating scale on Sample 2).

The results of the CFA analyses indicated that for both samples, at each point in time (i.e., Time 2 and Time 3) using both scoring methods (i.e., True/False versus four-point rating scale) an adequate fit of the data was obtained (see Table 8, Model 4\textsuperscript{e}, Model 4\textsuperscript{f}, Model 4\textsuperscript{g}, Model 4\textsuperscript{h}). This provides evidence of the replicability and also the structural validity of the WES-S.

**Summary: The Factorial Structure of the WES-S**

First, CFA was used to test the hypothesized two-factor model and was contrasted with two alternate models (i.e., three-factor model and a single factor model) on two samples of female clerical workers. None of the three models tested for either sample were a good fit of the data. Thus, whether the items were scored on a True/False or four-
point rating scale did not make a difference. Second, as a post hoc analysis, the extent to which the items themselves adequately reflected the subscales they were intended to represent was tested. EFA and CFA revealed that whether the WES-S subscales contained all their items or not, there was no improvement among the $X^2$ or fit indices.

Finally, EFA was used on all four data sets (i.e., Time 2 and 3, Sample 1, $N=223$; and, Time 2 and 3, Sample 2, $N=207$). The results indicated that one factor, Organizational Support, was consistently made up of five subscales (job involvement, peer cohesion, supervisor support, autonomy, and clarity). Organizational Support represents social resources more broadly than what was previously conceptualized by Billings and Moos (1982). The work pressure and managerial control subscales loaded more consistently on their own factors. Finally, CFA was used to test the stability of the single factor structure, Organizational Support, across four data sets. The CFA results indicated a stable factor structure and provided evidence of the replicability and the structural validity of the WES-S for female clerical workers who were experiencing ongoing work stress. Therefore, in Phase 2, Organizational Support, Work Pressure, and Managerial Control were used to predict job satisfaction and depression. Work Pressure and Managerial Control were considered work demands, consistent with Hypothesis 1.

**Phase 2: Work Environment, Job Satisfaction, and Depression Relationships**

Phase 2 was based on the results of Phase 1 and consisted first of testing two hypotheses aimed at predicting the relationships between Organizational Support, Work Pressure, and Managerial Control, and job satisfaction and depression, after controlling for demographic variables and NA (only in Sample 2).
depression and job dissatisfaction relationships was analyzed. Then, the hypothesized mediating effect of job satisfaction on the Organizational Support, Work Pressure, and Managerial Control-depression relationship was tested. Finally, the relationships between union membership and organizational size and job satisfaction and depression were examined from an exploratory perspective. The hypotheses and exploratory analyses were tested on data derived from both samples of female clerical workers ($N=223$ and $N=207$) as a form of replication because the two samples contained similar constructs. However, Sample 1 and Sample 2 differed in terms of: (a) the WES-S scoring method (i.e., True/False and four-point rating scale, respectively), (b) the depression measure used, and (c) NA was assessed only in Sample 2.

**Missing Data and Assumptions of HMR**

An examination of the scatterplots indicated that the assumptions for using HMR were met. That is, the residuals were normally and independently distributed, had a constant variance (homoscedasticity) around the criterion variables, and the overall shape of the scatterplots were rectangular (linear) in both samples.

There were no missing data and cases were evaluated for univariate extremeness. There were no extreme outliers for job satisfaction in Sample 1 and Sample 2. For depression, eight univariate outliers in Sample 1 and two univariate outliers in Sample 2 were identified. These outlier cases were dropped from both samples because Tabachnick and Fidell (1989) claimed that extreme cases have an impact on the results of regression analyses. However, in order to determine whether deleting the outlier cases affected the regression results, analyses predicting depression were conducted with and without the outlier cases (see Appendix K). Because multiplicative terms were used in the HMR,
scores for the continuous predictor variables were standardized in all HMR analyses.

**Hypothesis 2: Predicting Job Satisfaction**

Demographic variables were included in the HMR models as control variables only if they were significantly related to the criterion variables (i.e., job satisfaction and depression) at the bivariate level. There was a statistically significant negative correlation between education (0=High School; 1=College, University, or specialized training after High School in Sample 1; and in Sample 2 education was a continuous variable) and job satisfaction in Sample 1 and Sample 2 (r= -.13 and r= -.15, ps<.05, respectively) and there was a statistically significant positive correlation between age and job satisfaction in Sample 2 (r=.22, p<.01). NA was also statistically controlled for (in Sample 2 only). In addition, studies have found that education, age, and NA have been related to job satisfaction for working women (e.g., Barnett & Brennan, 1995; Brief et al., 1988). Thus, for replicability, age, education, and NA were statistically controlled for in the HMR analyses conducted on job satisfaction. See Table 10 for a summary of the HMR results predicting job satisfaction for Sample 1 and Sample 2.

Hypothesis 2 stated that the WES-S dimensions would significantly increase the amount of variance accounted for in job satisfaction, after controlling for age, education, and NA (only in Sample 2). Moreover, greater Organizational Support would relate positively to job satisfaction; whereas, greater Work Pressure and Managerial Control would relate negatively to job satisfaction. Variables were entered simultaneously as four blocks. In Step 1, age and education were entered as control variables for Sample 1. For Sample 2, age, education, and NA were entered in Step 1. Union membership (0=non-member; 1=union member) and size of organization (0=less than 499 employees;
Table 10

Summary of Hierarchical Multiple Regression Analyses Predicting Job Satisfaction From Work Environment Measures for Sample 1 (N=223) and Sample 2 (N=207)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample 1</th>
<th></th>
<th>Sample 2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>β</td>
<td>SE β</td>
<td>b</td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.81**</td>
<td>.28</td>
<td>.17</td>
<td></td>
</tr>
<tr>
<td>Education&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.31</td>
<td>.28</td>
<td>-.07</td>
<td></td>
</tr>
<tr>
<td>Negative Affectivity</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of Organization&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.63</td>
<td>.64</td>
<td>.07</td>
<td></td>
</tr>
<tr>
<td>Union Membership&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-1.34*</td>
<td>.67</td>
<td>-.14</td>
<td></td>
</tr>
<tr>
<td>Step 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational Support</td>
<td>2.20**</td>
<td>.30</td>
<td>.46</td>
<td></td>
</tr>
<tr>
<td>Work Pressure</td>
<td>-0.33</td>
<td>.29</td>
<td>-.07</td>
<td></td>
</tr>
<tr>
<td>Managerial Control</td>
<td>-0.23</td>
<td>.30</td>
<td>-.05</td>
<td></td>
</tr>
<tr>
<td>Step 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OS X Work Pressure</td>
<td>0.07</td>
<td>.29</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>OS X Managerial Control</td>
<td>0.61</td>
<td>.32</td>
<td>.12</td>
<td></td>
</tr>
</tbody>
</table>

Note. Dashes indicate that the variable was not assessed. Negative affectivity was not estimated in Sample 1. The β values are the unstandardized coefficients from the final simultaneous analysis, each term being corrected for all other terms in the model. OS=Organizational Support.

For Sample 1: Step 1: $R^2=.03$, $p<.06$; Step 2: $AR^2=.01$, $p<.48$; Step 3: $AR^2=.25$, $F(3, 214) = 24.61$, $p<.01$; Step 4: $AR^2=.02$, $p<.10$. The amount of variance in job satisfaction accounted for by the final simultaneous regression model was $R^2=.31$ (Adjusted $R^2=.27$), $F(9, 212) = 9.88$, $p<.01$.

For Sample 2: Step 1: $R^2=.12$, $F(3, 203) = 9.02$, $p<.01$; Step 2: $AR^2=.02$, $p<.07$; Step 3: $AR^2=.13$, $F(3, 198) = 12.14$, $p<.01$; Step 4: $AR^2=.01$, $p<.28$. The amount of variance in job satisfaction accounted for by the final simultaneous regression model was $R^2=.28$ (Adjusted $R^2=.25$), $F(10, 196) = 7.77$, $p<.01$.

<sup>a</sup>Education (0=High School, 1=College, University or specialized training after High School); <sup>b</sup>Size of Organization (0=less than 499, 1=more than 500); <sup>c</sup>Union Membership (0=no, 1=yes); * $p < .05$.  ** $p < .01$
123 employees) were entered in Step 2 for exploratory purposes. Organizational Support, Work Pressure, and Managerial Control were entered in Step 3, and two multiplicative terms (Organizational Support by Work Pressure and Organizational Support by Managerial Control) were entered in Step 4 for exploratory purposes.

The HMR results for Sample 1 indicated that Hypothesis 2 was partially supported. As a block, the WES-S variables (Organizational Support, Work Pressure, and Managerial Control) accounted for an additional 25% of the variance in job satisfaction, $R^2 = .25$, $F(3, 214) = 24.61, p < .01$, over and above what was accounted for by age, education, union membership, and organizational size. Singly, there was a significant positive relationship between Organizational Support and job satisfaction ($\beta = 2.20$, $p < .01$), however, Work Pressure and Managerial Control did not significantly contribute to the amount of variance accounted for in job satisfaction, $p > .05$. Tolerance values ranged from .71 to .95 and VIF values ranged from 1.05 to 1.40 meaning the variance of $\beta$ for Organizational Support was not significantly inflated as a consequence of the correlations between the independent variables. The amount of variance in job satisfaction accounted for by the final simultaneous regression model was $R^2 = .31$ (Adjusted $R^2 = .27$), $F(9, 212) = 9.88, p < .01$.

The HMR results for Sample 2 ($N = 207$) revealed similar results for the partial support of Hypothesis 2. As a block, Organizational Support, Work Pressure, and Managerial Control significantly accounted for an additional 13% of the variance in job satisfaction, over and above what was accounted for by age, education, NA, size of organization, and union membership, $\Delta R^2 = .13$, $F(3, 198) = 12.14, p < .01$. After
controlling for the other variables in the model, Organizational Support had a significant positive relationship with job satisfaction ($\beta =1.83, p<.01$), however, Work Pressure and Managerial Control did not significantly contribute to the amount of variance accounted for in job satisfaction. Tolerance values ranged from .80 to .98 and VIF values ranged from 1.02 to 1.25, suggesting that the variance of $\beta$ for Organizational Support was not significantly inflated as a consequence of the correlations between the independent variables. The amount of variance in job satisfaction accounted for by the final simultaneous regression model was $R^2 = .28$ (Adjusted $R^2 = .25$), $F (10, 196) = 7.77, p<.01$.

The exploratory questions reflected in these analyses are discussed after Hypothesis 3.

In summary, Hypothesis 2 was partially supported in both samples. There was a significant positive relationship between Organizational Support and job satisfaction, after controlling for age, education, NA (in Sample 2), union membership, and size of organization. Unexpectedly, in both samples, Work Pressure and Managerial Control did not account for a significant amount of variance in job satisfaction.

**Hypothesis 3: Predicting Depression**

Age and marital status were statistically controlled for in Hypothesis 3 because of the statistically significant negative correlation between age and depression in both samples ($r = -.16, p<.05$ and $r = -.20, p<.01$, respectively) and the statistically significant positive correlation between marital status (0=not married and 1=married) and depression in Sample 2 ($r = .24, p<.05$). NA was also statistically controlled for in Sample 2. See Table 11 for a summary of the HMR analyses predicting depression using the two samples.

Hypothesis 3 stated that the WES-S dimensions would significantly increase the
amount of variance accounted for in depression, after controlling for age, marital status, and NA (only in Sample 2). That is, greater Organizational Support would relate negatively to depression; whereas, greater Work Pressure and Managerial Control would relate positively to depression. Variables were entered simultaneously as four blocks. In Step 1, age, marital status, and education were entered as control variables for Sample 1. For Sample 2, age, marital status, and NA were entered in Step 1. Union membership and size of organization were entered in Step 2 for exploratory purposes. Organizational Support, Work Pressure, Managerial Control were entered in Step 3; and two multiplicative terms (Organizational Support by Work Pressure and Organizational Support by Managerial Control) were entered in Step 4 for exploratory purposes. See Table 11 for a summary of the HMR results predicting depression for Sample 1 and Sample 2.

The HMR results for Sample 1 indicated that Hypothesis 3 was partially supported. As a block, Organizational Support, Work Pressure, and Managerial Control accounted for an additional 6% of the variance in depression, $R^2 = .06$, $F(3, 207) = 4.54$, $p < .01$, over and above what was accounted for by age, marital status, and the objective work environment variables. Singly, there was a significant negative relationship between Organizational Support and depression ($\beta = -1.66$, $p < .01$), however, Work Pressure and Managerial Control were not significantly related to depression, $p > .05$. Tolerance values ranged from .73 to .94 and VIF values ranged from 1.06 to 1.38, suggesting that the variance of $\beta$ for Organizational Support was not significantly inflated as a consequence of the correlations between the independent variables. The amount of variance in depression accounted for by the final simultaneous regression model was $R^2 = .12$. 
Table 11

Summary of Hierarchical Multiple Regression Analyses Predicting Depression From Work Environment Measures for Sample 1 (N=223) and Sample 2 (N=207).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample 1</th>
<th>Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \beta )</td>
<td>SE( \beta )</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-1.64**</td>
<td>0.53</td>
</tr>
<tr>
<td>Marital Status(^a)</td>
<td>1.26*</td>
<td>0.64</td>
</tr>
<tr>
<td>Negative Affectivity</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size Organization(^b)</td>
<td>-1.89</td>
<td>1.21</td>
</tr>
<tr>
<td>Union Membership(^c)</td>
<td>1.29</td>
<td>1.25</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational Support</td>
<td>-1.66**</td>
<td>0.56</td>
</tr>
<tr>
<td>Work Pressure</td>
<td>0.66</td>
<td>0.54</td>
</tr>
<tr>
<td>Managerial Control</td>
<td>0.03</td>
<td>0.56</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OS X Work Pressure</td>
<td>0.50</td>
<td>0.55</td>
</tr>
<tr>
<td>OS X Managerial Control</td>
<td>-0.32</td>
<td>0.59</td>
</tr>
</tbody>
</table>

Note. Dashes indicate that the variable was not assessed. Negative affectivity was not estimated in Sample 1. The \( \beta \) values are the unstandardized coefficients from the final simultaneous analysis, each term being corrected for all other terms in the model.

OS=Organizational Support.

For Sample 1: Step 1: \( R^2 = .04, p < .01 \) (Adjusted \( R^2 = .03 \), \( F(2, 212) = 4.35, p < .01 \); Step 2: \( \Delta R^2 = .01, p < .28 \); Step 3: \( \Delta R^2 = .06, F(3, 207) = 4.54, p < .01 \); Step 4: \( \Delta R^2 = .01, p < .64 \). The amount of variance in depression accounted for by the final simultaneous regression model was \( R^2 = .12 \) (Adjusted \( R^2 = .08 \), \( F(9, 205) = 2.92, p < .01 \).

For Sample 2: Step 1: \( R^2 = .31 \) (Adjusted \( R^2 = .30 \), \( F(3, 201) = 29.97, p < .01 \); Step 2: \( \Delta R^2 = .01, p < .53 \); Step 3: \( \Delta R^2 = .01, p < .47 \); Step 4: \( \Delta R^2 = .01, p < .99 \). The amount of variance in depression accounted for by the final simultaneous regression model was \( R^2 = .34 \) (Adjusted \( R^2 = .29 \), \( F(9, 205) = 9.23, p < .01 \).

\(^a\)Marital Status (0=not married, 1=married); \(^b\)Size of Organization (0=less than 499, 1=more than 500); \(^c\)Union Membership (0=no, 1=yes);

\(* p < .05. \quad ** p < .01\)
(Adjusted $R^2=0.08$), $F(9, 205) = 2.92, p<.01$.

The results for Sample 2 indicated that as a block, Organizational Support, Work Pressure, and Managerial Control did not account for additional variance in depression, after controlling for age, marital status, NA, and the union membership, and organizational size, $p>.05$. The amount of variance in depression accounted for by the final simultaneous regression model was $R^2=.34$ (Adjusted $R^2=.29$), $F(9, 194) = 9.23, p<.01$.

In summary, Hypothesis 3 was partially supported. With Sample 1, there was a significant negative relationship between Organizational Support and depression, after controlling for age and marital status and accounting for union membership, organizational size, and the interaction variables. Moreover, Work Pressure and Managerial Control did not significantly contribute to the amount of variance accounted for in depression. However, in Sample 2, none of the WES-S variables were linearly related to depression, after controlling for age, marital status, and NA and accounting for union membership, organizational size, and the interaction variables.

**Exploratory Question 1: Buffering Effects of Organizational Support**

Exploratory Question 1 was aimed at examining the buffering effect of Organizational Support on the relationships between work demands and job satisfaction and depression in Sample 1 and Sample 2. HMR results revealed that both as a block (Step 4) or singly, the interactions between Organizational Support and Work Pressure and Organizational Support and Managerial Control did not significantly account for any of the variance in job dissatisfaction and depression, after accounting for the other variables in the model for either sample. See Tables 10 and 11.
Hypothesis 4: The Mediating Effect of Job Satisfaction on the Social Resources and Work Demands – Depression Relationship

Hypothesis 4 stated that job satisfaction would mediate the social resources and work demands-depression relationship, while controlling for age, education, marital status, and NA (only in Sample 2). I used LISREL 8.30 (Jöreskog & Sörbom, 1999) path analysis to examine the hypothesized mediating effect of job satisfaction in both samples as a form of cross-validation. Assumptions for path analysis were met for both samples (i.e., the relationships among the variables in the model were linear, additive, and causal; each residual was not correlated with other variables in the model; there was a one-way causal flow in the system; and the variables were measured on an interval scale).

Mediating effect of job satisfaction for Sample 1. Using data derived from Sample 1 (N=223), the mediating effect of job satisfaction on the relationship between Organizational Support, Work Pressure, and Managerial Control and depression (outcome), while controlling for relevant demographic variables (age, education, and marital status) was tested. The procedure proposed by Baron and Kenny (1986) was followed: The first condition for mediation was met (Path c). There was a significant negative relationship between the predictor, Organizational Support, and depression. The standardized regression coefficient ($b=-.23$) associated with the effect of Organizational Support on depression was significant ($t=-3.26, p<.01$). In contrast, Work Pressure and depression and Managerial Control and depression were not significantly related, $p>.05$. However, further testing was carried out with Organizational Support. The second condition for mediation was met (Path a). There was a significant positive relationship between Organizational Support and job satisfaction. The standardized regression
coefficient ($b = .47$) associated with this effect was significant ($t = 7.47, p < .01$). The third condition was met (Path b). There was a significant negative relationship between job satisfaction and depression. The standardized regression coefficient ($b = -0.21$) associated with this effect was significant ($t = -4.33, p < .01$). The final condition was met (Path c'). The negative relationship between Organizational Support and depression was no longer significant ($b = -.13, p > .05$). Thus, job satisfaction was a partial mediator of the Organizational Support and depression relationship for Sample 1. See Table 12 for a summary of the results.

However, many phenomena in psychology have multiple causes, and as such some researchers have suggested that a more realistic goal may be to seek mediators that significantly decrease Path c' rather than eliminate the relationship between the predictors and criterion variable altogether (e.g., Baron & Kenny, 1986; Frazier, Tix, & Barron, 2004; Judd & Kenny, 1981; Kenny et al., 1998). From a theoretical perspective, Kenny and his colleagues suggested that a significant reduction demonstrates that a given mediator is indeed potent, although not a necessary and sufficient condition for an effect to occur.

Therefore, by examining the unstandardized regression coefficients, the drop from -1.82 to -1.05 (i.e., from Path c to Path c') was tested and a significant difference was found ($z = 4.08, p < .05$). Overall, about 43% of the total effect of Organizational Support on depression was mediated by job satisfaction. The variance explained by this model was 13%, $R^2 = .13$, $F(7, 206) = 4.53, p < .01$. Thus, job satisfaction was a significant mediator of the Organizational Support-depression relationship but not for the work demands-depression relationships.
Table 12

Testing Mediator Effects of Job Satisfaction Using Path Analysis in Sample 1 (N=223) and Sample 2 (N=207)

<table>
<thead>
<tr>
<th>Steps in Mediation Model</th>
<th>Sample 1</th>
<th>Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testing Step 1 (Path c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome: Depression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictor: Organizational Support</td>
<td>-1.82</td>
<td>-0.05</td>
</tr>
<tr>
<td>Tests Step 2 (Path a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome: Job Satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Predictor: Organizational Support</td>
<td>2.22</td>
<td>n/a</td>
</tr>
<tr>
<td>Tests Step 3 (Paths b and c')</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome: Depression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mediator: Job Satisfaction (Path b)</td>
<td>-0.48</td>
<td>n/a</td>
</tr>
<tr>
<td>Predictor: Organizational Support (Path c')</td>
<td>-1.05</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Note. Values enclosed in parentheses represent confidence intervals; n/a = not applicable because Step 1 was not significant, so no further analyses were carried out.

** p < .01.

Figure 3. The standardized regression coefficients for paths a, b, c, and c' between the predictor, mediator, and outcome variables for Sample 1.
Mediating effect of job satisfaction for Sample 2. Using data derived from Sample 2 (N=207), the same procedure outlined by Baron and Kenny (1986) was carried out. Relevant demographic variables (age, education, and marital status) and NA were statistically controlled for in each step of the analysis. Separate standardized regression coefficients for each equation were estimated and tested following traditional path analysis procedures. In the first step of the analyses, depression was regressed on each of the predictor variables; the resulting beta coefficients were -0.01, 0.08, and -0.09 for Organizational Support, Work Pressure, and Managerial Control, respectively. None of the standardized regression coefficients were statistically significant, so no further analyses were conducted. Thus, job satisfaction did not mediate the Organizational Support or work demands-depression relationships.

In summary, Hypothesis 4 was partially supported. Job satisfaction mediated the Organizational Support-depression relationship in Sample 1 but not for work demands. In addition, job satisfaction did not have a mediating effect on the Organizational Support-depression relationship in Sample 2.

Exploratory Questions 2 and 3: Role of Union Membership and Organizational Size

Exploratory Questions 2 and 3 were aimed at examining the relationship between union membership and the size of the organization and job satisfaction and depression. The HMR results revealed that as a block (Step 2), the objective work environment variables (union membership and size of organization) did not significantly account for any additional amount of variance in job satisfaction, after controlling for age and education in Sample 1 and also NA in Sample 2. However, singly there was a significant negative relationship between union membership and job satisfaction ($\beta =-1.34, p<.05$ in
Sample 1; and, $\beta = -1.74, p<.05$ in Sample 2) suggesting that union membership was associated with greater job dissatisfaction. The acceptable tolerance and VIF values suggested that the variance of $\beta$ for union membership was not significantly inflated as a consequence of the correlations between the independent variables. Also, although the zero-order correlation between union membership and job satisfaction was not statistically significant in Sample 1 ($r = -.06, p > .05$), it was statistically significant in Sample 2 ($r = -.15, p < .05$). Thus, the relationship between union membership and job dissatisfaction may have been suppressed by other variables. See Table 10 for a summary of the HMR results predicting job satisfaction for Sample 1 and Sample 2.

Singly, size of the organization did not contribute significantly to the amount of variance accounted for in job satisfaction or depression, $p > .05$, in either sample. See Table 11 for a summary of the HMR results predicting depression for Sample 1 and Sample 2. In addition, the zero-order correlations between the size of the organization and job satisfaction and depression were not statistically significant in either sample, $p > .05$, suggesting that size of the organization was not related to job satisfaction or depression in either sample.

In summary, non-union membership was significantly related to greater job satisfaction in both samples, however, union membership did not relate to depression. In addition, size of the organization did not relate to job satisfaction or depression for either sample.

Post-Hoc Analyses

In order to better understand the relationships between the WES-S variables (Organizational Support, Work Pressure, and Managerial Control) and job satisfaction
and depression, four post-hoc analyses were carried out.

First, to examine the impact of NA on the relationship between Organizational Support, Work Pressure, Managerial Control and job satisfaction, the HMR analyses were repeated on Sample 2 ($N=207$) without the effects of NA statistically controlled for. The results were the same as when NA was statistically controlled for. That is, when NA was not in the model, Organizational Support was significantly related (positively) to job satisfaction ($\beta =1.97, p<.01$) and union membership was also significantly related to greater job satisfaction ($\beta =-1.78, p<.05$). In the analysis that statistically controlled for NA, the results showed that NA was statistically significant and related negatively to job satisfaction ($\beta =-0.96, p<.01$).

Second, a similar analysis was conducted to explore the impact of NA on the relationship between Organizational Support, Work Pressure, Managerial Control and depression. The HMR analysis conducted on Sample 2 was repeated without controlling for NA. The results were the same as when NA was statistically controlled for. That is, Organizational Support, Work Pressure, and Managerial Control did not significantly relate to depression, neither did the union membership or organizational size, $p>.05$.

Third, in order to determine whether the Organizational Support, Work Pressure, and Managerial Control were confounded by the appraised severity of the work stressor, the HMR analyses predicting job satisfaction and depression were repeated on both samples. In this instance, severity of the work stressor was included in the model as a control variable. Stress severity was assessed as how severe or upsetting the most salient work stressor was that the employee experienced the previous month (e.g., between Time 2 and Time 3), on a scale of 1 to 5 ($M_s=3.49$ and 3.77; and, $SD_s=1.00$ and .97; for
Sample 1 and Sample 2, respectively). The results were similar to when stressor severity was not statistically controlled for. Including stressor severity in the model did not change the effects that the work environment dimensions (i.e., Organizational Support and union membership) had on job satisfaction or depression. See Appendix I for details of the post-hoc HMR analyses with work stressor severity statistically controlled for in Sample 1 and Sample 2.

Finally, because the two samples differed on parental status (0=no children, 1=one or more children), number of years in the work force, education (0=High School, 1=College, University, and technical training), and number of years working with organization, post-hoc analyses were carried out in order to determine whether these demographic characteristics accounted for why Organizational Support predicted depression in Sample 1 but not in Sample 2. The HMR analyses were repeated on Sample 1 and Sample 2 and, in this instance, they were statistically controlled for (in addition to age, marital status, and NA that was originally statistically controlled for). The results were similar to when they were not statistically controlled for. Including the additional demographic variables in the model did not change the effects that Organizational Support had on depression in Sample 1 and Sample 2. See Appendix J for the details of the post-hoc HMR analyses with additional demographic variables statistically controlled for in Sample 1 and Sample 2.
Chapter VI: Discussion

The primary purpose of this longitudinal study was to gain a better understanding of the role of the work environment in job satisfaction and depression for female clerical workers who were experiencing ongoing work stress. However, in order to do so, the study proceeded in two phases. In Phase 1, I established the factorial structure of the WES-S through a series of CFA and EFA. The results indicated that the WES-S consisted of three factors (Organizational Support, Work Pressure, and Managerial Control) for two independent samples of female clerical workers assessed at two time periods, one month apart. As expected, based on these three factors: (a) greater Organizational Support was associated with greater job satisfaction in both samples, after controlling for age, education, and NA (in Sample 2) and accounting for union membership and size of the organization; (b) less Organizational Support was associated with greater depression for Sample 1 but not Sample 2, after controlling for age and marital status and accounting for other variables in the model; and, (c) job satisfaction mediated the Organizational Support-depression relationship only in Sample 1. Finally, the results of exploratory analyses indicated that union membership related to greater job dissatisfaction but not to depression for both samples. Moreover, there was no evidence to suggest that Organizational Support buffered the Work Pressure or Managerial Control relationships with job dissatisfaction and depression for either sample.

The Factorial Structure of the WES-S

Social resources and work demands were hypothesized to represent higher-order dimensions of the WES-S based on Billings and Moos (1982). Moos’s (1981) three-factor model (i.e., relationship, personal growth, and system maintenance and change)
and a single overarching model of work control (Johnson, 1989) were also examined to determine whether the hypothesized two-factor model was the best fitting model. CFA and EFA were carried out on the seven WES-S subscales on two independent samples of female clerical workers. The results indicated that the WES-S consisted of three higher-order factors: Organizational Support, WorkPressure, and Managerial Control. The Organizational Support dimension was consistently composed of five subscales (i.e., job involvement, peer cohesion, supervisor support, autonomy, and clarity) regardless of the scoring methods (i.e., True/False or four-point rating scales). Although not hypothesized, there was strong support for 1-month test-retest reliability ($r=.82$ in Sample 1; and $r=.87$ in Sample 2) and internal consistency (ranging from .90 to .93) for the Organizational Support factor. Thus, contrary to what was expected, the WES-S was not composed of the hypothesized two-factor model or the proposed alternative models – three-factor model (Moos, 1981) or a single over-arching factor structure (Johnson, 1989).

However, the three WES-S factors identified in the present study closely resembled the three-factor structure proposed by Moos (1981). That is, Moos claimed that depending upon the nature and variability of the sample, an identified factor structure may be composed of a constellation of WES-S dimensions that reflect relationship, personal growth, or system maintenance and change. The results of the present study revealed that autonomy and clarity loaded on the relationship dimension, along with job involvement, peer cohesion, and supervisor support. The other two scales that formed separate factors represented the personal growth dimension (i.e., work pressure) and system maintenance and change (i.e., managerial control). Therefore, although Moos's (1981) original constellation did not hold up in its totality, the WES-S factor structure
involved the same three overall dimensions that had been theorized.

It appears that Billings and Moos’s (1982) conceptualization of social resources is too narrow for female clerical workers who are experiencing ongoing work stress. The Organizational Support factor identified in the present study is a broader representation of relationships and is more consistent with the organizational support theory proposed by Eisenberger, Huntington, Hutchison, and Sowa (1986) and Shore and Shore (1995). The organizational support theory posits that employees develop global beliefs concerning the extent to which the organization values their contributions and cares about their well-being. For example, conditions such as autonomy reflect the organization’s trust in employees to decide wisely how they will carry out their job, whereas clarity about one’s tasks and responsibilities provides employees with additional resources that enhance their sense of competence. In addition, because supervisors act as agents of the organization (i.e., having responsibility for directing and evaluating employees performance), employees view their supervisor’s favourable or unfavourable orientation toward them as a reflection of the organization’s support.

Eisenberger and his colleagues claimed that social support, autonomy, and clarity contribute to job satisfaction because these characteristics suggest to employees that the organization respects and values their contributions and cares about their well-being. Schaefer and Moos (1993) asserted that job involvement, peer cohesion, and supervisor support have the potential to increase employee morale and protect employees from the negative effects of work stressors. Clerical workers, in particular, may rely more on others because of the little influence they have in the workplace. Thus, the organizational support theory provides an explanation for why job involvement, social support,
autonomy, and clarity consistently form one dimension, Organizational Support, for female clerical workers who are experiencing ongoing work stress.

Work Pressure (i.e., pressure to work continuously and time urgency) and Managerial Control (i.e., the use of rules and pressures to keep employees under control) continue to represent different aspects of work demands. It is possible that in light of the instability found in the workplace today (i.e., companies downsizing and shifts toward contractual work), these clerical workers may have come to expect (i.e., it has become the norm) more work pressure and managerial control. Andries, Kompier, and Smulders (1996) claimed that work pressure is found in many work environments today.

Variability may be due to how well the Work Pressure and Managerial Control subscale items discriminated for female clerical workers who were experiencing ongoing work stress. Some of the items on the work pressure (e.g., “pressure to keep working”) and managerial control (e.g., “emphasis on policies and regulations”) subscales did not discriminate very well according to the item analyses that were carried out. As Andries and his colleagues (1996) suggested, perhaps work pressure has become the norm, yet the “pressure to keep working” item correlated strongly with its respective subscale ($r=.64$). Similarly, “making up lost time/staying late” may not be a viable option for clerical workers who must adhere to strict union rules. This item did not correlate strongly with its respective work pressure subscale ($r=.30$). Moreover, the variability may be due to the fact that clerical workers have many bosses. However, overall, the Work Pressure and Managerial Control subscales had reasonable internal reliability (see Table 2 and 3).

*Work Environment and Job Satisfaction Relationships*

Based on the three factors (i.e., Organizational Support, Work Pressure, and
Managerial Control) consistently found on the WES-S through EFA/CFA, it was hypothesized that Organizational Support would be positively associated with job satisfaction whereas Work Pressure and Managerial Control would be negatively associated with job satisfaction. The results indicated that only Organizational Support was significantly positively associated with job satisfaction after controlling for age, education, and NA (accounting for union membership and organizational size) on two independent samples of female clerical workers who were experiencing ongoing work stress. Thus, the new WES-S subscale, Organizational Support, has good predictive validity.

These findings are consistent with Schaefer and Moos’s (1996) study of hospital staff who found that peer cohesion, autonomy, and clarity made a unique contribution to job satisfaction, even after controlling for work stress. Similarly, Repetti and Cosmas (1991) found a direct effect of perceived social support from coworkers and supervisors on job satisfaction for mostly female bank tellers and customer service representatives. According to Repetti (1987, 1993a) supportive, nonconflictual social interactions at work enhance psychological well-being by meeting basic human needs for affiliation and a sense of belonging. According to Hackman and Oldham’s (1980) Job Characteristics Model (JCM), autonomy is associated with greater job satisfaction because it is reinforcing to the employee and serves as an incentive to continue trying to perform well in the future. Thus, based on the changing work environment (e.g., companies downsizing), Organizational Support is particularly relevant to clerical workers’ job satisfaction.

The results of the present study indicated that Work Pressure and Managerial
Control did not serve as determinants of job dissatisfaction for clerical workers who were experiencing ongoing work stress. The JCM (Hackman & Oldham, 1976) is silent on whether Work Pressure and Managerial Control are associated with job satisfaction. Moreover, these results are not consistent with other studies. In Carayon and Zijlstra’s (1999) study of male and female American and Dutch office workers (including clerical workers, accountants, computer specialists, and supervisors), greater work pressure (defined as high job demands with tight deadlines) and less job control (defined as having less influence in one’s job) were directly related to less job satisfaction. However, clerical workers have less power and influence in the workplace and encounter different work stressors than professionals in other occupations (Narayanan et al., 1999). Thus, when clerical workers are combined with other occupations, the extent to which work pressure and managerial control are associated with job satisfaction may be masked. In addition, the zero-order correlations (see Tables 4 and 6) between Work Pressure and Job Satisfaction ($r = -.13, p < .05$ in Sample 1; and $r = .03, p > .05$ in Sample 2) and between Managerial Control and Job Satisfaction ($r = -.22, p < .05$ in Sample 1; and $r = -.13, p > .05$ in Sample 2) were weak and did not account for a great deal of variance. Thus, it is possible that when the other variables in the model were accounted for (i.e., demographic variables, Organizational Support, union membership, organizational size, and interactions), Work Pressure and Managerial Control’s effects were removed.

Another difficulty in examining the direct effects of Work Pressure and Managerial Control on job satisfaction in the research literature is that these constructs have often been subsumed under a global index (e.g., personal growth and system maintenance and change; Schaefer & Moos, 1993) or a latent construct (e.g., work
environment; Long et al., 1992). In Schaefer and Moos's (1993) study of nurses, when
direct relationships between these indices and job satisfaction were found, work pressure
was combined with autonomy to form one index and managerial control was combined
with clarity to form another index.

One reason for the inconsistent results may be due to the effects of NA. Brief and
his colleagues (1988) pointed out that NA has the potential to change the relationships
between the work environment and psychological well-being (e.g., job satisfaction) and
distress. Therefore, in the present study, NA was statistically controlled for in Sample 2.
As a post-hoc test, analyses were repeated without controlling for NA, and the same
results were found. Work Pressure and Managerial Control were not associated with job
satisfaction for clerical workers who were experiencing ongoing work stress, after
controlling for age, education, and NA.

Snow and his colleagues (2003) pointed out that the nature of work for clerical
workers is changing, for example, there is heightened complexity in work tasks, demands
for greater and more technical skills, rapidity of change, and for many, increasing hours
in the work week. Therefore, it is possible that clerical workers who are experiencing
ongoing work stress have come to expect Work Pressure and Managerial Control as
commonplace, which in turn, may no longer impact their level of job satisfaction.

Work Environment and Depression Relationships

Organizational Support, Work Pressure, and Managerial Control were also
expected to predict depression. Organizational Support was expected to be negatively
associated with depression whereas Work Pressure and Managerial Control were
expected to be positively associated with depression. The results of the analyses indicated
that, as expected, there was a significant negative relationship between Organizational Support and depression, after controlling for age and marital status and accounting for other variables in the model, in Sample 1. These findings are consistent with Schaefer Moos's (1996) study of hospital staff and Repetti's (1987) study of mostly female bank tellers and customer service representatives. Repetti claimed that the quality of the social environment at work provides a social bonding that is necessary for emotional well-being and that daily social encounters in a job setting where affiliative needs are not met would be expected to contribute to depression. This may be particularly relevant to clerical workers who have less power and influence in the workplace because they need to rely on others to a greater extent.

Unexpectedly, the relationship between Organizational Support and depression was not found in Sample 2, after controlling for age, marital status, and NA, and the other variables in the model. One reason may be the different measures of depression used in the present study. The SCL-90-R was used in Sample 1 and the CES-D was used in Sample 2. However, the two measures are similar in that they assess depressive symptoms during the previous week among nonpsychotic individuals. They contain a comparable number of items (20 items versus 13 items, respectively) that are assessed with Likert-type rating scales (i.e., four-point rating scale versus a five-point rating scale, respectively), and they share common items. In addition, there is evidence of strong convergent validity between the CES-D and SCL-90-R (Weissman & Klerman 1977). Therefore, the two depression measures seem to be measuring the same construct.

Another possibility is that controlling for NA accounted for the Organizational Support-depression relationship. Jex and Beehr (1991) claimed that individuals
with high levels of NA tend to experience negative emotionality and distress, regardless of the characteristics of the situations they are in. However, the WES-S variables-depression relationship was reanalyzed without controlling for NA to determine its effect. The same results were obtained. Thus, the influence of NA does not explain why Organizational Support predicted depression in one sample and not the other.

Perhaps the inconsistency in results between Sample 1 and Sample 2 lies in the different demographic characteristics between the two samples (e.g., parental status). For example, in Sample 2, participants had been in the workforce longer, worked for their organization longer, had fewer children, and had more technical training (e.g., secretarial training) than those in Sample 1. Thus, clerical workers in Sample 2 may have had more resources and thus were less likely to be depressed. However, as a post-hoc test, the WES-S variables-depression relationship was reanalyzed, controlling for these additional demographic variables. The same results were obtained. Thus, the different demographic characteristics between the samples do not account for these differential results — Organizational Support predicted depression in one sample and not the other. Perhaps unmeasured third variables account for the difference between the two samples. Future studies will need to determine the stability of the relationship.

Work Pressure and Managerial Control did not significantly contribute to the amount of variance accounted for in depression in either sample. This is not surprising considering that inconsistent results have been found in other studies regarding the relationships between Work Pressure, Managerial Control, and depression (e.g., Carayon, 1993ab; Westman, 1992). The inconclusive results may be due to the different measures used to assess work pressure and managerial control. In the present study, they were
assessed using the neutral items of the WES-S, thus, providing greater confidence in the results that were obtained. In addition, in the present study, managerial control referred to the extent to which the management uses rules and pressures to keep employees under control. Thus, further research regarding the role of Work Pressure and Control in psychological well-being is needed.

Buffering Effects of Organizational Support

The extent to which Organizational Support buffered the effects of Work Pressure and Organizational Support and Managerial Control on job dissatisfaction and depression was examined from an exploratory perspective because of the lack of empirical evidence and theory claims to suggest specific predictions. The results of the HMR analyses indicated that Organizational Support did not buffer the Work Pressure and Managerial Control relationships with job dissatisfaction or depression in either sample. Thus, there is no evidence for Billings and Moos's (1982) hypothesis that social resources buffer the relationships between work demands and depression for clerical workers who are experiencing ongoing work stress. The results of their study may have been due to having used a different measure of depression (i.e., Health and Daily Living Form; Langner, 1962) and there could have been occupational and gender differences. That is, Billings and Moos's study included men and women in a variety of occupations as well as clerical workers. In addition, other studies have failed to find reliable evidence that the effects of various work demands on depression or job satisfaction are moderated by social support (e.g., Hammer et al., 2004; Pelfrene et al., 2002; Schaubroeck & Fink, 1998). Under conditions of high Work Pressure or high Managerial Control, high Organizational Support would have been expected to buffer the Work Pressure or Managerial Control-
job dissatisfaction and depression relationships. Perhaps high Work Pressure and high Managerial Control did not exceed the capacities of the clerical workers and therefore Organizational Support would not buffer depression or job dissatisfaction. Moreover, the means and standard deviations for Work Pressure and Managerial Control were comparable to Moos’s (1981) reported means and standard deviations and thus, there was no potential for ceiling or floor effects and there was variability among the scores. Furthermore, although coping was not tested, it is possible that coping strategies may have had a mediating or moderating effect on the work demand-job satisfaction and depression relationships. Therefore, in order to better understand the outcomes, job satisfaction and depression, future research should examine the effects of coping strategies on these relationships.

*Mediating Effects of Job Satisfaction*

Job satisfaction was hypothesized to mediate the three WES-S variables (identified through EFA/CFA) and depression. Only Organizational Support had a significant relationship with depression. Therefore, there was no reason to test Work Pressure and Managerial Control further. As hypothesized, the results provided evidence that job satisfaction mediated the relationship between Organizational Support and depression, while controlling for relevant demographic variables (age, education, and marital status) in Sample 1. Folkman and Moskowitz (2000) proposed that positive emotions may interrupt negative rumination and serve as a barrier against depression. Thus, positive emotions, such as job satisfaction, may provide a psychological break for the employee by interrupting the ruminative spiral and preventing the decline into depression.
However, job satisfaction's mediating effect was not detected in Sample 2 because Organizational Support was not related to depression. In Sample 1, there was a significant negative correlation between Organizational Support and depression ($r = -.21, p < .05$); whereas, in Sample 2 it was not significant ($r = -.09, p > .05$). The different results between Sample 1 and Sample 2 were not due to the clerical workers' different characteristics (e.g., clerical workers in Sample 2 worked in the workforce and for their organizations longer). As a consequence, the Organizational Support-depression relationship may vary from sample to sample because of third unmeasured variables or the work stressors may differ by sample. Thus, there is only partial support for the claim that job satisfaction mediates the Organizational Support-depression relationship. Future studies should examine the mediating effect of positive affect on the Organizational Support-depression relationship in the workplace.

Objective Work Environment - Job Satisfaction and Depression Relationships

The extent to which union membership and organizational size predicted job satisfaction and depression were examined from an exploratory perspective because of the lack of empirical evidence and theory to suggest specific predictions. The results of HMR analyses yielded only one significant result: Union membership was associated with greater job dissatisfaction for both samples. Gwartney-Gibbs and Lach (1994) and McKenna (1995, 2000) speculated that union membership may place restrictions on employees, such as the formalized conflict resolution procedures used to deal with grievances in the organization. In contrast, non-union membership may provide workers with opportunities to resolve interpersonal conflicts in different ways. Thus, belonging to a union may place constraints on the nature of interpersonal relationships for female
clerical workers. However, some researchers have pointed out that unions provide employees with a voice and alternative to quitting and that unionized employees may not be genuinely dissatisfied with their jobs but rather proclaim discontent in order to be heard and have their work conditions improved (Bender & Sloane, 1998; Bryson et al., 2004). Bender and Sloane claimed that the positive association between union membership and job dissatisfaction may be due to the relationship between the employees and employers (i.e., industrial relations climate). Thus, future studies should take the industrial relations climate into account when examining the relationship between union membership and job satisfaction for female clerical workers who are experiencing ongoing work stress.

Finally, although clerical workers who were union members were more dissatisfied with their job, union membership was not associated with depression in either sample. However, six of the eight depression outlier cases in Sample 1 that were deleted from the regression analyses were union members (in Sample 2, the two depression outlier cases were non-union members). When the outliers were included in the analyses, union membership was associated with depression (see Appendix K). However, the industrial relations climate was not taken into account, and thus, the relationship between union membership and depression after taking the industrial relations climate into account should be examined further in future studies.

Size of organization was not significantly related to job satisfaction or depression in either sample. This is inconsistent with previous speculations that employees in larger organizations may experience greater psychological distress because of the greater potential to feel alienated and disconnected from others (McKenna, 2000). With job
insecurity being a serious concern for clerical workers (Snow et al., 2003), whether one is employed in a large organization or not may not matter to clerical workers. Just having a job may suffice. In addition, there may be some overlap between size of the organization and union membership in that unions are generally present in larger-sized organizations (McKenna, 1995). However, in the present study, the indicator of organizational size did not independently predict job satisfaction or depression. This may be because the indicator was not operationalized very well. Perhaps with very large typing pools, organizational size could have had an impact on job satisfaction and depression.

**Limitations and Strengths of the Present Study**

A primary limitation of the present study is that the data from both samples of clerical workers are archival; thus, the study is restricted to examining the variables that were assessed. In addition, the two samples were assessed 7 years apart potentially resulting in a history effect. Also, the two female samples examined in the present study were predominantly White. Therefore, it is unclear the extent to which these findings may generalize to different ethnic groups or men. Moreover, the characteristics of the dropouts in Sample 1 (i.e., had more technical training, such as secretarial, legal, and medical training) may limit the findings to clerical workers who have High School and some college and university education. Additionally, the average age of the clerical workers in Sample 1 and Sample 2 were approximately 40 and 42 years, respectively. According to Statistics Canada (1996), the average age of clerical workers is 25 to 34 years. Thus, these results may not generalize to clerical workers in other age groups. Furthermore, although this study was longitudinal in design, with the absence of an experimental control, causal inferences about the work environment-job satisfaction or
depression relationships cannot be made. The results may be prone to alternative causal explanations and to the effects of unmeasured third variables. Moreover, both samples of clerical workers were experiencing ongoing work stress. Thus, the results may not generalize to non-stressed clerical workers. Finally, it must be emphasized that these results are only applicable to female clerical workers who self-reported ongoing work stress.

One of the major strengths of the present study is its longitudinal design. The relationships between the work environment and job satisfaction and depression were tested over a one-month period. Most of the research examining the work environment-psychological well-being and distress relationship has been cross-sectional (e.g., Graham, 2000; Repetti, 1987). Kasl (1998) pointed out that cross-sectional studies have become almost trivial.

The present study strengthened our understanding of the work environment because the WES-S items were neutral in tone, the factorial structure was established first, and specific hypotheses were proposed. Moreover, demographic variables, NA, and appraised severity of the work stressor were statistically controlled for. In addition, the relationships between the WES-S dimensions and job satisfaction and depression were tested on two independent samples of female clerical workers who were experiencing ongoing work stress, thus providing evidence of replicability and strengthening the conclusions drawn.

Another strength is that subjective perceptions of the WES-S (i.e., Organizational Support, Work Pressure, and Managerial Control) were assessed as well as the objective work environment (i.e., size of the organization and union membership) among clerical
workers who were experiencing ongoing work stress. To my knowledge, this is the first study that examined both objective and subjective measures of the work environment.

Most studies that have examined the work environment dimensions—job satisfaction and depression relationships have been limited to examining one or two dimensions of the work environment, which have often been defined differently and assessed using nonstandardized measures (e.g., Karasek et al., 1998). The present study included multiple indicators of the work environment by using the standardized WES-S (Billings & Moos, 1982). As a result, the information gained enhances our understanding of the work environment and its contribution to job satisfaction and depression.

**Implications for Theory and Practice**

The present study has important implications for theory and practice and provided evidence of the replicability and the structural validity of the WES-S (Billings & Moos, 1982). The factorial structure of the WES-S was consistently found at two time periods, assessed one month apart, for both samples of clerical workers. The present findings make an important contribution because the factorial structure of the WES-S had never been established for female clerical workers, a large segment of the workforce. Also, the consistent relationship between Organizational Support and job satisfaction on two different samples suggests that the new WES-S subscale, Organizational Support, has good predictive validity.

In addition, the relationship between Organizational Support and job satisfaction is important to administrators who wish to design a healthy work environment. Ducharme and Martin (2000) claimed that attempts to increase worker integration on a social level (e.g., via company sponsored picnics, parties, and other social activities) could be
important. However, these activities could be even more beneficial if they were combined with efforts aimed at building effective work teams that enhance coworkers' abilities and opportunities to provide on-the-job assistance, advice, and information. Better appreciation of the structure of interactions between workgroup members may guide managers in building work teams with a suitable mix of skills and abilities; in turn, workgroup composition may facilitate a worker's access to the beneficial aspects of practical support when work demands exceed an individual's ability to fulfill his or her job requirements. The results suggest that systematic efforts to promote both affiliative and practical ties with and between employees may enhance worker affect and promote job satisfaction. Thus, the consistent relationship between Organizational Support and job satisfaction illustrates the importance of creating a positive work environment that values and shows respect for the employees' contribution to the organization.

Post-hoc analyses were carried out in order to determine whether the work environment dimensions (i.e., Organizational Support and union membership) were confounded with the appraised severity of the work stressor. Including stressor severity in the model did not change the effects that the work environment dimensions had on job satisfaction and depression. This has important implications for theory because these results suggest that the work environment was independent of stressor severity and supports the neutral nature of the WES-S.

In the present study, female clerical workers were recruited because they were experiencing on-going work stress. This could have attracted women who were high in NA and a ceiling effect could have occurred. However, the data were examined and there was no indication of this. Yet, further studies would benefit from examining the influence
of NA on stressed and non-stressed clerical workers.

Conclusion

Organizational support is important to female clerical workers and consists of job involvement, peer cohesion, supervisor support, autonomy, and clarity. It is a construct that was consistently found over time and for two separate samples of clerical workers who were experiencing ongoing work stress. Thus, an understanding of what aspects of the work environment are associated with job satisfaction and limited information on depression was provided.

The consistent relationship between Organizational Support and job satisfaction lends support for the organizational support theory (Rhoades & Eisenberger, 2002) that suggests narrow conceptualizations of resources may limit the conclusions drawn about their role in work environment-job satisfaction and depression relationships.

The inconsistent results between Organizational Support and depression across both samples needs to be examined further. The results were apparently not due to demographic variables, NA, or the different measures of depression. Also, it cannot be argued that the severity of the work stressor explains why the lack of Organizational Support relates to depression in one sample but not the other. Therefore, the Organizational Support-depression relationship may vary from sample to sample because of third unmeasured variables, a history effect between Sample 1 and Sample 2, or non-work stressors, for example, marital conflicts.

Finally, job satisfaction plays an important role in psychological distress because it accounts for the relationship between low organizational support and depression. Organizational support was not directly related to depression but instead, was enhanced
by job satisfaction. However, this was found only in the first sample of clerical workers
and not the second. Thus, the mediating effect of job satisfaction on the organizational
support-depression relationship needs to be replicated. In addition, further research on job
satisfaction is needed because the research literature tends to examine only negative
emotional responses to the environment and work stress.

The conceptualization of organizational support revealed in the present study
identifies clerical workers who perceive themselves as valued and respected for their
workplace contributions. Organizational support not only includes interpersonal
relationships but also job involvement, autonomy, and clarity and this broader
classification expands our understanding of what makes employees feel more
satisfied at work and what makes them feel valued. The results also revealed that job
satisfaction has the potential to attenuate the relationship between low organizational
support and depression. From a theoretical perspective, researchers need to determine the
mechanism by which job satisfaction mediates the organizational support-depression
relationship. This is important because being valued by the organization predicts job
satisfaction and although not directly related to depression, it is indirectly related through
job satisfaction. Thus, this study provides tentative evidence that the nature of the work
environment, especially organizational support contributes to the psychological well-
being of clerical workers who are experiencing ongoing work stress.
Chapter VII: References


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## Appendix A

1996 Statistics Canada Census Data of Prevalence of Women and Clerical Workers in the Labour Force

<table>
<thead>
<tr>
<th>SOC* Code</th>
<th>Occupation</th>
<th>Both Sexes</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>B21</td>
<td>Secretaries, Recorders and Transcriptionists</td>
<td>402,695 (3% TLF)</td>
<td>395,955 (6% FLF)</td>
</tr>
<tr>
<td>B211</td>
<td>Secretaries (except legal &amp; medical)</td>
<td>317,275</td>
<td>311,835</td>
</tr>
<tr>
<td>B212</td>
<td>Legal Secretaries</td>
<td>36,525</td>
<td>36,045</td>
</tr>
<tr>
<td>B213</td>
<td>Medical Secretaries</td>
<td>43,350</td>
<td>42,920</td>
</tr>
<tr>
<td>B214</td>
<td>Court recorders &amp; medical transcripts</td>
<td>5,545</td>
<td>5,155</td>
</tr>
<tr>
<td>B51</td>
<td>Clerical Occupations, General Office</td>
<td>374,460 (3% TLF)</td>
<td>329,280 (5% FLF)</td>
</tr>
<tr>
<td>B511</td>
<td>General office clerk</td>
<td>207,140</td>
<td>173,175</td>
</tr>
<tr>
<td>B512</td>
<td>Typist and word processing operators</td>
<td>17,490</td>
<td>16,490</td>
</tr>
<tr>
<td>B513</td>
<td>Records and file clerks</td>
<td>24,965</td>
<td>20,630</td>
</tr>
<tr>
<td>B514</td>
<td>Receptionists &amp; Operators</td>
<td>124,865</td>
<td>118,985</td>
</tr>
<tr>
<td>B52</td>
<td>Office Equipment Operators</td>
<td>141,230 (1% TLF)</td>
<td>105,095 (2% FLF)</td>
</tr>
<tr>
<td>B521</td>
<td>Computer operator</td>
<td>30,590</td>
<td>14,360</td>
</tr>
<tr>
<td>B522</td>
<td>Data entry clerk</td>
<td>89,325</td>
<td>73,880</td>
</tr>
<tr>
<td>B523</td>
<td>Typesetters and related occupations</td>
<td>7,715</td>
<td>4,900</td>
</tr>
<tr>
<td>B524</td>
<td>Telephone operators</td>
<td>13,600</td>
<td>11,955</td>
</tr>
<tr>
<td>B53</td>
<td>Finance and Insurance Clerks</td>
<td>470,445 (3% TLF)</td>
<td>396,355 (6% FLF)</td>
</tr>
<tr>
<td>B531</td>
<td>Accounting and related clerks</td>
<td>264,915</td>
<td>219,895</td>
</tr>
<tr>
<td>B532</td>
<td>Payroll clerks</td>
<td>32,830</td>
<td>29,310</td>
</tr>
<tr>
<td>B533</td>
<td>Tellers, financial services</td>
<td>98,940</td>
<td>88,545</td>
</tr>
<tr>
<td>B534</td>
<td>Banking, insurance &amp; other</td>
<td>56,345</td>
<td>46,825</td>
</tr>
<tr>
<td></td>
<td>Financial clerks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B535</td>
<td>Collectors</td>
<td>17,415</td>
<td>11,780</td>
</tr>
<tr>
<td>B54</td>
<td>Administrative Support Clerks</td>
<td>78,835 (1% TLF)</td>
<td>65,770 (1% FLF)</td>
</tr>
<tr>
<td>B541</td>
<td>Administrative clerks</td>
<td>67,975</td>
<td>57,055</td>
</tr>
<tr>
<td>B542</td>
<td>Personnel clerks</td>
<td>8,170</td>
<td>6,545</td>
</tr>
<tr>
<td>B543</td>
<td>Court clerks</td>
<td>2,690</td>
<td>2,170</td>
</tr>
<tr>
<td>B55</td>
<td>Library, Correspondence, &amp; Related Clerks</td>
<td>63,375 (1% TLF)</td>
<td>115,155 (2% FLF)</td>
</tr>
<tr>
<td>B551</td>
<td>Library clerks</td>
<td>12,545</td>
<td>10,385</td>
</tr>
<tr>
<td>B552</td>
<td>Correspondence</td>
<td>7,340</td>
<td>5,430</td>
</tr>
<tr>
<td>B553</td>
<td>Customer Service</td>
<td>114,950</td>
<td>79,085</td>
</tr>
<tr>
<td>B554</td>
<td>Survey interviewers, statistical clerks</td>
<td>28,535</td>
<td>20,245</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SOC* Code</th>
<th>Occupation</th>
<th>Both Sexes</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>B56</td>
<td>Mail</td>
<td>115,685 (1% TLF)</td>
<td>41,890 (1% FLF)</td>
</tr>
<tr>
<td>B561</td>
<td>Mail, postal clerks</td>
<td>41,235</td>
<td>23,645</td>
</tr>
<tr>
<td>B562</td>
<td>Letter carriers</td>
<td>27,920</td>
<td>7,870</td>
</tr>
<tr>
<td>B563</td>
<td>Couriers and messengers</td>
<td>46,530</td>
<td>10,380</td>
</tr>
<tr>
<td>B57</td>
<td>Recording and Distribution</td>
<td>239,215 (2% TLF)</td>
<td>69,550 (1% FLF)</td>
</tr>
<tr>
<td>B571</td>
<td>Shippers and Receivers</td>
<td>116,165</td>
<td>22,920</td>
</tr>
<tr>
<td>B572</td>
<td>Storekeepers and parts clerks</td>
<td>37,565</td>
<td>7,090</td>
</tr>
<tr>
<td>B573</td>
<td>Production clerks</td>
<td>13,565</td>
<td>6,110</td>
</tr>
<tr>
<td>B574</td>
<td>Purchasing and inventory clerks</td>
<td>44,870</td>
<td>21,230</td>
</tr>
<tr>
<td>B575</td>
<td>Dispatchers and radio operators</td>
<td>24,965</td>
<td>11,435</td>
</tr>
<tr>
<td>B576</td>
<td>Transportation route and crew</td>
<td>2,085</td>
<td>760</td>
</tr>
</tbody>
</table>


TLF: Total Labour Force, both sexes.
FLF: Total Female Labour Force.
Appendix B
Sample Items of the Shortened Work Environment Scale - Real Form (Billings & Moos, 1982)

Involvement Subscale:
Item 1. The work is really challenging.

Peer Cohesion Subscale:
Item 2. People go out of their way to help a new employee feel comfortable.

Supervisor Support Subscale:
Item 10. Supervisors usually compliment an employee who does something well.

Autonomy Subscale:
Item 11. Employees have a great deal of freedom to do as they like.

Work Pressure Subscale:
Item 5. There is constant pressure to keep working.

Clarity Subscale:
Item 13. Activities are well planned.

Managerial Control Subscale:
Item 7. There's a strict emphasis on following policies and regulations.

“Modified and reproduced by special permission of the Publisher, CPP, Inc., Palo Alto, CA 94303 from Work Environment Scale Form-R by Rudolf H. Moos. Copyright 1974 by CPP, Inc. All rights reserved. Further reproduction is prohibited without the Publisher’s written consent.”
### Moos's (1981) Work Environment Scale: Subscale and Dimension Descriptions

<table>
<thead>
<tr>
<th>Subscales</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relationship Dimension</strong></td>
<td></td>
</tr>
<tr>
<td>Involvement</td>
<td>The extent to which employees are concerned and committed to their job.</td>
</tr>
<tr>
<td>Peer cohesion</td>
<td>The extent to which coworkers are friendly and supportive of each other.</td>
</tr>
<tr>
<td>Supervisor support</td>
<td>The extent to which supervisors are supportive of employees and encourage employees to be supportive of each other.</td>
</tr>
<tr>
<td><strong>Personal Growth or Goal Orientation Dimension</strong></td>
<td></td>
</tr>
<tr>
<td>Autonomy</td>
<td>The extent to which employees are encouraged to be self-sufficient and to make their own decisions.</td>
</tr>
<tr>
<td>Task orientation</td>
<td>The extent to which good planning, efficiency and getting the job done is emphasized.</td>
</tr>
<tr>
<td>Work pressure</td>
<td>The extent to which the pressure of work and time urgency dominate the work environment.</td>
</tr>
<tr>
<td><strong>System Maintenance and Change Dimension</strong></td>
<td></td>
</tr>
<tr>
<td>Clarity</td>
<td>The extent to which employees know what to expect in their daily routine (regarding the work and criteria for adequate performance), and how explicitly rules and policies are communicated.</td>
</tr>
<tr>
<td>Managerial control</td>
<td>The extent to which management uses rules and pressures to keep employees under control.</td>
</tr>
<tr>
<td>Innovation</td>
<td>The extent to which variety, change, and new approaches are emphasized.</td>
</tr>
<tr>
<td>Physical comfort</td>
<td>The extent to which the physical surroundings contribute to a pleasant work environment.</td>
</tr>
</tbody>
</table>

*Not present in the WES-S.*
Appendix D

Modification Indices and Standardized Residuals for Model 1

Based on the evidence (i.e., goodness of fit indices, $R^2$, construct reliabilities, average variance extracted, and unstandardized parameter estimates), the two-factor model (i.e., social resources and work demands; Billings & Moos, 1982) did not fit the data. If Model 1 (see Figure 1) were to be modified, the modification indices and standardized residuals would suggest the following:

The largest modification index (MI) was 37.02 between lack of clarity and managerial control. Similarly large MIs were found for lack of autonomy and managerial control ($MI=16.44$) and for job involvement and work pressure ($MI=19.73$). According to Hoyle (1995), MIs provide information about the amount of $X^2$ change that would result if parameters that were formerly fixed were set free in a specified model. Large MIs (i.e., > 9) indicate that the model would fit the data better if the corresponding parameters were introduced into the model.

Consistent with the above findings, there were a number of large residuals (i.e., > 3). Large standardized residuals occurred between (a) lack of clarity and managerial control (-6.08), (b) work pressure and job involvement (4.39), and, (c) managerial control and lack of autonomy (4.05). Standardized residuals reflect the difference between the hypothesized and observed variable correlations; large standardized residuals indicate that adjustments to specified paths would result in a better fitting model. However, because the model was not exploratory in nature, modifications to the model were not performed. Thus, Model 2 was tested in order to determine if Moos’s (1981) three-factor structure best fit the data for clerical workers.
Appendix E

Modification Indices and Standardized Residuals for Model 2

Based on the evidence (i.e., goodness of fit indices, $R^2$, construct reliabilities, average variance extracted, and unstandardized parameter estimates), the three-factor model (i.e., relationship, personal growth, and SMC; Moos, 1981) did not adequately fit the data. If the three-factor model (see Figure 1) described in Model 2 were to be modified, modification indices and the standardized residuals would suggest the following: The largest $MI$ was 57.91 between LCL and LCLL. Similarly, large $MIs$ (i.e., $>9$) were found for job involvement and work pressure ($MI=17.00$), LAU and managerial control ($MI=15.94$), LCL and managerial control ($MI=14.82$), and supervisor support and work pressure ($MI=9.97$).

There were also a number of large standardized residuals (i.e., $>3$) produced from the three-factor model. Large negative standardized residuals occurred between (a) LAU and managerial control (-7.91), (b) supervisor support and managerial control (-7.14), (c) job involvement and managerial control (-5.73), (d) peer cohesion and managerial control (-4.99), (e) LCL and managerial control (-3.85), and (f) supervisor support and work pressure (-3.43). Large positive standardized residuals occurred between (a) LAU and managerial control (7.91), (b) work pressure and managerial control (3.27), (c) LAUU and managerial control (4.84), (d) job involvement and work pressure (3.35), and (e) work pressure and managerial control (3.20). However because the model was not exploratory in nature, modifications to the model were not performed. Thus, Model 3 was tested to determine if a single-overarching structure best fit the data for clerical workers.
Appendix F

Modification Indices and Standardized Residuals for Model 3

Based on the evidence (i.e., goodness of fit indices, $R^2$, construct reliabilities, average variance extracted, and unstandardized parameter estimates), the single overarching factor model (i.e., Work Environment; Johnson, 1989) did not fit the data (see Figure 1). If the single-factor model described in Model 3 were to be modified, the modification indices and standardized residuals would suggest the following:

The largest $MI$ was 42.15 between clarity and managerial control. A large $MI$ (i.e., $>9$) was also found for job involvement and work pressure ($MI=17.93$). Consistent with the above findings, there were large positive residuals (i.e., $>3$) between clarity and managerial control (6.49) and job involvement and work pressure (4.23). Standardized residuals reflect the difference between the hypothesized and observed variable correlations; large standardized residuals indicate that adjustments to specified paths would result in a better fitting model. However, because the model was not exploratory in nature, modifications to the model were not performed.
Appendix G

Post-Hoc EFA and CFA of the 63 WES-S Items.

Using SPSS 9.0 (1998), EFA was used to force the 63 WES-S items (Moos, 1981) into seven factors using the ML estimation method and the varimax factor rotation procedure. Bryant and Yarnold (1995) recommended that eigenvalues larger than 1.00 be used to determine whether dimensions load on a particular factor, however in this instance, values less than .30 were suppressed in order to identify an interpretable orthogonal factor solution. They also recommended that the scree plot be examined as another way to identify factors. In addition, the amount of variance accounted for by the factors was examined.

The results indicated that the various indicators of factorability were good (i.e., eigenvalues > 1). Seven factors with an eigenvalue greater than .30 were found and together they explained approximately 45% of the variance. The scree plot also indicated seven factors. This provides support for Moos’s (1981) conceptualization of seven work environment subscales.

Based on the Rotated Factor Matrix, there were a large number of aberrant items and some items did not load on any factors. Factor 1 contained items from job involvement, peer cohesion, supervisor support, and autonomy subscales and seemed to represent personal connections with coworkers and supervisors. However, some of the factors were more consistent with the WES-S subscales. That is, Factor 2 contained items mostly from the clarity subscale; Factor 3 contained items mostly from the work pressure subscale; and, Factor 4 contained items mostly from the managerial control subscale. Factor 5 was also made up of managerial control items but they seemed to represent more
of an emphasis on rules and regulations. Factor 6 was made up of autonomy items; and, Factor 7 was made up of job involvement items.

The WES-S subscales were not developed by means of factor analysis, thus it was possible that the items do not adequately reflect the subscale they are intended to represent. The EFA results indicated that the subscales contained items that loaded highly on other scales. Thus, the three highest loadings for each factor (listed in Appendix L) were taken and new scales were created in order to obtain a purer measure of Moos's (1981) WES-S subscales. Then, CFA was performed again on the purer measures of the WES-S. That is, Models 1 (i.e., two-factor model), 2 (three-factor model), and 3 (single-factor model) were analyzed again using CFA to determine whether one of these models would emerge as the best fitting model using purer measures of the WES-S. Evidence from the $X^2$ and fit statistics indicated that none of the models were a good fit of the data. See Table 8 for Model $1^c$, Model $2^c$, and Model $3^c$.

I carried out another approach to determine the extent to which the WES-S items would load on their respective scales using CFA. The $MIs$ were examined to determine whether some items loaded more highly on other subscales and would need to be deleted. Most of the items still contributed to their own scales but they also contributed to other scales. As a result, items that also contributed to other scales were systematically removed. Then, new scales were created from the retained items. CFA was performed again, testing Models 1, 2, and 3 using the revised scales with items removed. Again, based on the results of the $X^2$ and fit statistics, none of the models provided a good fit of the data. See Table 8 for Model $1^d$, Model $2^d$, Model $3^d$. Thus, it was decided that the subscales would remain the same and include all of their items in further analyses.
The results of the EFA and CFA suggested that whether the WES-S subscales contained all of their respective items or not, none of the models provided an adequate fit of the data. An examination of the item frequencies indicated that all of the items discriminated well enough for this population. Although some items were weak ($r<.02$), there were only a few, thus they were retained and not deleted. The extent to which the items correlated with their respective scales was also examined. Each item was significantly correlated with its respective subscale. Although some items did not strongly correlate ($r=.30$ range) with their respective subscales (i.e., item 38 and supervisor support subscale; item 60 and autonomy subscale, item 62 and clarity subscale; and, item 63 with the managerial control subscale), there were only a few, they were still significantly correlated, and thus, were retained in the analyses.
Appendix H

*Post-Hoc EFA: Three Items on Each Factor with the Highest Loadings (N=223)*

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*Note.* Factor 1 contains peer cohesion and supervisor support items. Factor 2 contains lack of clarity items; Factor 3 work pressure items; Factor 4 contains managerial control items; Factor 5 also contains managerial control items but they seemed to represent more of an emphasis on rules and regulations. Factor 6 contains lack of autonomy items; and, Factor 7 contains job involvement items. See Appendix B for a list of sample items.
Appendix I

Post-Hoc HMR Analyses with Severity of Work Stressor Controlled (Sample 1 and Sample 2)

Post-hoc HMR analyses were carried out in order to determine whether the WES-S variables were confounded with the appraised severity of the work stressor. The HMR analyses were repeated on Sample 1 (N=223) and Sample 2 (N=207) and in this instance the severity of the work stressor was included in the model. Participants were asked how severe or upsetting the work stressor was on a five-point scale ranging from (1) not very to (5) extremely. The scores ranged from 1 to 5. The means and standard deviations were Ms=3.49 and 3.77; and, SDs=1.00 and .97; respectively for Sample 1 and Sample 2. The severity of the work stressor was entered in the first block of the HMR analyses as a way to control for the severity of the work stressor. The results were similar to when work stressor severity was not statistically controlled for. When work stressor severity was statistically controlled for, Organizational Support was significantly positively related to job satisfaction in Sample 1 and Sample 2 and negatively related to depression in Sample 1. Non-union membership was significantly associated with job satisfaction in Sample 1 and Sample 2 and positively related to depression in Sample 1. Also, the non-significant interactions between Organizational Support and Work Pressure and Organizational Support and Managerial Control on job satisfaction and depression did not change. Including the work stressor severity variable in the model did not remove the effects that the work environment variables (i.e., Organizational Support and union membership) had on job satisfaction and depression. This suggests that the work environment was independent of severity of work stressor.
Appendix J

Post-Hoc HMR Analyses with Additional Demographic Variables Controlled (Sample 1 and Sample 2)

Post-hoc HMR analyses were carried out to determine whether the significantly different demographic characteristics between Sample 1 and Sample 2 accounted for why Organizational Support predicted depression in Sample 1 but not in Sample 2. The HMR analyses were repeated on Sample 1 (N=223) and Sample 2 (N=207) and in this instance parental status (0=no children, 1=one or more children), number of years in the work force, education (0=High School, 1=College, University, and specialized technical training), and number of years with the organization were statistically controlled for (in addition to age, marital status, and NA that were originally statistically controlled for). The demographic variables were entered in the first block of the HMR analyses as a way of statistically controlling for their potential effects on depression. The results were similar to when they were not statistically controlled for. When all of the demographic variables were statistically controlled for, Organizational Support was significantly negatively related to depression in Sample 1 but not Sample 2. The non-significant relationship between the objective work environment and depression and the non-significant interactions between Organizational Support and Work Pressure and Organizational Support and Managerial Control on depression did not change. This suggests that perhaps an unmeasured third variable may account for why Organizational Support predicts depression in Sample 1 and not in Sample 2.
Appendix K

Post-Hoc HMR Analyses with Depression Outlier Cases Included in the Analyses

(Sample 1 and Sample 2)

Post-hoc analyses were carried out to determine the extent to which the univariate outlier cases for depression had an impact on the regression solutions. The HMR analyses were repeated without deleting the outlier cases for both samples. The results were relatively the same as when the outliers were deleted. That is, in Sample 1 when the eight univariate outlier cases (6 of the 8 cases were union members) associated with depression were included in the analysis, as a block the work environment variables (Organizational Support, Work Pressure, and Managerial Control), accounted for an additional 6% of the variance in depression, $R^2 = .06$, $F(3, 215) = 5.05, p < .01$, over and above what was accounted for by age, marital status, and the objective work setting variables. Singly, there was a significant negative relationship between Organizational Support and depression ($\beta = -1.78, p < .01$) and a significant negative relationship between age and depression ($\beta = -1.32, p < .01$). However, marital status was no longer significantly associated with depression, $p > .07$. Thus, the inclusion of outlier cases in the analysis removed the effects of marital status on depression.

In Sample 2, when the two univariate outlier cases (non-union members) associated with depression were included in the analysis, as a block, the work environment variables (Organizational Support, Work Pressure, and Managerial Control) did not account for any additional variance in depression, after controlling for age, marital status, NA, and the objective work setting variables, $p > .33$. Singly, there was a significant positive relationship between age and depression ($\beta = 1.46, p < .03$) and NA and
depression ($\beta = 5.15, p<.01$). The exception was that there was a statistically significant positive relationship between union membership and depression when the outliers were included in the analysis ($\beta = 3.59, p<.05$), suggesting that union membership was associated with greater depression. Thus, the deletion of outlier cases in the analysis removed the effects of union membership on depression.