KYOUNG-OK PARK
The Effects of Social Support at Work on Job Demands, Job Control, Depression,
    Job Performance, and Absenteeism
(Under the direction of Dr. MARK WILSON)

Depression is a growing issue in work stress research because work stressors are closely related to depression and depression, in turn, affects organizational loss. Considering such subsequent causal relationships within a work stress framework, some powerful and comprehensive source to prevent work stress is needed for worksite health promotion. It is well documented that social support at work has direct and indirect beneficial effects on the work stress framework. However, there have been few studies examining the comprehensive effects of social support on a work stress process and its outcomes.

This study examined how social support affected workers' depression and related organizational outcomes. The participants were 240 workers employed in a public hospital in Georgia. Self-administered questionnaires were distributed to employees with their pay slips followed by eight reminders over a 20-day period. The response rate was 31%. The questionnaires asked about job demands, job control, social support at work, depression, job performance, absenteeism, and demographics. The social support construct was measured by who supported at work and what kinds of support were provided. Statistical analyses were conducted using the structural equation modeling approach in LISREL version 8.5.

Social support at work was directly related to high job control, low depression, and high job performance. However, social support did not buffer the negative effects of work factors on depression and related organizational outcomes. By source of support,

only organizational support was positively related to high job control. Organizational

support was more effective than supervisor and coworker support by source of support.

Any stressors and their outcomes were not different by what kinds of support they had at

work. This result indicated that job control was influenced more by who supported them

rather than what kinds of support they had at work and the most efficient source of

support was organization. In summary, social support at work had positive effects on job

control, depression, and job performance. Organizational support was a strong factor in

improving workers' perceived controllability on the job.

INDEX WORDS: Hospital workers, Social support at work, Work stress, Depression,

Job performance, Absenteeism, Job demands, Job control,

The demand-control-support model, Source of support,

The framework of occupational stress, Function of support,

Main effect, Interaction effect, Structural equation modeling

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CONTROL, DEPRESSION, JOB PERFORMANCE, AND ABSENTEEISM

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This dissertation is dedicated to

God in heaven, Jesus Christ, and the Holy spirit.

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This dissertation is absolutely not the best academic piece but just a small academic piece. However, I dare to dedicate this dissertation to God because this is my first piece that I did my best in Jesus' name. I sincerely hope this dissertation pleases my God.

"A new command I give you: Love one another.

As I have loved you, so you must love one another".

(John 13:34)

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CHAPTER 1

INTRODUCTION

It is well documented that social support at work has diverse beneficial effects on reducing both causes and effects of work stress (Cohen, 1988; House, 1981). Theoretically, beneficial effects of social support at work on work stress have been emphasized in two representative work stress models: Karasek's (1979) demand-control-support model and House's framework of occupational stress. These two work stress models have also strongly been supported in empirical research in terms of their predictability of work stress outcomes (Baker, Israel, & Schurman, 1996; Theorell & Karasek, 1996).

In recent years, numerous intervention programs to reduce work stress have been conducted because medical cost related to work stress is rapidly growing (Sauter, Murphy, & Hurrell, 1990). In particular, depression, a psychological outcome of work stress, is a leading cause of work disability and induces major organizational loss due to high medical cost, high absenteeism, and poor job performance (Conti & Burton, 1994). Accordingly, comprehensive stress prevention strategies should be developed to manage the entire work stress process covering work stressors, strains, and diverse outcomes not just some causes or outcomes. Thus, it is worthwhile to study the diverse effects and characteristics of social support affecting work stress for the work stress prevention.

Significance and Background

Work stress comprises the main body of occupational health research because recent studies have reported that work stress is related to organizational productivity loss

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as well as to physical and psychological strains (Brook & Price, 1989; Goodwin, 1992; Iverson, Olekalns, & Erwin, 1998). In relation to work stress, depression, absenteeism, and job performance are the main sources of organizational productivity loss. These stress outcomes are also correlated with each other (Dwyer & Ganster, 1991).

Depression is a serious and prevalent psychological outcome related to work stress. The prevalence rate of major depression among workers in the United States is approximately 9.5%, and adults' experience of depression has tripled in the last thirty years (Narrow, 1998). Furthermore, depression has higher rates of relapse to disability status than any other common chronic medical conditions in the working population (Conti & Burton, 1994).

Depression is a primary mental health problem itself and is also related to organizational outcomes such as absenteeism and job performance (Conti & Burton, 1994). Greenberg, Kessler, Nells, Finkelstein, and Berndt (1996) reported that the annual salary-equivalent cost of depression due to work loss and work cutback in the U.S. labor force is over $40 billion per year. More than half of the depression cost arises from the cost of increased absenteeism (Eaton, Anthony, Mandel, & Garrison, 1990; Kessler et al., 1999). Depression also decreases job performance because depressed workers can not fully concentrate on their job. Thus, depression not only increases medical cost and absent days for the treatments but also decreases job performance. This indicates that within a work stress process, psychological outcomes and organizational outcomes are closely correlated with each other (Dwyer & Ganster, 1991; Hurrell & Murphy, 1996; Iverson, Olekalns, & Erwin, 1998; Kristensen, 1991).

The demand-control-support model (Karasek, 1979) successfully explains what the major drivers of work stress are and how much they affect mental and physical illness. Karasek divided job contents into two components: job demands and job control. Interaction of the extent to which workers are able to exert control over their work and actual demands at work determines the level of work stress and the outcomes of work

stress in this model (Karasek & Theorell, 1990). Karasek regarded social support at work as an important work environment factor modifying the negative effects of job demands and job control on strains in the worksite. Karasek found that the interaction of those three components affected depression more than any other psychological strains. The effects of social support on stress have also been well documented in other organizational studies (Schecher, Green, Olson, Druse, & Cargo, 1997). House (1981) proposed an entire work stress framework for researchers conducting work stress prevention programs. House's framework shows a whole process of work stress and emphasizes the beneficial role of social support at work on the work stress process. In both the demand-control-support model and the House's framework, social support at work not only directly reduces work stressors, strains, and outcomes, but also buffers the effects of work stress on outcomes.

Social support at work can be a powerful source of work stress intervention. One of the greatest strengths of stress prevention using social support is that social support at work has comprehensive beneficial effects on the entire work stress process and its outcomes (Israel, Schurman, & House, 1989), whereas most other stress prevention programs attempt to reduce or relieve strains through education in stress coping methods or muscle therapy (Murphy, 1996). Social support at work can alleviate depression both by increasing support itself, by strengthening perceived control, by providing solutions to problems, and by increasing emotional attention from other people at work (Dwyer & Ganster, 1991). Few studies, however, have comprehensively examined how social support at work affects the relationship between the psychological work stress process and organizational outcomes. Furthermore, few studies have examined what characteristics of social support at work are more effective in reducing work stress and negative organizational outcomes. Most work stress studies examined only part of how social support affected the work stress process or how social support affected part of the work stress process (Cahill & Landsbergis, 1996; Eisenberger, Cummings, Armeli, &

Lynch, 1997; Heaney, Israel, Schurman, Baker, House, & Hugentobler, 1993; Kline & Snow, 1994; Terborg, Hibbard, & Glasgow, 1995). Moreover, studies examining the effects of social support on organizational outcomes in relation to work stress are still rare.

Accordingly, identifying the comprehensive effects of social support at work on work stress is important in a work stress prevention perspective. If a study specifies characteristics of social support affecting the work stress process, examines effects of social support in a framework based on a theoretical model, and includes organizational outcomes into the framework, this study will supply efficient information for developing work stress prevention programs.

Problem Statement

The main purpose of the study was to identify the effects of social support at work on job demands, job control, depression, job performance, and absenteeism. Specifically, this study (1) examined how social support at work affects job demands, job control, depression, job performance, and absenteeism, and (2) identified which characteristics of social support at work affect perceived job demands, job control, depression, job performance, and absenteeism.

Research questions and hypotheses were as follows.

Q1: How does social support at work affect job demands, job control, depression, job performance, and absenteeism?

H_1: Social support at work directly affects job demands, job control, depression, job performance, and absenteeism (the main effect).

H_2: Social support at work buffers the path between job demands, job control, depression, job performance, and absenteeism (the interaction effect).

Q2: What characteristics of social support at work are closely related to job demands, job control, depression, job performance, and absenteeism?

H_3: Effects of support at work on job demands, job control, depression, performance, and absenteeism are different by source of support.

H_4: Effects of social support at work on job demands, job control, depression, job performance, and absenteeism are different by function of support.

CHAPTER 2

LITERATURE REVIEW

This chapter indicates the general meanings of social support and depression and reviews the relationships between work stress and social support at work based on theoretical models and empirical research. *Social Support at Work* defines general meanings of social support and describes two major characteristics of social support at work. *Depression and Work* describes the general meaning of depression and the significance of depression at work. *Two Work Stress Models Related to Social Support* points out two representative work stress models: the demand-control-support model (Karasek, 1979) and the framework of occupational stress (House, 1981). These two models contributed to building the work stress framework for this study. *Relationships Between Work Stressors, Depression, Job Performance, and Absenteeism* summarizes findings of empirical research on work stressors, depression, job performance, and absenteeism. *Effects of Social Support at Work on Work Stressors, Depression, Job Performance, and Absenteeism* describes diverse effects of social support at work on work stress.

Social Support at Work

Definition of Social Support

Caplan (1974) suggests that social support systems consist of "continuing social aggregates that provide individuals with opportunities for feedback about themselves and validations of their expectations of others." Lin, Simeone, Ensel, and Kuo (1979) identify social support with social networks or social environments. They define social support as support accessible to an individual through social ties with other individuals, groups, and the larger community. House (1981) defines social support as an interpersonal transaction involving one or more of the following: (1) emotional concern

(liking, love, and empathy), (2) material aid (goods or services), (3) information (about the environment), or (4) appraisal (information relevant to self-evaluation). Summarizing the various definitions of social support, social support is perceived support from one's interpersonal networks in solving one's problems or in improving one's well-being.

It has been hypothesized that support has positive functions on stressors and strain. Stressors and strains vary in the types of adaptational demands they make, and the various characteristics of social support differ with respect to the type of adaptational demands they can moderate. That is, definitions of social support have been based on the assumption that social support is effective in minimizing the negative effects of stressors and strains when there is congruence between adaptational demands of stress at work and characteristics of social support (Wilcox & Vernberg, 1985). Thus, determining characteristics of social support which are associated with stress can be a key point in minimizing stress effects on health and productivity at work. Source and function are primary characteristics of social support (House, 1981).

Source and Function of Social support at Work

Source of social support concerns who provides social support. House (1981) indicates that sources of support include the major individuals and groups that might provide support to the people in need. Supervisor support and coworker support have frequently been measured as sources of social support at work (Israel, House, Schurman, Heaney, & Mero, 1989). House also indicated that supervisors were a more effective source of support than coworkers in reducing work stress and buffering the impact of work stress on outcomes because cohesive interaction with coworkers was limited. Limited interaction with coworkers is a common feature of many industrial jobs such as assembly-line jobs and service jobs (Larocco, House, & French, 1980). Coworkers are in similar working conditions to each other and have less power to solve their stressful conditions than supervisors. Therefore, supervisors are more able to supply appropriate support at the proper time.

House (1981) discusses that supervisor support is affected by what the organization has, especially, management styles, advocate, value, and reward. Sustained changes in supervisory or managerial behavior, including increased emphasis on social support, are likely to occur only in the context of broad organizational participation in support. Hutchison and Garstika (1996) also mention that employees view actions taken by agents or supervisors of an organization as representative of actions of the organization itself. They describe this process as *personification* of the organization. That is, workers' satisfaction with work support affects employees' general feeling of how much their organization takes care of them. The structures of the organization and the jobs within it also have a strong influence on coworker support. In a study of factory workers, coworker support had little influence on stress and health because of the highly individuated structure of work in that factory (House & Wills, 1978). Factory workers who work independently of others tend to report lower coworker support than other workers. Thus, levels of coworker support are also limited by the type of work in addition to the values and climates of the organization (Armeli, Eisenberger, Fasolo, & Lynch, 1998; Eisenberger, Cummings, Armeli, & Lynch, 1997; Hutchison, 1997).

Function of social support is one of the most frequently measured characteristics of social support (Cohen & Wills, 1985). Function of social support means the kinds of social support that people receive. House (1981) suggested that the main functions of social support were emotional support, material support, informational support, and appraisal support. He assumed that all four functions of support should be considered as potential forms of support, and their different impacts on stress and stress outcomes should be studied more.

Emotional support involves providing empathy, caring, love, and trust. The impacts of emotional support on stress and health are relatively clearer than those of other functions of support (Cohen & Hoberman, 1983; Schaefer, Coyne, & Lazarus, 1981; Stansfeld, Bosma, Hemingway, & Marmot, 1998). Gottlieb (1978) found that individuals

thought mainly of emotional support when they thought of people being 'supportive' toward them and felt thankful for emotional support without feeling burdened by the need to do something for the support that they received. Material support consists of aid in money, labor, and time. Material support is more clearly distinguished from emotional support than from other functions of support because instrumental helping behaviors directly support something the person needs (House, 1981). However, material support also has fundamental psychological consequences. For example, giving a person money can be a sign of caring or a source of feedback. Informational support means providing a person with information that the person can use in coping with personal and environmental problems. It is difficult to clearly differentiate between appraisal support and informational support because appraisal support and informational support involve only transmission of information rather than affection involved in emotional support or the practical aid involved in material support (Wilcox & Vernberg, 1985).

Depression and Work

<u>Definition of Depression</u>

Depression is described in terms of symptoms and types of depression. Depressive symptoms consist of sad mood, loss of interest in activities that were once enjoyed, change in appetite or weight, difficulty sleeping or oversleeping, physical slowing or agitation, energy loss, feelings of worthlessness or inappropriate guilt, difficulty thinking or concentrating, and recurrent thoughts of death or suicide (National Institute of Mental Health, 2001). Although most psychological strains of sadness, loss, or anger are temporary, depression is persistent and can interfere significantly with an individual's ability to function (Birmaher & Ryan, 1996).

There are three types of clinical depression: major depressive disorder, dysthymic disorder, and bipolar disorder. These disorders have almost the same depressive symptoms but the severity and the pattern are different from each other. A major depressive disorder is diagnosed if a person has five or more of the depressive symptoms

almost every day during a two-week period. A dysthymic disorder is more chronic but less severe than a major depressive disorder. People who have a dysthemic disorder experience a depressed mood persisting for at least two years with at least two other depressive symptoms. In a bipolar disorder, depression alternates with mania, which is characterized by abnormally and persistently elevated mood or irritability. The symptoms include overly-inflated self-esteem, decreased need for sleep, increased talkativeness, racing thoughts, distractibility, physical agitation, and excessive risk taking (National Institute of Mental Health, 2001). Generally, in this study, depression indicates depressive symptoms not clinical depressive disorders diagnosed by doctors.

Significance of Depression at Work

The prevalence of major depression among workers in the United States is approximately 9.5%. There are 18.8 million adults who have depressive disorders (Narrow, 1998), and the nationwide prevalence ranges from 5 to 10% (Conti & Burton, 1994). By gender, the prevalence of depression among female workers (12%) is almost twice that of male workers (7%) and many women experiencing depressive disorders belong to the active working ages between the ages of 27 and 46 (Conti & Burton, 1994). Depression becomes a significant health issue among working women.

Depression has higher rates of short-term disability and relapse to disability status than any other common medical conditions in the working population (Conti & Burton, 1994). In a study of depression conducted in a large financial company, the disability days for depression were greater than disability days for heart disease, lower back pain, and diabetes mellitus. Furthermore, regarding 12-month recidivism of short-term disability, depression showed 26% higher rates of relapse than diabetes mellitus. Additionally, the relapse rate of short-term disability due to depression was higher than the relapse rates of heart disease, back pain, and blood pressure (Conti & Burton, 1994). Thus, depression not only produces longer disability periods than common chronic medical conditions, but also shows a higher rate of relapse to disability status.

Absenteeism and job performance are major issues related to depression in the workforce. Greenberg, Kessler, Nells, Finkelstein, and Berndt (1996) estimated that the annual salary-equivalent cost of depression due to work loss and work cutback in the US labor force is $44 billion per year. Of this $44 billion, $24.5 billion was caused by costs of increased absenteeism (Kessler et al., 1999). Other factors in the total cost include losses arising from decreased productivity due to increased work loss and medical costs related to safety risks, accidents, and suicide. More than half of the total cost of depression in an organization results from increased absenteeism (Eaton, Anthony, Mandel, & Garrison, 1990). Cartwright, Cooper, and Murphy (1995) reported that 30 to 40 percent of all sickness absence from work was attributable to depressive symptoms. Kessler and colleagues (1999) in a nationwide study reported that depressed workers had between 1.5 and 3.2 more short-term disability days per month than those without depression; these differences resulted in a salary equivalent productivity loss of $182 to $395 per month. They found that the salary equivalent productivity loss due to absent days was at least half of the total cost of depression to organizations. They also suggested that between 45% and 98% of the total cost of depression for the US workforce would be offset by increased work productivity associated with symptom remission.

Depression also affects job performance although unlike absenteeism, the cost of depression due to decreased job performance has little been reported. However, depressive symptoms decrease personal performance at work because motivation to work is decreased and depressed workers do not fully concentrate on their work (Grunberg, Anderson-Connolly, & Greenberg, 2000). Thus, in terms of absenteeism and job performance, depression induces not only visible but also invisible organizational problems at work. There are many empirical studies reporting significant relationships between depression and job performance. This relationship is discussed in detail in the next literature review section.

The reason why work and life might cause depression is *stress*. Brown and Harris (1978) identify stress as the discrepancy between the demands of life situations and the capacity of the individual or group to deal with them comfortably (Eaton, Anthony, Mandel, & Garrison, 1990). Continuous exposure to stressors at work and stressful life events are major triggers of clinical depression in susceptible individuals (National Institute of Mental Health, 2001). Karasek (1979) found that job demands and job control were the most significant work contents affecting depression in a nation-wide study. Job demands and job control in Karasek's study included most negative aspects of daily work life. Job demands included workload, job complexity, job conflict, and job ambiguity, role clarity, and interpersonal relationships at work. Job control was comprised of decision making latitude, task variety, job autonomy, and work schedule (Karasek & Theorell, 1990). Maciejewski, Prigerson, and Mazure (2000), using data from the longitudinal 'Americans' Changing Lives Study,' found that serious life events significantly increased adults' depressive symptoms. The stressful life events affecting depressive symptoms consisted of the death of a child, death of a spouse, death of a parent, death of a close friend or relative, divorce, move to a new residence, loss of job, a serious financial problem, physical attack, and life-threatening illness or injury. These stressful events both in work and life are major determinants of depression.

Two Work Stress Models Related to Social Support

There are two work stress models that have predominantly been applied to work stress research: Karasek's demand-control-support model (Karasek, 1979) and the framework of occupational stress (House, 1981). These two models have greatly contributed to predicting the relationship between work stress and social support.

The Demand-Control-Support Model (Karasek, 1979)

Karasek (1979) developed the job demands and control model from depression data of 911 employees in the U.S. Department of Labor's Quality of Employment Survey (QES) in 1969, 1972, and 1977. He found that depressive symptoms had a specific

patterned distribution with the interaction effects between job demands and job control. Findings of depression were the most prominent and basic empirical evidence of the job demands and control model because the job demands and control model predicted workers' depressive symptoms better than other strains in the nationwide study.

The job demands and control model primarily deals with the work content as a major source of stress. Karasek (1979) divided job content into two components in terms of what I should do (job demands) and what I can do for the demands (job control) at work (Theorell, 1998). He also conceptualized that the two constructs interacted each other affecting workers' mental and physical health. From the QES research, Karasek recognized the beneficial role of social support on the interaction of job demands and job control as well as on health outcomes. Karasek accepted that social interaction was obviously a major component of health and behavioral reactions. He expanded the original job demands and control model to the demand-control-support model including social support as a third construct affecting health outcomes. Accordingly, the demand-control-support model (Karasek, 1979) is the modified version of the job demands and control model. It is clear that changes in social relations between workers and changes in decision latitude are almost inseparable strategies when the job demands and control model is applied to job redesign (Karasek & Theorell, 1990). This linkage has led House (1981) to refer to "participatory work design processes" as a combination of job control and social support changes, implying that social support at work can enlarge the latitude of job control and beneficially affect psychological strain in the same direction as job control.

Job demands are the demands that are required when carrying out a job. Job demands are natural at work, but job demands become stressors if they exceed workers'

control over them. Karasek (1979) operationalizes job demands in the sense of psychological stressors at work such as requirements for working fast and hard, heavy workload, not having enough time, and having conflicting demands. The concept of job control has been discussed in organizational research broadly in terms of participation in decision-making and job design (Spector, 1986). Karasek (1979) defines job control as the working individual's potential control over his tasks and his conduct during the working days. He regards job control as workers' latitude to control diverse job demands. Karasek calls job control "decision latitude."

The job demands and control model has a major hypothesis, which is that four distinctly different kinds of psychological work experience are generated by the interactions of job demands and job control. The four psychological work experiences are high strain jobs (high demands and low control), low strain jobs (low demands and high control), active jobs (high demands and high control), and passive jobs (low demands and low control). The main hypothesis is that the lowest levels of psychological well-being and the highest level of symptoms and diseases are to be found in the high strain group (Kristensen, 1991). Karasek hypothesized that job demands were not in themselves harmful, but when combined with low employee control, these demands could lead to the development of psychological strain. Accordingly, active jobs raise just average level of strain because much of the energy arisen by many stressors of the active jobs is translated into action through effective problem solving, so there is little residual strain to cause disturbance, and psychological strain from active jobs is similar to that from passive jobs (Karasek & Theorell, 1990). Thus, Karasek implies that job control is a primary construct in handling demands at work and stress outcomes.

In some ways, the job demands and control model was a narrowing and specification of environmental demands and worker's abilities in the person-environment fit theory (Koslowsky, 1998). According to the person-environment fit theory (Edwards, Caplan, & Harrison, 1998), stress arises from the misfit between the person and his or her

working environments. The discrepancies between workers and working environments yield strains which affect workers' health and organizational outcomes (Caplan, 1987; Caplan & Harrison, 1993).

The demand-control-support model (Karasek, 1979) has another hypothesis to the job demands and control model. The hypothesis is that active participation in social life is related to low job strains. According to the extended model, the highest risk of strain is to be expected in the "iso-strain" group with high demands, low control, and low social support (Kristensen, 1991). In a national study using depression measures, high social support was associated with dramatically lower levels of depression. There was a clear demand-control association within each level of social support in the data. These three dimensions of work content—job demands, control, and social support—were capable of predicting much of the range of total variation of depressive symptoms in the representative working population, from a 6 % to a 41 % likelihood (Karasek & Theorell, 1990).

The Framework of Occupational Stress (House, 1981)

The framework of occupational stress (House, 1981) structures comprehensive path relationships dealing with work stressors, strains, enduring outcomes, and modifying variables in a framework. Each path relationship within the framework has been sufficiently confirmed by empirical research with few theoretical conflicts. The framework of occupational stress has been examined and modified mainly by French, Larocco, and House and, subsequently by Israel and other colleagues in the University of Michigan (Baker, Israel, & Schurman, 1996; House, Wills, Landerman, McMichael, & Kaplan, 1979; Israel, House, Schurman, Heaney, & Mero, 1989; Larocco, House, & French, 1980). This model deals with most hypotheses of occupational stress concerning the relationship between work stressors, strains, and health outcomes.

The framework of occupational stress is based on a core definition, that is, stress is a process including the environmental sources of stress and the individual's perception of them as well as short-term and long-term physiological, psychological, and behavioral responses, and a number of modifying factors that influence the relationships among variables in the stress process (Israel, Schurman, & House, 1989). The framework of occupational stress also has the assumption that stress arises from the misfit between the person and the working environments and that work stressors are determined by individuals' perception (Edwards, Caplan, & Harrison, 1998) just as in the demand-control-support model (Karasek, 1979). Thus, work stressors in House's (1981) model are not work stressors objectively estimated but work stressors subjectively perceived by individual workers.

In the framework of occupational stress, work stressors induce strains through perceived stress, which in turn affects short-term responses (strains) and negative enduring outcomes. A number of modifying variables directly and indirectly affect the process of work stressors, perceived stress, strain, and enduring outcomes. House focused on the role of modifying variables to the occupational stress process. In particular, he regarded social support at work as an important modifying variable affecting occupational stress, which is consistent with the role of social support in Cohen's (1988) stress-buffering model.

Social support is a modifying variable affecting work stress. Figure 2.1 illustrates how social support affects work stress. Social support can directly reduce perceived work stressors, strains and negative enduring outcomes because social support meets important needs for security, social contact, approval, belonging, and affection (Cohen & Hoberman, 1983). These effects of social support are called main effects. Another effect of social support is illustrated in the dotted lines in Figure 2.1. This effect is the potential of social support to mitigate or buffer the impact of work stressors on strains and the

impact of strains on enduring outcomes. This effect is called an interaction effect. The meaning of interaction is central in most of the major writing on social support, and some authors have gone so far as to suggest that interaction is virtually a minor way in which support affects enduring outcomes (Cohen & Wills, 1985; House, 1981).

Social support has greater beneficial effects on strain and enduring outcomes among persons with high work stress. The beneficial interaction effects of social support on strains and outcomes become increasingly apparent as work stress increases. In contrast, the main effect of social support on enduring outcomes is not affected by levels of support, indicating independent from the interaction effect. Thus, the need to distinguish main versus interaction effects arises when considering how stress and social support may combine to affect enduring outcomes (Cohen, 1988; House, 1981).
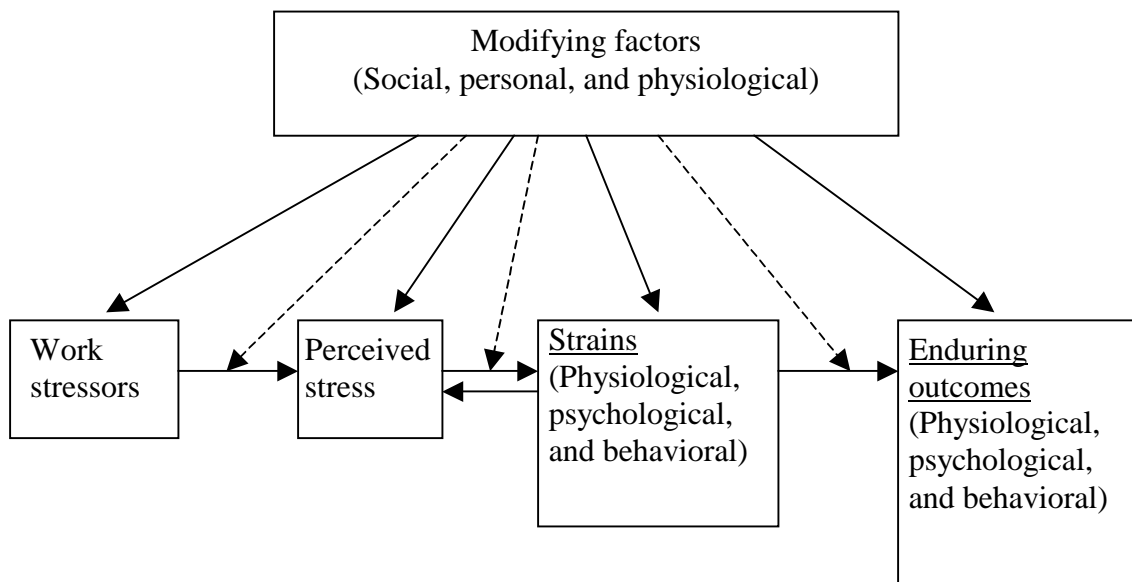
Figure 2.1. The Framework of Occupational Stress (Adapted from House, 1981)

Summary

The demand-control-support model successfully points out key work contents affecting the work stress process and describes the interaction between job demands and job control affecting psychological and physical health outcomes. In this stress arousal process, social support takes an important moderating role. However, the demand-control-support model is too simple to explain comprehensive relationships between work stressors, strains, and diverse outcomes including psychological, physical, and organizational outcomes within a framework although this model clearly organizes the relationship between the three job components and stress outcomes.

House's (1981) framework of occupational stress successfully explains the entire work stress process and the comprehensive effects of social support on the process. However, there is a problem in applying the framework of occupational stress to empirical research because this model was developed to show the general work stress process for stress intervention studies. Accordingly, not all constructs within this model are specific enough to be used directly. In particular, House's model little specifies work stressors and interaction between work stressors.

Relationships Between Job Demands, Job Control, Depression,

Job Performance, and Absenteeism

Perceived work stressors increase depressive symptoms and organizational loss. Recent studies have reported that absenteeism and job performance are major organizational outcomes related to depression (Kristensen, 1991; Marmot, 1994; Michie, 1996; Sheffield, Dobbie, & Carroll, 1994; Unden, 1996). Work stressors not only directly affect depression, absenteeism, and job performance, but also indirectly affect absenteeism and job performance through depression as a mediating variable. Goodwin (1992) indicated that absenteeism was related to other enduring outcomes such as

physical and mental illnesses, accidents, and medical cost. He reported that 35% of absenteeism resulted from stress-related illness.

Work stressors directly affect workers' depressive symptoms. Kandel, Davies, and Raveis (1985) examined the effect of role stress on depressive symptoms among 197 working women in New York. Occupational, household, marital, and parental roles were measured. The occupational role was a significant stressor inducing depressive symptoms. Depressive symptoms were more severe when the occupational role was combined with the household role. How much workers control their job at work and at home was a significant stress related factor influencing working women's depression. Cahill and Landsbergis (1996) examined job strain among 4,018 post office mail-handlers in the US using the job demands and control model. They measured job demands, job control, supervisor support, and psychological strain through a self-administered questionnaire survey. Heavy job demands, low job control, and low supervisor support were strongly related to psychological strain. Mausner-Dorsch and Eaton (2000) studied the effects of psychological work environments on depression using the job demands and control model among 905 full-time workers in the Baltimore area. Psychological work environments (job demands and job control) were measured by Karasek's (1979) Job Content Questionnaire (JCQ) and depression data were collected by the National Institute of Mental Health Diagnostic Interview Schedule (DIS). Low decision authority was significantly related to a high number of depressive symptoms. Heavy job demands tended to increase depressive symptoms; however, this relationship was not significant.

A prominent organizational outcome related to work stressors and depression is absenteeism. Brooke and Price (1989) developed a causal model determining work absenteeism. Self-administered questionnaires were distributed to full-time employees (n=425) of a medical center located in the upper Midwest twice, with a three-month interval in between. The self-administered questionnaire consisted of various work

stressors, job satisfaction, health status, alcohol involvement, job involvement, and absenteeism. The two items for absenteeism were absence days and reasons for absence during the past three months. Psychosocial work climate was closely related to absenteeism. High routinization, low work involvement, high centralization, high role ambiguity, and low job satisfaction explained 22% of the variance of absenteeism. Marmot (1994) reported the effect of working conditions on white-collar workers' health status in the Whitehall II study. The Whitehall II study was a longitudinal intervention study to reduce incidence of cardiovascular disease through behavioral changes. This study was conducted with 3,000 civil servants in England. Having long spells of absence was associated with lack of control over work. The study showed that low job control at work and financial problems out of work were important stressors inducing absenteeism. Iverson, Olekalns, and Erwin (1998) conducted a cross-sectional study to 487 staff of a public hospital in Australia to establish the relationship between work stressors, burnout, affectivity, and organizational outcomes based on a causal model. Organizational outcomes consisted of job satisfaction and absenteeism. Absenteeism was measured by the frequency of absences during a period of six months and was collected from respondents' personnel records. Path analysis showed that task demands (autonomy and workload) significantly affected absenteeism. That is, low autonomy and heavy workload were related to high absenteeism.

Dwyer and Ganster (1991) conducted a survey of 90 manufacturing employees of a large Midwestern company to examine the effects of job demands and job control on employee withdrawal. Employee withdrawal was estimated by absenteeism and tardiness for one year. Absenteeism was measured by the number of days each employee was absent from work, which was compiled from company records. Job demands and job control were significant factors affecting sick days. Effects of heavy workload and low work control explained 20% of the absenteeism variance in the study. Another study examined the effects of job demands and work control on sickness absence among

Danish slaughterhouse workers (Kristensen, 1991). A total of 4,828 workers employed in 147 companies participated in the self-administered survey. The questionnaire included job demands, job control, psycho-somatic symptoms, and absenteeism. Absenteeism was measured by inquiring about sickness absence days over the previous 12 months. The study reported that high job demands and low job control were related to increased absenteeism. Monotonous work and heavy workload were significant work stressors related to a large number of absence days.

In addition to absenteeism, job performance is another major organizational outcome related to work stressors and depression. Grunberg, Anderson-Connolly, and Greenberg (2000) examined how conducting layoffs and other work factors affected organizational commitment and job performance item in a study with 2,279 employees in a large manufacturing company. They compared individual job performance with sick leave hours and work effort. Company records provided sick leave hours for the last 30 months. Bad health status was the primary indicator of sick hours. Layoff contact was closely related to sick leave. This study indicated that work content and job security affected absenteeism. Job challenge and skill discretion were significant factors affecting work effort. Stewart and Barling (1996) examined whether work stressors and depressive mood affected interpersonal job performance of 71 physicians, nurses, and technicians participated in the study. Interpersonal job performance was measured by a performance questionnaire consisting of 20 items. Work stressors were measured by four factors: overload, role conflict, role ambiguity, and social support. Role conflict was a significant work stressor related to depressive mood. High mean score of four stressors and high depression score were significantly related to a low score of interpersonal performance.

Parker and Kulik (1995) examined the effects of social support at work on burnout and organizational outcomes. Seventy three full-time nurses in the San Diego Veterans Affairs Medical Center participated in the survey. The questionnaire included items on job stress factors, social support at work, burnout, job performance, and

absenteeism. Absenteeism was measured by a question asking about the number of absent days during the past six months. Job performance was measured by self-rated performance and supervisor-rated performance. Absenteeism was significantly related to low work support and high job stress factor scores. Emotional exhaustion was associated with job performance. High absenteeism due to mental health reasons was associated with high job burnout, low job performance, and high intention to quit. Behrman and Perreault (1984) conducted a mail survey of 196 industrial salesmen to examine work factors affecting job performance. Job performance was measured by 31 performance items. Work stressors were measured by role conflict, role ambiguity, working hours, locus of control, and communication at work. Role ambiguity, role conflict, and working hours explained 25% of the variance of job performance. Job demands and the level of work control were important factors influencing salesmen's performance. Work stressors and depressive symptoms significantly decreased job performance.

Work stressors mediated by depression also indirectly affect absenteeism and job performance. Unden (1996) reported that sickness absenteeism was related to some functions of support at work. He conducted a survey of 133 civil servants performing office work in Sweden. The questionnaire included physical and mental health status, social support at work, job demands, and job control. Absenteeism was measured by means of a question asking if the employee had ever been absent from work during the last 12 months due to sickness. Causes of sickness absenteeism were described in two ways. One cause of sickness absenteeism started from low social support at work. The other cause was from work strain and quality of life. The latter cause, in particular, explained that insufficient rest time (heavy workload) was perceived as a serious work stressor and increased sickness absenteeism. Sheffield, Dobbie, and Carroll (1994) administered a survey to 88 secondary school teachers to evaluate the relationship between stress and social support. Main variables were job demands, job control, perceived social support and satisfaction with support, psychological well-being, and

sickness absence. The authors reported that job responsibility and workload, among the perceived work stressors, were significantly related to short-term absenteeism and long-term absenteeism was related to health status. Psychological stress symptoms mediated the relationship between workload and absenteeism.

Michie (1996) conducted a stress counseling intervention study with 92 hospital staff in London, England. The intervention was designed to identify causes of work stress and to increase workers' coping skills. Workers' problems treated in the counseling intervention were work stressors (workload and perceived control), depression, and relationship problems at work. A self-administered survey was conducted at three times: before the intervention, right after the intervention, and 6-month follow-up. All variables were included in the survey questionnaire except absence data. Absence data from six months prior to the intervention were collected from hospital computer records. After the intervention, both depression and absenteeism significantly decreased. The stress intervention program had a beneficial effect in decreasing absenteeism and showed that job demands and job control were key work factors affecting depression and absenteeism.

Abramis (1994) interviewed 281 workers living in the greater Detroit area to identify a clear relationship between work stressors and job performance. Role ambiguity, role conflict, and job insecurity were measured for work stressors. Strains were measured by job dissatisfaction, anxiety, anger, and depression by the Hopkins Symptoms Checklist. Job performance was measured by technical performance, social performance, absenteeism, and tardiness. Depressive symptoms were significantly related to role conflict, and absenteeism was related to role conflict, job insecurity, anxiety, and depression. Technical performance was significantly associated with role conflict, depression, and anger. This study showed not only that work stressors were directly related to depressive symptoms and job performance but also that depression mediated the relationship between work stressors and job performance.

<u>Summary</u>

A large amount of literature supported that depression was induced by stressors at work, and was closely related to organizational loss in terms of absenteeism and job performance. Job demands and job control are significant work characteristics increasing depression and absenteeism. These two work factors directly and indirectly affect workers' depressive symptoms, absenteeism, and job performance.

Two mechanisms explain the association between work stressors, depressive symptoms, absenteeism, and job performance. One mechanism concerns stress-inducing illness (Kristensen, 1991; Marmot, 1994; Sheffield, Dobbie, & Carroll, 1994; Unden, 1996). Some work stressors stimulate psychological outcomes, in particular, depression. Depression weakens employees' general health status resulting in organizational loss such as increased absenteeism and reduced job performance (Michie, 1996). The other mechanism of stress and organizational loss concerns stress coping: workers perceive some depressive symptoms as temporary psychological responses to stressors (Brook & Price, 1989; Dwyer & Ganster, 1991; Iverson, Olekalns, & Erwin, 1998; Schechter, Green, Olsen, Kruse, & Cargo, 1997). After that, they temporarily withdraw from their work by absence. They also make less effort on their job due to low motivation (Unden, 1996). Depression-induced unstable supply of labor to the organization results in the disruption of scheduled work processes and the loss of productivity (Brooke & Price, 1989).

Effects of Social Support at Work on Job Demands, Job Control, Depression,

Job Performance, and Absenteeism

Social support at work has two effects on the work stress framework including work stressors, depression, job performance, and absenteeism: main effects and interaction effects (Cohen & Wills, 1985; House, 1981). A large amount of work stress research reported the two effects of social support on work stress.

Main Effects of Social Support at Work

The main effects of social support at work on work stressors, depression, job performance, and absenteeism have been well documented. Social support at work is significantly related to low work stressors, low depression, high job performance, and low absenteeism.

Social support at work, primarily, has main effects on work stressors and psychological outcomes throughout the literature. Significant work stressors are job demands and job control and depression is the most frequently mentioned psychological outcome related to social support. Sheffield, Dobbie and Carroll (1994) evaluated the relationship between work stress, social support at work, and general well-being among 88 secondary school teachers in Scotland. The cross-sectional study used a self-administered survey. Perceived work stressors, anxiety, somatic symptoms, sickness absence, and social support at work were included in the survey questionnaire. Social support at work was measured by two seven-item indices on availability and satisfaction of general social support from coworkers and supervisors. Perceived work stressors were measured by 15 items of job responsibility and workload. Social support at work had significant main effects on job responsibility and workload. Social support at work also had positive effects on somatic symptoms and absenteeism.

Dean and Ensel (1982) examined the relationship between social support, life stress, and depression among 871 representative samples of adults in New York State. Social support was measured by support functions and social ties. The more the social support the lower the depressive symptoms. This showed that social support had a direct effect on depression. Landsbergis (1988) conducted a mailing survey to identify the

effects of job demands, job control, and social support at work on depression based on the demand-control-support model. The respondents were 771 clerical employees in two hospitals and one nursing home in New Jersey. Job demands, job control, social support at work, and depression were measured by the Job Content Questionnaire. Job demands, job control, and social support at work had direct effects on depression. Heavy workload, low job control, and low social support at work were related to severe depressive symptoms.

To examine the relationships between work strain, social support at work, and psychological distress, Vermeulen and Mustard (2000) conducted a survey of 7,484 employees in a Canadian national survey. Based on the demand-control-support model (Karasek & Theorell, 1990), psychological demands and work control were employed as work factors inducing psychological distress. Social support at work was a moderator buffering psychological distress. Social support at work was measured by four items of global perceived support from coworkers and supervisors. Social support at work had greater effects on reducing psychological distress in women than in men. Low support at work had clear main effects on psychological distress for both men and women. The iso-strain condition with high job demands, low control, and low social support was associated with high psychological distress.

Kline and Snow (1994) conducted a stress prevention program for 115 working mothers in Connecticut. This program was designed to encourage workers to practice adaptive stress coping strategies and to apply problem-solving techniques through effective social support networks at work. Self-administered questionnaires were distributed to participants three times: before the intervention, at the end of the intervention, and 6 months after the intervention. Global functional support from both work (coworker and supervisor) and non-work sources (spouse/partner, friend, and relatives) was measured. Six months after the intervention, social support from work sources was significantly related to decreased perceived role stressors and depressive

symptoms. This finding showed that there were significant main effects of social support at work on employee role stress and depression. The intervention encouraged workers to help each other to solve problems. As social support at work improved, depression decreased. Bromet, Dew, Parkinson and Schulberg (1988) studied whether social support had negative effects on work stressors and psychological strain among 325 non-managerial employees of two nuclear power plants and two fossil-fuel plants in Pennsylvania. A self-administered questionnaire was employed in the survey. Perceived support from work (coworkers) and perceived support out of work (friends) were assessed. Work stressors were measured by job demands and job control, and psychological strain was major depression and behavioral strain (alcohol problems). High job demands was significantly related to high depression. Coworker support was related to a low level of work stressors and low depression although it was not statistically significant.

Israel, Schurman, and House (1989) recognized that organizational support was powerful in reducing work stressors, psychological strain, and health outcomes. They conducted an intervention study to reduce work stress in which the intervention was based on problem-solving methods through improved interrelationships and active participation at work. The subjects were 630 workers in a manufacturing plant of a major corporation located in a medium-sized urban area in Michigan. The survey questionnaire consisted of interpersonal relationships at work (coworker support, supervisor support, and negative relationships at work), 16 items of work stressors, perceived control (participation and influence), coping methods, job satisfaction, negative feelings of work, and depression. Interpersonal relationships at work had significant main effects on work stressors and psychological strains. Social relationships at work had clear main effects on work stressors and depression. The interpersonal relationships explained 16% of the variance of work stressors. Depression was significantly associated with low perceived control, poor interpersonal relationships, and high perceived work stressors.

Grosch and Murphy (1998) examined occupational differences in depression and global health with the National Medical Expenditure Survey data. The study was conducted by both self-administered questionnaire and interviews. Items of global health, depression, and health habits were included in the questionnaire. The participants of the survey were 9,218 American adult workers. Sharing feelings with others were the best predictor of depression, showing that emotional support at work was significantly related to reduced depressive symptoms. Depression exhibited .43 correlation with global health. Firth-Cozens (1998) also reported organizational predictors of depression in 131 general practitioners. The relationship with senior doctors was the most stressful work factor for general practitioners. Conflict of career with personal life (r= .40) and home-work interface (r= .42) were strongly correlated with depression. The results implied that social network at work and controllability of work and life were meaningful work factors affecting workers' depression.

Recent studies examined organizational outcomes affected by work stress and also identified the extended effects of social support at work on organizational outcomes not limited on mental health outcomes. Beehr, Jex, Stacy, and Murray (2000) examined effects of work stressors and social support on psychological strain and job performance among 198 door-to-door salesmen. Job performance was measured by total units sold and demonstrations (the number of home presentations of the product). Psychological strain was measured by depression. Social support at work was measured by coworker support (Caplan, Cobb, French, Harrison & Pinneau, 1975). Global functional support from coworkers, positive communication with coworkers, and negative communication with coworkers explained 29% of depression variance. Support from coworkers was significantly related to both job performance measures: units sold and demonstrations. Schaubroeck and Fink (1998) examined the effects of job control and social support on physical well-being and organizational outcomes: physical symptoms, absenteeism, and job performance. They conducted a self-administered questionnaire survey in two offices

of a large insurance company. A total of 214 employees successfully completed the survey. Job performance and absenteeism were measured by supervisors. Social support was measured by supervisor and coworker support. High job control was significantly related to high overall job performance, but job control was not significantly related to absenteeism. The relationship between organizational outcomes and physical well-being were not examined. Nelson and Quick (1991) conducted a mail survey of 91 professional-level employees in a large university, an oil field service company, and an electronics manufacturer. Nelson and Quick examined whether social support at work affected newcomers' job satisfaction, job performance, and psychological stress. Social support was measured by the availability and helpfulness of resources at work (from supervisor and coworker). Work stressors were measured by job demands, role conflict, workload, and career progress. Outcome measures were psychological distress, job satisfaction, and supervisor-rated performance. High availability of coworker and supervisor support, active interaction with coworker, and frequently interaction with other newcomers were significantly related to high job performance. High supervisor support and frequent interaction with other newcomers were also significantly associated with low psychological strain. Job satisfaction was negatively related to psychological strain.

Interaction Effects of Social Support at Work

Interaction effects of social support on work stress have been less documented than the main effects. Theoretically, social support at work reduces or buffers the negative influence of work stressors on depression, job performance, and absenteeism. Although interaction effects are not consistent and weak, research on social support at work still reports the evidence of the interaction effects of social support at work.

LaRocco, House, and French (1980) analyzed data from 6,360 male workers of 23 occupational groups in a number of different organizations. Four functional supports and three sources of support (supervisor, coworkers, and wife/family/friend) were measured.

Dependent variables included perceived stress (job satisfaction) and health-related outcomes (somatic complaints, depression, and anxiety). Regression analyses indicated that support from wife, coworkers, and supervisor significantly buffered the effects of work stressors on depressive symptoms. Coworker support had a significant interaction effect on the relationship between role conflict and job satisfaction as well as the relationship between role conflict and depression. Coworker and supervisor support buffered the negative effect of heavy workload on psychological stress symptoms (the combination of depression, anxiety, and irritation). The results showed work-related sources of support to be more important for depression than family support.

Stansfeld, Bosma, Hemingway, & Marmot (1998) conducted three surveys of 9,302 civil servants in 20 London-based branches during a five-year period. They used the demand-control-support model, and the survey included job demands, decision latitude, and social support at work. Social support measures included emotional support, practical support, negative aspects of close relationships, and networks of social support. Social support at work had a significant interaction effect with perceived work control on quality of life. The three-way interaction of low decision latitude, high job demands, and low social support at work was significantly related to psychological disorders and absenteeism. Unden (1996) examined whether health status and social support affected absenteeism of 133 civil servants performing office work in Sweden. The survey questionnaire included social support at work and out of work, job demands, decision latitude, perceived health status, and psychosomatic symptoms. Social support was significantly associated with high psychosomatic symptoms, poor perceived health, and high absenteeism. Low belonging support, low instrumental support, and low social integration had a negative relationship with high job demands and low decision latitude. There was an interaction effect of job demands and perceived control on depressive symptoms. Results of the multivariate analysis showed .25 correlation between work stressors and depressive symptoms, and .32 correlation between depressive symptoms

and quality of life. Johnson, Thomas, and Riordan (1994) conducted a case-control study with 211 fishermen as the cases and 99 land-based workers as the control cases comparing their work stressors and stress symptoms. The study assumed that lack of social ties affected work stress, and that fishermen were a group lacking social ties. The self-administered survey consisted of depression, somatic symptoms, ten work stressors including carrier stress, overload, control, hazards, and conflict. Social support was measured by 15 items of perceived quality of social relationships. The relationships were with friends, relatives, wife, supervisors, and coworkers. They found that fishermen had greater work stressors, depression, and somatic symptoms than land-based workers. This indicated that social ties were directly related to work stressors and depression. Under low support conditions, work stressors were more closely related to depression than under high support conditions, which means that there was the interaction effect of social support on the relationship between work stressors and depression.

Iverson, Olekalns, and Erwin (1998) examined the relationship between work stressors, burnout, and absenteeism. A self-administered survey was conducted of 487 staff of a public hospital in Australia. Based on the demand-control-support model, job demands and job control were considered major work stressors, and social support was measured by supervisor support, coworker support, and peer support. High supervisor support and high coworker support had beneficial effects in reducing absenteeism. In their own model, social support at work and task demands had indirect effects on absenteeism as mediated by psychological strain: depressive symptoms, emotional exhaustion, and depersonalization. Bromet, Dew, Parkinson and Schulberg (1988) conducted a cross-sectional study for 325 non-managerial employees of two nuclear power plants and two fossil-fuel plants in Pennsylvania. There were significant interaction effects of social support on job demands, perceived control, and psycho-behavioral strains (depression and alcohol problems). Coworker support had a clear interaction effect on the relationship between job demands and depression.

Mausner-Dorsch and Eaton (2000) studied psychological work environment and depression. The subjects were 905 full-time workers in the Baltimore area and the data were collected by individual interviews. Job control was the best predictor of depression and the interaction of high psychological job demands and low control were related to high depressive symptoms. Calnan, Wainwright, Forsyth, Wall, and Almond (2001) examined mental distress of workers in 81 hospitals in southern England. They used the demand-control-support model to find the relationship between work stressors and depressive symptoms. The interaction of high job demands, low job control, and low social support was significantly related to high depressive symptoms. In the study, under high support conditions, the interaction effect between job demands and job control on mental distress was clearer than in low support situations.

Schaubroeck and Fink (1998) examined the effects of job control and social support on organizational outcomes: absenteeism, physical symptoms, and job performance, based on the demand-control-support model. A total of 214 employees completed the survey in two offices of a large insurance company. Job performance and absenteeism were rated by supervisors. Social support was measured by supervisor and coworker support. Supervisor support had a significant interaction effect with low job control on low job performance. Supervisor support, job control, and skill underutilization had a three-way interaction on job performance. That is, high supervisor support mitigated the effect of low job control and under-skillfulness on low job performance. High coworker support also had an interaction effect with low job control and heavy workload on low job performance.

Summary

It has been well documented that social support at work has beneficial main effects on low perceived work stressors, low depression, high job performance, low absenteeism. Job demands and perceived control are significant work factors affecting

depressive symptoms. The studies support that supervisor support and coworker support are associated with low depression, high job performance, and low absenteeism.

The interaction effect of social support were also supported by the literature even if the effects seemed to be less clear and the effect was lower than the main effect. Overall, a large portion of social support studies examined and reported main effects only, and the significance of the interaction effect on work stressors and their outcomes was marginal or lower than main effects. Dwyer and Ganster (1991) mentioned that because of the low interaction effects of social support on the stress process, many studies less focused on the interaction effects of social support on the work stress process, although their original purposes were to examine the interaction effect of social support on the stress process.

From a statistical perspective, the statistical power for interaction effects decreases because product terms are involved in the interaction effects than in the main effects (Cohen & Cohen, 1983). Thus, larger sample size and more careful consideration of other confounding effects should be provided to properly detect the interaction effect of social support at work on the stress process.

The Work Stress Framework of this Study

Based on the strengths and weaknesses of those two representative work stress models, and on empirical research on work stress, this study established a work stress framework describing the comprehensive effects of social support on the relationship between work stressors, psychological outcomes and organizational outcomes: job demands, job control, depression, absenteeism, and job performance. The general path structure of work stress process was employed from the framework of occupational stress (House, 1981). To clarify stressful work factors in the framework of occupational stress, this study employed job demands and job control as major stressors from the demand-control-support model (Karasek, 1979). This study also focused on organizational outcomes in relation to work stressors and depression. Recent empirical studies raised

two issues related to psychological and organizational outcomes of work stress. One was that work stressors affected organizational outcomes as well as psychological outcomes. The other suggested that there were also substantial relationships between these two outcomes. Short-term responses of work stressors were omitted from this study because empirical research using the two work stress models sufficiently supported the direct relationship between work stressors and their outcomes (Figure 2.2).
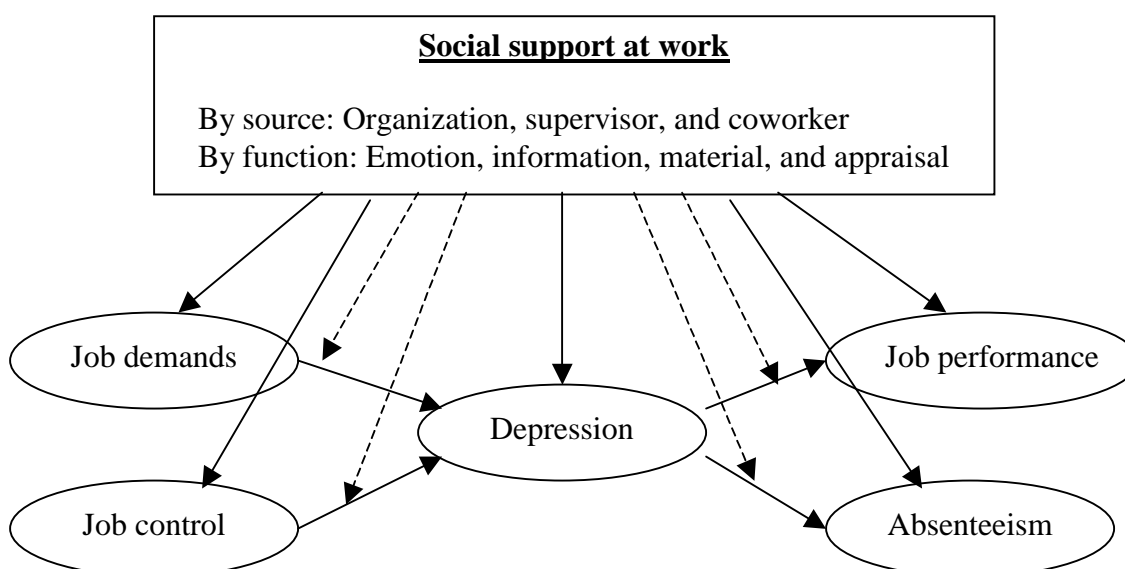
Figure 2.2. The work stress framework of this study

Main and interaction effects were considered at the same time. Social support at work was operationalized to identify what characteristics of social support affect the work stress framework, specifically which function and source of support. In other words, the question was about what functions of support among emotion, material, information, and appraisal were more effective and what sources of support among organization, supervisor, and coworker were more effective on the work stress framework. The

findings of the present study would help to build better stress prevention programs using social support at work.

CHAPTER 3

METHODS

In this chapter, the purpose of the study is followed by explanation of the methods used to conduct the research. The discussion of methodology includes a description of study participants, study design, research questions and hypotheses, data collection, measures, and data management and statistical analyses.

Purpose of the Study

The main purpose of the study was to identify the effects of social support at work on job demands, job control, depression, job performance, and absenteeism. Specifically, this study (1) examined how social support at work affects job demands, job control, depression, job performance, and absenteeism, and (2) identified the characteristics of social support at work that affect perceived job demands, job control, depression, job performance, and absenteeism.

Study Participants

This study was conducted in collaboration with a non-profit organization, the Georgia Regional Hospital in Atlanta, Georgia. All 863 employees in September 2001 were eligible to participate in the study. Initially, 267 employees completed the survey and the response rate was 30.9%. Among the 267 cases, 240 cases were used in analyses because 27 cases were discarded due to problematic missing and patterned responses. Because this sample size did not reach the desired number of respondents (340) for statistical analyses, a missing data imputation technique was employed to efficiently save more data in statistical analyses.

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The Georgia Regional Hospital provides general medical services for low-income individuals and their families, and also houses juvenile vagrants who have health problems. The hospital consists of 20 buildings including a children's unit, a central unit for adult's health, a mental health unit, a dental health unit, and a forensics unit.

Study Design

This study used a cross-sectional design. A self-administered survey was conducted among employees in the Georgia Regional Hospital, which satisfied the following requirements to avoid some crucial threats to validity: 1) all full-time and part-time employees at the time of the survey were eligible to participate in the survey, and 2) the hospital had not worked with other organizational research projects since 2000.

It was important that the survey be offered to all employees in this study and administered to as many willing participants as possible in order to decrease the selection bias of the study findings. Recent participation in other organizational intervention or surveys could have threatened the reliability of the survey results, particularly if other studies about organizational climate, job design, social support at work, or psychological status had been conducted or were ongoing. Fortunately, there was no involvement of employees in other organizational attitude-related studies in recent years. The Institutional Review Board of the University of Georgia (IRB) approved this study protocol on August 27, 2001, granting it a project number of H2001-10601-0.

Research Questions and Hypotheses

Research questions and hypotheses are as follows.

Q1: How does social support at work affect job demands, job control, depression, job performance, and absenteeism?

H_1: Social support at work directly affects job demands, job control, depression, job performance, and absenteeism (main effects).

H_2: Social support at work buffers the path between job demands, job control, depression, job performance, and absenteeism (interaction effects).

Q2: What characteristics of social support at work are closely related to job demands, job control, depression, job performance, and absenteeism?

H_3: Effects of support at work on job demands, job control, depression, performance, and absenteeism are different by source of support.

H_4: Effects of social support at work on job demands, job control, depression, job performance, and absenteeism are different by function of support.

Data Collection Procedures

Data collection was conducted by means of a self-administered survey (See Appendix A) distributed to all employees through the pay slip delivery system. In this hospital, pay slips are distributed to employees on the 15th and 30th of every month. The survey began on September 14 and data collection was completed on October 2, 2001.

On September 14, 2001, 863 questionnaires and envelopes with pay slips were delivered to program assistants in all buildings who distributed the survey to all employees working in their buildings. Ten survey return boxes were located in the main lobbies of the ten buildings: children's building, central building, administration building, developmental and learning center, forensics I building, forensics II building, skilled nursing building, cafeteria, housekeeping, and engineering and maintenance building. The first page of the survey explained the purpose of the survey, confidentiality assurances, and the voluntary nature of invited participation in the survey, as well as the participation procedure and the location of survey boxes to which the surveys should be returned.

To encourage employees to participate in the survey, a letter of endorsement from the Chief Executive Officer asking employees to participate was attached to the front of the survey. A memo encouraging survey participation was also delivered to supervisors of all units on the first day of the survey. No incentives were used in the survey. The hospital-wide voice intercom system was used for the follow-up of the data collection. The follow-up reminder and announcement were started after three business days from

the first day of the survey, lasting for eight business days. The survey announcement was made twice a day during the first four days to reach all employees on different shifts, and was made once a day during the last four days. The announcement encouraged of survey participation, and indicated the absolute confidentiality of the survey, the survey collection period, and the location of the survey boxes. The survey boxes were emptied three times during the data collection period: September 19, September 25, and October 2, 2001. Each time, the survey investigator accompanied a staff of the Human Resource Department and emptied the boxes in front of the staff member to ensure the security of the survey. The number of surveys collected was 152, 85, and 30, respectively. Table 3.1 shows a timeline describing the overall flow of the survey distribution, follow-up announcements, and survey collection.

Table 3.1

The time-line of the survey collection

Day / Date				Follow-up (frequency)	Survey collection
9	14		Survey starts	By memo (1)	
	15				
	16				
	17	/Mon			
	18				
	19				The 1st collection
	20			By intercom (2)	
	21			By intercom (2)	
	22				
	23				
	24	/Mon		By intercom (2)	
	25			By intercom (2)	The 2nd collection
	26			By intercom (1)	
	27			By intercom (1)	
	28			By intercom (1)	
	29			By intercom (1)	
	30				
10	1	/Mon			
	2		Survey ends		The 3rd collection

Measures

The survey questionnaire was organized to examine six main constructs: social support at work, job demands, job control, depression, job performance, and absenteeism. Table 3.2 shows the main variables of the study, number of items, and sources of measures. All variables were estimated by self-administered questionnaires (Appendix A).

Table 3.2

Description of measures

Variables		Contents	No	Sources of scales
Social support at Work		Organizational support	9	Eisenberger et al. (1997)
		Supervisor support	7	Heaney (1991)
		Coworker support	7	Heaney (1991)
	Work stressor	**Job demands** (workload, work-pace, job complexity, job conflict, and interpersonal relationships at work)	9	Karasek et al. (1998)
Stressor		**Job control** (decision making latitude, task variety, work schedule, job autonomy)	22	Dwyer & Ganster (1991)
	Non-work stressor	Stressful life events out of work	7	Maciejewski et al. (2000) Tausig (1982)
Depression		Depressive symptoms (CES-D)	12	Santor & Coyne (1997)
Job performance		Self-rated performance, supervisor-rated performance		Wilson, et al. (2002)
Absenteeism		Number of absent days during the past three months	1	Sheffield et al. (1994)
Demographics		Age, gender, marital status, duration of the present work, job title, and job status	6	Wilson et al. (2002)
		Total	82	

Social support at work was measured by three sources of support: organizational support, supervisor support, and coworker support. Items for each source of support concern four functions of support: material, emotion, information, appraisal, and undermining. To estimate the clear effect of work stressors on outcomes, stressors including both work stressors and non-work stressors were measured. Work stressors were mainly used in the analyses and consisted of two job characteristics: job demands and job control. Non-work stressors were measured with nine stressful life events, and the effects of non-work stressors were controlled in the analyses to exactly estimate the effects of work stressors on depression. Depression was measured as a representative psychological strain with self-reported depressive symptoms. Absenteeism was measured by self-reported absent days. Job performance was measured by self-rated performance and supervisor-rated performance.

Social Support at Work

Social support at work was measured by source and function of support. Sources of support consisted of organizational support, supervisor support, and coworker support. Each source of support consists of five functions of support in the survey.

Organizational Support.

Organizational support was measured by perceived support from the organization using a nine-item scale. The original scale with 22 items was developed by Eisenberger, Cummings, Armeli, and Lynch (1997) and was revised by Wilson, DeJoy, Vandenberg, Richardson, and McGrath (2002). The nine items were scored in a five-point Likert scale from 1 'strongly disagree' to 5 'strongly agree.' The greater the score reflected the greater amount of perceived organizational support. Eisenberger, Cummings, Armeli, and Lynch reported that the internal consistency of the scores of the scale was .90. Armeli, Eisenberger, Fasolo, and Lynch (1998) reported an internal consistency of .75 for the scores of the scale. Wilson, DeJoy, Vandenberg, Richardson, and McGrath refined the measurement structure of this scale using confirmatory factor analysis. They reported a

value of 0.92 internal consistency for the scores of the refined scale. The scale of organizational support was not clearly divided by specific functions of support, but was developed based on perceived functional support at work.

Supervisor and Coworker Support.

Scales for supervisor support and coworker support were employed from Heaney's (1991) items of social support at work. The supervisor support and coworker support scales consisted of seven items each. Items of supervisor and coworker support consisted of five functional support items: material support, emotional support, informational support, appraisal support (praise and feedback), and undermining as a negative support. All fourteen items of supervisor support and coworker support were scored in the five-point Likert scale from designated 1 as 'not at all' to 5 as 'a great deal.' Generally speaking, the greater the score the higher the social support from the supervisor and coworker.

Heaney (1991) reported .89 internal consistency for the scores of the supervisor support items and .87 internal consistency for the scores of the coworker support items. Heaney and colleagues (1993) reported a value of .76 for internal consistency for the scores of the supervisor support items.

Stressors

Scales of stressors consisted of work stressors and non-work stressors. Work stressors were measured by perceived job demands and job control. Non-work stressors were measured by seven items representing stressful life events. The effects of non-work stressors were controlled in a statistical analysis to discriminate accurate effects of work stressors from non-work stressors on depression, job performance, and absenteeism.

Work Stressors.

Work stressors were measured by job control and job demands. Karasek (1979) operationalized job demands in the sense of psychological stressors at work such as requirements for working fast and hard, heavy workload, not having enough time, and

having conflicting demands. He modified the conception of job demands to include job complexity and interpersonal relations at work (Karasek et al., 1998). Dwyer and Ganster (1991) pointed that the workload, job complexity, job conflict, and job ambiguity involved in carrying out a job as the main components conceptualizing job demands. The main components comprising job demands of this study were workload, time-pressure, job complexity, job conflict, and interpersonal relationships.

Job demands was measured by the psychological demands scale revised by Karasek and colleagues (1998). They added four items to the original five items of job demands, and verified the reliability and validity of the revised scale. The refined scale included workload, time-pressure, job complexity, job conflict, and interpersonal relationships at work. Internal consistency of the scores of the nine items was .72 in the male population and .71 in the female population (Karasek et al., 1998). All nine job demands items were scored by a five-point Likert scale designated from 1 as 'rarely' to 5 as 'very often.' The greater the mean score, the heavier the perceived job demands were expected to be.

The concept of job control was discussed in organizational research in terms of participation in decision-making and job design (Spector, 1986). Karasek (1979) defined job control as the working individual's potential control over his tasks and his conduct during the working days. He indicated that job control was conceptualized by two components: a worker's authority to make decisions on his job and the variety of skills that the worker used on the job. Ganster (1989) defined control as the ability to exert some influence over one's environment so that the environment became more rewarding or less threatening. He mentioned that participation in decision-making and job autonomy was the main components conceptualizing job control. From Karasek and Ganster's perspectives, the main components of job control of this study were decision-making latitude, task variety, work schedule, and job autonomy.

Job control was estimated by Dwyer and Ganster's (1991) scale in this study. The job control scale has been confirmed in many organizational studies (Kristensen, 1991; Schecheter, Green, Olsen, Kruse, & Cargo, 1997; Schaubroeck & Merritt, 1997). The job control scale was similar to the 'decision latitude' scale of Karasek's (1979) Job Content Questionnaire (JCQ). Schaubroeck and Merritt (1995) discussed that job demands items of JCQ problematically overlapped with job complexity. Spector (1986) also reported that Karasek's decision latitude scale seemed to create colinearity problems with job satisfaction scales. The job control scale by Dwyer and Ganster consisted of decision making latitude, task variety, work schedule, and job autonomy. Dwyer and Ganster reported .87 internal consistency for the scores of the scale. Schaubroeck and Merritt reported .83 internal consistency value for the scores of the job control scale. All twenty-two items of job control were scored by a five-point Likert scale designated from 1 as 'not at all' to 5 as 'a great deal.' The greater the mean score the more controllable the job is believed to be.

Non-work Stressors.

Non-work stressors were assessed to control for the effects of non-work stressors on depression and to keep only the effects of work stressors on depression. Non-work stressors were measured by major seven stressful life events items selected from the scales used in two large studies (Maciejewski, Prigerson, & Mazure, 2000; Tausig, 1982). Maciejewski, Prigerson, and Mazure conducted Americans' Changing Lives study (ACL) to predict the onset of depression by stressful life events. Ten events were found to be related to depression: death of a child, death of a spouse, death of a partner, death of a close friend or relative, divorce, move to a new residence, loss of job, a serious financial problem, physical attack, and life-threatening illness or injury. Tausig used the Recent Life Changes Questionnaire (RLCQ) consisting of 118 items to predict depression of 1,091 adult residents in New York. He categorized six significant life events related to high CES-D scores: home, love, family, health, work, and legal problems.

From the significant life events in identified by Maciejewski, Prigerson, and Mazure (2000) study and Tausig's (1982) study, seven life events were selected for this study. The seven stressful life events were perceived stress from spouse or partner (conflict, disease, death, and so on), family (conflict, disease, death, and so on with a parent, child, or relatives), friends (conflict, disease, death, and so on), financial problems, health problems, legal problems, and traumatic experiences (robbery, mugging, physical attack, threat, and so on) during the last six months. The seven stressful life events were scored by a five-point Likert scale from 1 designated as 'not at all' to 5 designated as 'a great deal.'

Depression

Depression in this study refers to depressive symptoms as a psychological strain induced by stressors. Depressive symptoms were measured with a short version of the Center for Epidemiologic Studies for Depression (CES-D) scale (Santor & Coyne, 1997). The CES-D scale was developed to identify the epidemiology of depressive symptomatology in the general population. Internal reliability of the scores of the original 20 CES-D items in the general population was .85 and even higher in patient population (= .90) (Radloff, 1977). Radloff reported that CES-D items had acceptable test-retest stability (r= .55) and excellent concurrent validity by clinical and self-report criteria.

Santor and Coyne (1997) indicated that CES-D was less sensitive to healthy people than to patients or the elderly. They identified twelve effective items from the original items in the Michigan depression project with 1,928 primary care patients by comparing scores of CES-D with the clinical criteria. The twelve items correlated .93 with the original CES-D items. Sensitivity and specificity of the revised items were greater than those of the original items. Internal consistency of the scores of the revised items was .84. Accordingly, the revised items of depression symptoms during the week before the survey were scored by a four-point Likert scale from 1 'rarely or none of the time' to 4 'most or all of the time.' People with a high mean score can be interpreted to

be "at risk" of depression or in need of treatment (Radloff, 1977). Radloff confirmed that the scale was suitable for use in Black and White English-speaking American adults of both genders in the study of depressive symptoms.

Absenteeism

Absenteeism was measured with one item modified from Sheffield, Dobbie, and Carroll's (1994) study. Absenteeism was assessed by the extent of total absent days during the past three months. A three month-period has been the most frequently used period for self-report absenteeism in organizational studies, and the period is appropriate in terms of the accuracy of respondents' recall (Brooke & Price, 1989).

Job Performance

Job performance was measured by two items of self-rated performance and supervisor-rated performance. Scales of self-rating performance and supervisor-rating performance were employed from the items used in a large study of healthy work organization (Wilson, DeJoy, Vandenberg, Richardson, & McGrath, 2002). The two performance items are scaled by a five-point Likert scale ranging from 1 ranked as 'unsatisfactory' to 5 ranked as 'outstanding,' with a 6 provided for 'don't know/unsure responses.

Demographics

Age, gender, and marital status were included in the demographics and the effects of the three demographic characteristics on depression were controlled. It has been well documented that there are significant differences in depressive symptoms by age, gender, and marital status. Hurrell (1985) reported female workers had significantly higher stress symptoms than male workers among 2,803 postal workers in the US. Hellerstedt and Jeffery (1997) reported that stress at work was significantly different by gender in a health behavior intervention study. The participants of the study were 3,843 workers in 32 profit-organizations. In a literature review study, Pohorecky (1991) indicated that age and gender were significant moderators affecting the relationship between stress

symptoms and behavioral strain (drug abuse). Cohen, Schwartz, Bromet, and Parkinson (1991) regarded age as a significant factor confounding the effect of stressors on health status. They controlled the effect of age in their study on the relationship between mental health and stressors. Vermeulen and Mustard (2000) also examined the gender difference between perceived social support, work stress, and psychological strain. They found that women had more perceived social support, high work stress, and psychological strain than men.

Luoto, Roikolainen, and Uutela (1998) found that stress symptoms were significantly different by gender (women) and marital status (single) in an annual survey by the National Public Health Institute in Finland. Burvill (1995) also noted that age, gender, and marital status were significant demographics affecting depression prevalence in a literature review study. Johnson, Thomas, and Riordan (1994) used age and marital status as covariates affecting depression and work stressors.

Data Management and Statistical Analyses

Data Management

Collected data were entered into a computerized database using the Statistical Package for the Social Sciences (SPSS) version 10.1 (Norusis, 1997). Data entry accuracy was validated in two ways. First, 20% of the data were randomly selected from the original data and reentered on another worksheet. Then, the original data and the 20% sample data were compared with each other to inspect discrepant values. Second, all values were checked to determine if they fell within a possible response range.

A missing data imputation technique was used to effectively handle missing data. It is common practice to use list-wise deletion to deal with missing data. With this practice a large portion of data may be easily dismissed because all cases that have any

one or more missing responses should be eliminated. Roth (1994) reported that at least 18.3% of the total cases were easily lost in the analysis when 2% of the data were missing randomly and entire cases with any missing data were deleted. Furthermore, missing data can bias correlation coefficients downward because high or low scores tend to be lost and the lost data attenuate the correlation between underlying constructs (Little & Rubin, 1987; Roth, 1994). Accordingly, a missing data imputation technique can prevent the large loss of data and minimize bias in parameter estimation (Chan, Gilman, & Dunn, 1976). Seventy usable cases should have been eliminated from analyses under list-wise deletion practice in this study. However, 47 cases among the 70 cases were saved using missing data imputation technique. The present study has 1.4% missing responses among the total number of responses.

Missing data imputation was applied through the following three steps. The first step was to select the measures, excluding objective measures or single-item measures since these cannot be used in imputation (Roth, 1994). Thus, all demographic questions, absenteeism, and performance measures were excluded from missing data imputation. The second step was to select the cases that had acceptable because missing data imputation is only available for random missing responses not for systematic missing responses (Wilson, DeJoy, Vandenberg, Richardson, & McGrath, 2002). However, there is no clear rule to discriminate between the two patterns. The alternative method is to find how many items should have missing values to define the cases that have systematic missing patterns. Roth, Switzer, and Switzer (1999) highly recommend a conservative two thirds rule. That is, cases can be considered missing at random if the cases have more

than two thirds valid responses of the items in a scale. In this study, 240 cases fell into the imputation possible category.

The final step was to apply an imputation method to handle the missing values. Missing data imputation is available both in multiple regression and structural equation modeling. Multiple imputation in structural equation modeling approach obtains greater maximum likelihood of imputation than regression imputation because the multiple imputation technique is strong in a small sample population (Arbuckle, 1996). Thus, the expected maximization algorithm in multiple imputation was applied to impute the missing values. The expected maximization algorithm starts imputation with the mean vectors and covariance matrices of the cases, which have no missing values. Then, the mean vectors and the covariance matrices of the cases with missing values are repeatedly adjusted compared with those of the cases with no missing values until the two sets of data have the same mean vectors and the same covariance matrices. The multiple imputation for this data was conducted using LISREL Version 8.5 (Du Toit & Du Toit, 2001).

Tests of the Measurement Models

Before hypothesis tests, measurement models should be tested to ensure that scales behaved as intended because overall model fit in structural equation modeling is sensitive to the measurement model as well as the structural model (Bollen, 1989). Measurement models of this study were adjusted using confirmatory factor analysis in LISREL version 8.5 (Du Toit & Du Toit, 2001). The most primary purpose of confirmatory factor analysis was to make sure that scale items reflect their intended underlying constructs (Lance & Vandenberg, 2002).

First of all, it was tested whether all manifest (observed) variables were loaded to the intended latent variables (underlying constructs). Each latent variable in a specified model is usually defined by several manifest variables (Bollen, 1989). The 68 items that were intended to represent social support at work, job demands, job control, depression, and job performance were tested. The parameter estimate and the error variance of an observed variable for each latent variable were fixed to 1 and 0 as a reference indicator. Fourteen items of demographics, life stress, and absenteeism were excluded from factor analysis because factor analysis is not available for objective measures or single-item measures. Based on standardized residuals between manifest variables and parameter estimates, the least reliable items were screened. In this procedure, the items that were not loaded well on any latent variables were excluded.

In terms of four overall fit indices and standardized parameter estimates, the measurement models were ensured with the screened observed items using confirmatory factor analysis. The four overall fit indices and standardized parameter estimates used in this study will be described in detail in the 'hypothesis test' section. The closer the standardized estimate to 1.00 the closer the relationship between the manifest variable and the latent variable (Bollen, 1989). T-value is a significance indicator of each estimate and greater than 1.96 t-value equals to less than .05 p-value.

Four measurement models were tested to ensure that scales behaved as intended in the four hypothesis tests with the screened items. Absenteeism and job performance were not included in the tests of measurement models because they were measured with one manifest variable each. Three measurement models were confirmed with item-unit data, and the measurement model for the test of interaction effects was tested with parcel-

unit data. Ideally, the best approach to model testing is to use item-unit data. However, using parcel-unit data is a popular alternative in relation to the power issue when the sample size is small and the number of parameters to be identified is large (Bandalos & Finney, 2001). A parcel consists of a set of several items. The items within a parcel are significantly correlated with each other. The average score of the items within a parcel takes the same role the score of an item in the analysis. The test identifying the interaction effects of social support requires dividing the samples into two groups (the high support group and low support group) in multi-group analysis (Joröskog & Sörbom, 1996). Accordingly, the sample size is reduced to half but the numbers of parameters which should be identified are not reduced in model testing per group. In this case, the power issue could be a serious problem because so many estimates must identified with a small sample. Thus, the sample size needs to be enlarged or the number of parameter needs to be decreased to maintain eligible power. Using parceled data is useful to reduce the number of parameters which must identified, when the sample size can not be changed.

The first measurement model was for the hypothesis test of main effects of social support at work. The first measurement model has a type of higher-order latent variable structure for social support at work. Higher order constructs have been used in situations where the meaning of a conceptual entity cannot be captured through its individual components, but must be captured through common forces underlying those components (James, James, & Ashe, 1990). In the second-order latent variable approach, the second order latent variables are defined by the first order latent variables, and the first order latent variables are operationalized by several manifest variables (MacCallum, Browne,

& Sugawara, 1996). The first measurement model consisted of six first-order latent variables and one second-order latent variable. The first-order latent variables were organizational support, supervisor support, coworker support, job demands, job control, and depression. Organizational support, supervisor support, and coworker support comprised the second-order latent variable, social support at work.

Parceled data were used for the test of the second measurement model due to the ratio of the sample size to parameters which should be identified. Based on standardized residuals between items in confirmatory factor analysis, two or three parcels were created in a latent variable. Then, the study population was divided to two groups: the high support group and the low support group. The measurement models of the two samples were examined both individually and collectively. The third and fourth measurement models confirmed the measurement structure of social support at work by source and by function. In the third measurement model, organizational support, supervisor support, coworker support, job demands, job control, and depression were examined as latent variables. In the fourth measurement model, social support at work was examined by functions of support at work: organizational support, information from supervisor and coworker, material from supervisor and coworker, emotion from supervisor and coworker, appraisal support from supervisor and coworker, and undermining from supervisor and coworker.

Hypothesis Tests

Descriptive statistics were analyzed using SPSS version 10.1 (Norusis, 1997). To describe the basic response patterns of data by variables descriptive statistics (mean, standard deviation, and percentage) were calculated. Simple correlations between all

latent variables and internal reliability values (Cronbach's alpha) for the latent variables were generated. Prior to the hypothesis test, the impact of demographic variables and stressful life events on depression were examined using multiple regression analysis because the variables could be controlled, if necessary, in the hypothesis tests to clearly identify the effects of work stress on depression and its outcomes.

To test the four hypotheses, this study employed the structural equation modeling using LISREL version 8.5 (Du Toit & Du Toit, 2001). The first hypothesis test was to identify the main effect of social support at work on the proposed work stress framework using the second-order latent variable approach. Eleven latent variables were analyzed in the first-order level. Social support at work was analyzed at the second-order level. Job performance and absenteeism had fixed parameter estimates and error variances because these latent variables were estimated by single-item observed variables. Their parameter estimates on the latent variables were the square root of the observed variables' reliability. As a rule of thumb, .60 has been used as the reliability value of a single-item variable. Similarly, the 1st-order error variances of the observed variables were fixed one minus the reliability times the variance of the measure (Vandenberg & Scarpello, 1990; Williams & Hazer, 1986). The parameter estimates of job performance and absenteeism observed variables on their latent variables were .775. Their error variances were .40 and .41.

The second hypothesis test was to identify the interaction effect of support on the proposed work stress framework. Multi-group analysis in structural equation modeling was applied to this hypothesis test. Multi-group analysis has been used to estimate moderating effects of certain factors or treatments on path relations between variables (Jorëskog & Sörbom, 1996). In the analysis, the entire sample was divided into two groups by their support levels: high support group and low support group. The cut-off

point dividing the two groups was the median score of the summed support scores. The median score has been frequently used in most cases to equal the statistical power of the two groups if the median value was not far from the mean value. The median value was appropriate in this study because the average of the total support scores was 59.0, which was close to the median value of 60.0. Before the test of interaction effect, multi-group analysis requires that the data satisfy the two basic assumptions: the equal measurement structure and the equal factor loading between the two data sets. After that, the hypothesized path relationships moderated by social support at work were examined one by one through whole analysis steps. In each analysis step, one parameter of one data set was set to be equal to the corresponding parameter of the other data set. There is significant interaction effect on the constraint parameter if the model has significantly increased chi-square values compared with the previous model. A total of six analysis steps were conducted to the interaction effect test of social support at work.

The third and forth hypothesis tests were post-hoc tests of the first hypothesis test. Based on the significant effects of social support at work on the proposed work stress process, the third test identified which sources of support at work were significantly related to the variables identified in the main effect test. The forth test followed exactly the same analysis process as the third test and identified the functions of support at work that were more related to the variables which were significantly related to social support in the main effect test.

All hypothesis tests were interpreted in terms of the two aspects: overall model fit and parameter estimates. Overall fit index generally indicates the degree of fit of the hypothesized model to the data in terms of both the structural model and the measurement model. However, the fit index does not specify the test of hypothesized path relationships. The estimates for the parameters can answer whether hypothesized relationships within the model were satisfied. Each parameter estimate was examined in

terms of two-tail test. Standardized estimates were generated and the greater the estimate the stronger the relationship between the two latent variables. Thus, overall fit index and parameter estimate accompany each other in output interpretation of hypothesis tests.

Various fit indices have been used in the structural equation modeling approach. This study used four fit indices. The first index was the chi-square test of model fit. Ideally, a statistically nonsignificant chi-square value should be observed to infer good fit. However, inferring the fit between a theoretical model and data in chi-square test is frequently ill advised because a statistically significant chi-square value of bad fit can be obtained even when all of the other indices indicate that the specified model provides an excellent fit to the data (Bollen, 1989; Hu & Bentler, 1993). This derives from the fact that the chi-square test is very sensitive to even minor deviations between the observed and reproduced data matrices, and is quite susceptible to sample size influences (Bollen & Long, 1993; Marsh, Balla, & McDonald, 1988). That is, the chi-square test provides a conservative dimension of the model fit if the misleading effect of the sample size is considered as well. Thus, it is suggested calculating the chi-square to degrees-of-freedom ratio as a supplement to chi-square test (Medsker, Williams, & Holahan, 1994). Carmines and McIver (1981) indicated that ratios of five were viewed as a lower bound limit and ratios of three or less are indicators of excellent fit.

The second fit index was the Tucker-Lewis index (TLI; Tucker & Lewis, 1973). The TLI appropriately penalizes model complexity and appropriately rewards model parsimony. TLI is relatively: (1) insensitive to sample size, (2) sensitive to model misspecifications, (3) insensitive to violations of assumptions of multivariate normality, and (4) relatively insensitive to estimation methods (Hu & Bentler, 1999). The third fit index was the relative noncentrality index (RNI; McDonald & Marsh, 1990). The RNI is recommended when research investigators put their credence in null models and do not want to weight the badness-of-fit ratio with a parsimony ratio as does the TLI. Although the value may fluctuate outside of this range under some situations, the TLI and RNI vary

between 0 and 1.0 with values above .90 indicative of good-fitting models. The fourth fit index was the root mean square error of approximation (RMSEA; Steiger, 1990). Unlike the other indices, the RMSEA does not require a null model in its calculation and does not conflict with the requirements for parsimony. The definition of the RMSEA is based on the property that the minimum value of the discrepancy function is close to the systematic lack of fit of the model (Browne & Cudeck, 1993; Jorëskog & Sörbom, 1996). Ideally, there should be no error, but realistically, values .08 or less represent reasonable errors of approximation in the population (Wilson, DeJoy, Vandenberg, Richardson, & McGrath, 2002).

CHAPTER 4

RESULTS

This chapter presents the results of the statistical analyses conducted for this study. The first section addresses the validation of the measurement model, followed by the participants' demographic characteristics and occupational characteristics in the second section. The third through the sixth sections present the results of the four hypothesis tests. The third section presents the findings of social support at work in terms of the main effects on the proposed work stress framework. The fourth section presents the interaction effects of social support at work on the proposed work stress framework. The last two sections present which sources of support and which functions of support were closely related to the variables that showed significant relationships to social support at work in the main effect test.

Validation of Measurement Models

Among 69 scaled items used in the survey (Appendix A), 50 items were selected as valid items for hypothesis tests. Through factor analysis, 19 items were dropped (See Table 4.1). Initially, 23 items of social support (nine items of organizational support, seven items of supervisor support, and seven items of coworker support), nine items of perceived job demands, 22 items of job control, 12 items of depression, and two items of job performance were examined in the measurement model tests. Among them, two items of supervisor social support (item numbers 15 and 16), two items of coworker support (item numbers 20 and 21), two items of perceived job demands (item numbers 27 and 29), nine items of job control (item numbers 33, 36, 38, 44, 47, 49, 51, 52, and 53), three

items of depression (item numbers 63, 64, and 65), and one item of job performance

(self-rated performance) did not appropriately explain the intended latent variables and

were excluded from hypothesis tests.

Table 4.1

Description of measures used in the survey and in the analysis

Variables	Numbers of items used in the survey	Numbers of items used in model tests
Organizational support	9	9
Supervisor support	7	5
Coworker support	7	5
Job demands	9	7
Job control	22	13
Depression	12	9
Absenteeism	1 (Absent days during the past three months)	1 (Absent days during the past three months)
Job performance	2 (Self-rated and supervisor-rated performance)	1 (Supervisor-rated performance)
Stressful life events out of work	7	0
Demographics	6	0
Total	82	50

None of the demographic variables or stressful life events was used in the

hypothesis tests because these did not have significant effects on depression in multiple

regression analysis (Appendix B). With these 50 observed items, four measurement

models for four hypothesis tests were validated using confirmatory factor analysis.

Four measurement models were confirmed to ensure that the scales behaved as

intended in terms of overall model fit and parameter estimates. Overall model fit

indicates whether a measurement model has a generally acceptable factor loading pattern

of variables. Four fit indices (χ^2 /df, RMSEA, TLI, and RNI) were used in this study.

Parameter estimates indicate how well the item loaded on the designated latent variable.

Thus, all estimates represented the relative factor loading values compared with the

standardized estimate 1.0 to the perfect loading.

Strong fit was observed for the measurement models for Hypotheses 1, 3, and 4.

The measurement model for Hypothesis 2 was the least strong but still acceptable (Table

4.2). The measurement models for Hypothesis 1, 3, and 4 revealed chi-square to the

degrees-of-freedom ratios lower than the 3.0 good fit standard. The RMSEA values were

also lower than the .05 good fit standard. The TLI and RNI values were greater than

the .90 good fit standard. In contrast, the measurement model for Hypothesis 2 had the

least acceptable fit in terms of the RMSEA and TLI. However, these almost reached the

acceptable boundaries. The TLI almost reached the .90 good fit standard and the RMSEA

value was acceptable at .08 standard. Thus, all four measurement models were

statistically adequate to examine the hypotheses tests.

Table 4.2

Overall model fits of the four measurement models

Measurement model	χ^2 (df)	χ^2 /df	RMSEA	TLI	RNI
The measurement model for Hypothesis 1	1590.21 (1072)*	1.48	.04	.92	.92
The measurement model for Hypothesis 2	105.47 (56)*	1.88	.08	.88	.91
The measurement model for Hypothesis 3	1581.78 (1065)*	1.49	.04	.92	.92
The measurement model for Hypothesis 4	1567.23 (1052)*	1.49	.04	.92	.92

*: p= .00

Appendices C.1 to C.4 show the measurement models including the corresponding structure models of the hypotheses tests. The rectangular boxes represent manifest variables and the capitalized variables designate latent variables. The bold lines with arrows identify the measurement model analyzed in the confirmatory factor analysis. Other dotted lines with arrows point out the structural model examined in hypothesis tests.

The first measurement model was for Hypothesis 1 (See Appendix C.1). All 50 observed variables behaved as intended in terms of their standardized estimates (Table 4.3). All estimates were significant at the .05 level. In the first-order level, organizational support, supervisor support, and coworker support had strong measurement structures. All standardized estimates of manifest variables for the three first-order latent variables were over .70. Job control and depression also had good measurement structures. All estimates for job control and depression reached to .50. Job demands had two items whose estimates were less than .50; however, the two items were still acceptable.

This measurement model, which was built with a second-order latent variable of social support, fit the data significantly better than the measurement model with simply one latent variable of social support at work. This means that the first-order latent variables (organizational support, supervisor support, and coworker support) have their own unique factors as well as a common factor of overall social support at work. Organizational support and supervisor support (first-order level) were strongly loaded on the second-order social support at work but the estimate of coworker support was relatively small.

Table 4.3

Parameter estimates of the measurement model for Hypothesis 1

Variables	OS	SS	CS	Job demands	Job control	Depression	Social support at work
1st-order							
Item#1	.85 (RI)						
Item#2	.91 (.05)						
Item#3	.90 (.05)						
Item#4	.92 (.05)						
Item#5	.81 (.06)						
Item#6	.91 (.05)						
Item#7	.89 (.05)						
Item#8	.85 (.05)						
Item#9	.76 (.06)						
Item#10		.87 (RI)					
Item#11		.95 (.05)					
Item#12		.89 (.06)					
Item#13		.74 (.06)					
Item#14		.85 (.06)					
Item#17			.81 (RI)				
Item#18			.86 (.08)				
Item#19			.91 (.07)				
Item#20			.78 (.08)				
Item#21			.77 (.08)				
Item#24				.77 (RI)			
Item#25				.68 (.08)			
Item#26				.58 (.10)			
Item#28				.74 (.10)			
Item#30				.36 (.09)			
Item#31				.59 (.10)			
Item#32				.41 (.11)			
Item#34					.62 (RI)		
Item#35					.57 (.11)		
Item#37					.50 (.11)		
Item#39					.66 (.14)		
Item#40					.59 (.13)		
Item#41					.53 (.12)		
Item#42					.52 (.11)		
Item#43					.49 (.11)		
Item#45					.73 (.12)		
Item#46					.53 (.11)		
Item#48					.67 (.11)		
Item#50					.68 (.12)		
Item#54					.68 (.11)		
Item#55						.51 (RI)	
Item#56						.66 (.18)	
Item#57						.59 (.16)	
Item#58						.88 (.19)	
Item#59						.50 (.17)	
Item#60						.61 (.15)	
Item#61						.49 (.16)	
Item#62						.49 (.17)	
Item#66						.78 (.18)	
2nd-order							
OS							.88 (RI)
SS							.76 (.09)
CS							.33 (.06)

Note. OS = Organizational support, SS = Supervisor support, CS = Coworker support,
All numbers are standardized estimates (standard errors). RI = Reference indicator
(Standard error and significance are not estimated for reference indicators.)

The second measurement model was to test interaction effects of social support at work. Parceled data were used for the test of the interaction effect. Two parcels for job demands, three parcels for job control, and two parcels for depression were created based on standardized residuals between items in confirmatory factor analysis. Two parcels of job demands consisted of three items (Item numbers 24, 25, and 26) and four items (Item numbers 28, 30, 31, and 32). Three parcels of job control consisted of five items (Item numbers 34, 35, 37, 45, and 46), four items (Item numbers 43, 48, 50, and 54), and four items (Item numbers 39, 40, 41, and 42) each. Two parcels of depression consisted of three items (Item numbers 56, 58, and 66) and six items (Item numbers 55, 57, 59, 60, 61, and 62). The composite scores of the items within a parcel were used in the analyses. The same measurement model (See Appendix C.2) was tested both in the low and the high support groups because in order to test the interaction effect, one structure model was examined in the two groups, and the patterns of the structure model in both groups were compared with each other. All parameter estimates in the measurement model indicated that parcels created from the original items behaved as intended at the .05 level. All standardized estimates reached to .50 or greater, which means all factor loadings were stable (Table 4.4).

The third and fourth measurement models were for Hypotheses 3 and 4. The third measurement model specified social support at work by source of support: organizational support, supervisor support, and coworker support. The three sources of support were the first-order latent variables of social support in the first measurement model (See Appendix C.3). All observed items behaved as intended regarding support by source in the confirmatory factor analysis. The factor loading of all items on the intended latent

variables were significant at the .05 level. The standardized estimates were over .50

except two items of job demands. However, the two items were still acceptable (Table

4.5).

Table 4.4

Parameter estimates of the measurement model for Hypothesis 2

Parcel	Low support group			High support group		
	Job demands	Job control	Depression	Job demands	Job control	Depression
Job demands 1	1.00 (RI)			1.00 (RI)		
Job demands 2	.61 (.09)			.64 (.09)		
Job control 1		1.00 (RI)			1.00 (RI)	
Job control 2		.60 (.05)			.59 (.07)	
Job control 3		.64 (.06)			.49 (.08)	
Depression 1			1.00 (RI)			1.00 (RI)
Depression 2			.70 (.10)			.75 (.10)

Note. RI=Reference indicator, All numbers are standardized estimates (standard errors).

The last measurement model was for Hypothesis 4. Initially, one organizational

support and four functions of support each from supervisor and coworker were entered in

confirmatory factor analysis. However, the factor structures of supervisor support and

coworker support changed. Information and material support were clustered to one

variable and emotional and appraisal support were clustered to another variable. These

factor loading patterns were the same in supervisor support and in coworker support.

Organizational support worked as intended (See Appendix C.4). All items were

significantly loaded to their latent variables at the .05 level. Their parameter estimates

also indicated that the latent variables within the model were excellently represented by

the selected manifest items (Table 4.6).

Table 4.5

Parameter estimates of the measurement model for Hypothesis 3

Variables	OS	SS	CS	Job demands	Job control	Depression
Item#1	.84 (RI)					
Item#2	.91 (.05)					
Item#3	.89 (.06)					
Item#4	.91 (.06)					
Item#5	.80 (.06)					
Item#6	.91 (.06)					
Item#7	.89 (.06)					
Item#8	.84 (.06)					
Item#9	.75 (.06)					
Item#10		.87 (RI)				
Item#11		.94 (.05)				
Item#12		.89 (.06)				
Item#13		.73 (.06)				
Item#14		.85 (.06)				
Item#17			.81 (RI)			
Item#18			.86 (.08)			
Item#19			.91 (.07)			
Item#20			.78 (.08)			
Item#21			.77 (.08)			
Item#24				.77 (RI)		
Item#25				.68 (.08)		
Item#26				.58 (.10)		
Item#28				.74 (.10)		
Item#30				.36 (.09)		
Item#31				.59 (.10)		
Item#32				.41 (.11)		
Item#34					.62 (RI)	
Item#35					.57 (.11)	
Item#37					.50 (.11)	
Item#39					.66 (.14)	
Item#40					.59 (.13)	
Item#41					.53 (.12)	
Item#42					.52 (.11)	
Item#43					.49 (.11)	
Item#45					.73 (.12)	
Item#46					.53 (.11)	
Item#48					.67 (.11)	
Item#50					.68 (.12)	
Item#54					.68 (.11)	
Item#55						.51 (RI)
Item#56						.66 (.18)
Item#57						.58 (.16)
Item#58						.88 (.19)
Item#59						.50 (.17)
Item#60						.61 (.15)
Item#61						.49 (.16)
Item#62						.50 (.17)
Item#66						.78 (.18)

Note. OS=Organizational support, SS=Supervisor support, CS=Coworker support, RI = Reference indicator
All numbers are standardized estimates (standard errors).

Table 4.6

Parameter estimates of the measurement model for Hypothesis 4

Variables	OS	SS (I&M)	SS (E&A)	CS (I&M)	CS (E&A)	Job demands	Job control	Depression
Item#1	1.00 (RI)							
Item#2	1.05 (.05)							
Item#3	1.05 (.06)							
Item#4	1.07 (.06)							
Item#5	.95 (.06)							
Item#6	1.09 (.06)							
Item#7	1.09 (.06)							
Item#8	.92 (.06)							
Item#9	.88 (.06)							
Item#10		1.00 (RI)						
Item#11			1.00 (RI)					
Item#12		1.09 (.06)						
Item#13		.87 (.06)						
Item#14			.89 (.04)					
Item#17				1.00 (RI)				
Item#18					1.00 (RI)			
Item#19				1.25 (.07)				
Item#20				1.14 (.08)				
Item#21					.94 (.06)			
Item#24						1.00 (RI)		
Item#25						.76 (.08)		
Item#26						.84 (.10)		
Item#28						1.05 (.10)		
Item#30						.46 (.09)		
Item#31						.80 (.10)		
Item#32						.63 (.11)		
Item#34							1.00 (RI)	
Item#35							.81 (.11)	
Item#37							.75 (.11)	
Item#39							1.18 (.14)	
Item#40							.97 (.13)	
Item#41							.85 (.12)	
Item#42							.76 (.11)	
Item#43							.74 (.11)	
Item#45							1.12 (.12)	
Item#46							.80 (.11)	
Item#48							.97 (.11)	
Item#50							1.00 (.12)	
Item#54							.98 (.11)	
Item#55								1.00 (RI)
Item#56								1.25 (.18)
Item#57								1.03 (.16)
Item#58								1.55 (.19)
Item#59								1.02 (.17)
Item#60								1.03 (.15)
Item#61								.95 (.16)
Item#62								1.03 (.17)
Item#66								1.40 (.18)

Note. All numbers are standardized estimates (standard errors). RI = Reference indicator, OS=Organizational support, SS (I&M)=Information and material support from supervisor, SS (E&A)=Emotion and appraisal support from supervisor, CS (I&M)=Information and material support from coworker, CS (E&A)=Emotion and appraisal support from coworker

Description of the Participants

A total of 240 cases were analyzed. Distributions of job demands, job control, depression, and social support were conducted from the perfect 240 cases using multiple imputation technique.

Demographic Characteristics

The ages of the participants ranged from 20 to 76 years of age. The majority of them were in the 40s (30.3%) and the 50s (35.5%). The average age was 46.12 years old ($\underline{SD}$ = 11.01). The majority of the participants were women (71.5%), and were married or lived with partners (48.2%) (Table 4.7).

Table 4.7

Demographic characteristics of participants

Variable	N	%
Age (years)		
20 – 29	20	9.5
30 – 39	31	14.7
40 – 49	64	30.3
50 – 59	75	35.5
60 or older	21	10.0
Total	211	100.0
Gender		
Men	67	28.5
Women	168	71.5
Total	235	100.0
Marital status		
Never married/live alone	51	22.4
Divorced/separated	67	29.4
Married/live with partner	110	48.2
Total	228	100.0

<u>Occupational Characteristics</u>

Duration of work for the present organization ranged from one month to 32 years. More than half of participants had worked in the organization less than five years (<u>n</u> = 115). Medical technicians and support staff working in housekeeping, maintenance, or food service comprised the largest job categories, whereas doctors and nurses were less than 20% of total participants (Table 4.8).

The majority of participants were full-time employees. About 43% of the participants answered that their job performance was rated as 'excellent,' or 'very good' by their supervisors on the most recent performance evaluation. The average absent days during the past three months were approximately one day (<u>M</u> = .91, <u>SD</u> = 3.44) with 44.2% of participants who had never been absent from their offices during the three months before the survey.

Means and standard deviations of variables included in hypothesis tests are presented in Table 4.9. Correlation and internal reliability (Cronbach's alpha) of the scores of all latent level variables are also shown in the table. The numbers within parentheses on the diagonal of correlation matrix are Cronbach's alpha values of the scores of the scales. Most scores showed Cronbach's alpha values at .8 to .9, which means they had strong internal reliability. Organizational support was lower than the other kinds of support at work. Participants responded that their depressive symptoms were at a mild level, close to 'some or little of the day.' Depression and job control showed stronger correlation with social support at work than did other variables.

Table 4.8

Occupational characteristics of participants

Variable	N	%
Duration of work in the organization		
Less than 1 year	35	15.6
1 year or more and less than 5 years	80	35.6
5 years or more and less than 10 years	37	16.4
10 years or more and less than 20 years	36	16.0
20 years or more and less than 30 years	29	12.9
30 years or more	8	3.6
Total	225	100.0
Job category		
Physician	6	2.6
Nurse	33	14.2
Technician	60	25.8
Administration	32	13.7
Program assistant	28	12.0
Support staff	40	17.2
Social worker or psychologist	17	7.3
Others	17	7.3
Total	233	100.0
Job status		
Full-time employees	222	94.1
Part-time employees	14	5.9
Total	236	100.0
Job performance (Supervisor-rated)		
Unsatisfactory	5	2.1
Satisfactory	50	20.8
Good	83	34.6
Very good	72	30.0
Excellent	30	12.5
Total	240	100.0
Absenteeism (during the past 3 months)		
None	106	44.2
1 – 2 days	80	33.3
3 – 4 days	25	10.4
5 days or more	29	12.1
Total	240	100.0

Table 4.9

Correlations between variables

Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1. Organizational support	2.83	1.21	(.96)									
2. I & M support from supervisor	3.22	1.26	.62**	(.88)								
3. E & A support from supervisor	3.51	1.00	.25**	.30**	(.89)							
4. I & M support from coworker	3.26	1.24	.58**	.83**	.32**	(.87)						
5. E & A support from coworker	3.37	1.10	.21**	.21**	.81**	.27**	(.82)					
6. Job demands	3.38	.81	-.10	-.08	-.06	-.03	-.04	(.79)				
7. Job control	2.91	.81	.35**	.25**	.08	.25**	.05	-.04	(.88)			
8. Depression	1.74	.63	-.18**	-.20**	-.19**	-.16*	-.21**	.09	-.01	(.84)		
9. Job performance (reversed)	3.30	1.00	.17**	.15*	.04	.15*	.04	.09	.22**	.04	(NA)	
10. Absenteeism	.91	1.01	.02	-.03	-.01	-.01	-.04	-.08	-.02	.09	-.06	(NA)

Note. $\underline{N} = 240$, * : $\underline{p} < .05$, ** : $\underline{p} < .01$, I & M = Information and material, E & A = Emotion and appraisal, NA = Not available

All Constructs were scored based on a five-point scale ranging from one to five except depression and absenteeism. Depression was scored in a four-point scale ranging from one to four and absenteeism was measured with respondents' absent days.

Main Effects of Social Support on Job Demands, Job Control, Depression,

Job Performance, and Absenteeism

The primary purpose of the study was to determine whether social support at work had beneficial effects on the proposed work stress framework. The first hypothesis test examined whether social support at work had main effects on job demands, job control, depression, job performance, and absenteeism.

The first hypothesis test showed an excellent fit, which means the main effect model was supported by the data. This strong overall model fit indicated that both the measurement part and the structure part of the model generally fit the data. All four fit indices suggested good fit for the model. The significance of chi-square statistic needs to be checked with the chi-square to the degrees-of-freedom ratio because the chi-square statistic is very sensitive to sample size and frequently rejects the null hypothesis. The chi-square statistic was rejected (χ^2 (1165) = 1689.58, $\underline{p}$= .00); however, the chi-square to the degrees-of-freedom ratio was 1.45, which was far lower than the excellent fit standard of less than 3.0. RMSEA was .039, which was within the good fit standard of less than .05. The TLI and RNI were .918 and .922 each, which were greater than the .90 standard to infer good fit.

Concerning parameter estimates, social support at work had significant relationships with job control, depression, and job performance (Figure 4.1). Social support at work had a strong positive relationship with job control, which means the greater the social support at work, the greater the job control. One unit increase of social support drove a .386 increase of job control in examining the unstandardized estimate and the standardized coefficient was over .40. Social support at work had significant

relationships with both of the psychological outcome and the performance outcome. Social support at work had an opposite relationship to depression, which means the greater the social support, the lower the depressive symptoms. One unit increase of social support at work was related to a .168 decrease of depression in examining an unstandardized coefficient estimate. The standardized coefficient reached .30. Also, social support at work was positively related to job performance and the standardized estimate was over .30. The unstandardized coefficient estimate was a .348. One unit increase of social support at work drove .348 increase of supervisor-rated job performance. Social support affected the organizational outcome as well as the psychological outcome.

The proposed work stress framework hypothesized that job demands and job control affect depression and depression subsequently affects job performance and absenteeism. There was no significant relationship between job demands, job control, job performance, and absenteeism. In terms of overall model fit, significance in all path relationships is not required to obtain good fit. Overall model fit indicates that generally most parameters within a model fit the data well, although not all parameters do so at a significance level.

Interaction Effects of Social Support on the Proposed Work Stress Framework

The second hypothesis test was conducted to identify whether social support at work buffered the negative effects of work stressors on psychological and organizational outcomes. This test examined the interaction effects of social support at work on the proposed work stress process linking job demands, job control, depression, job performance, and absenteeism. Four interaction effects of social support at work were
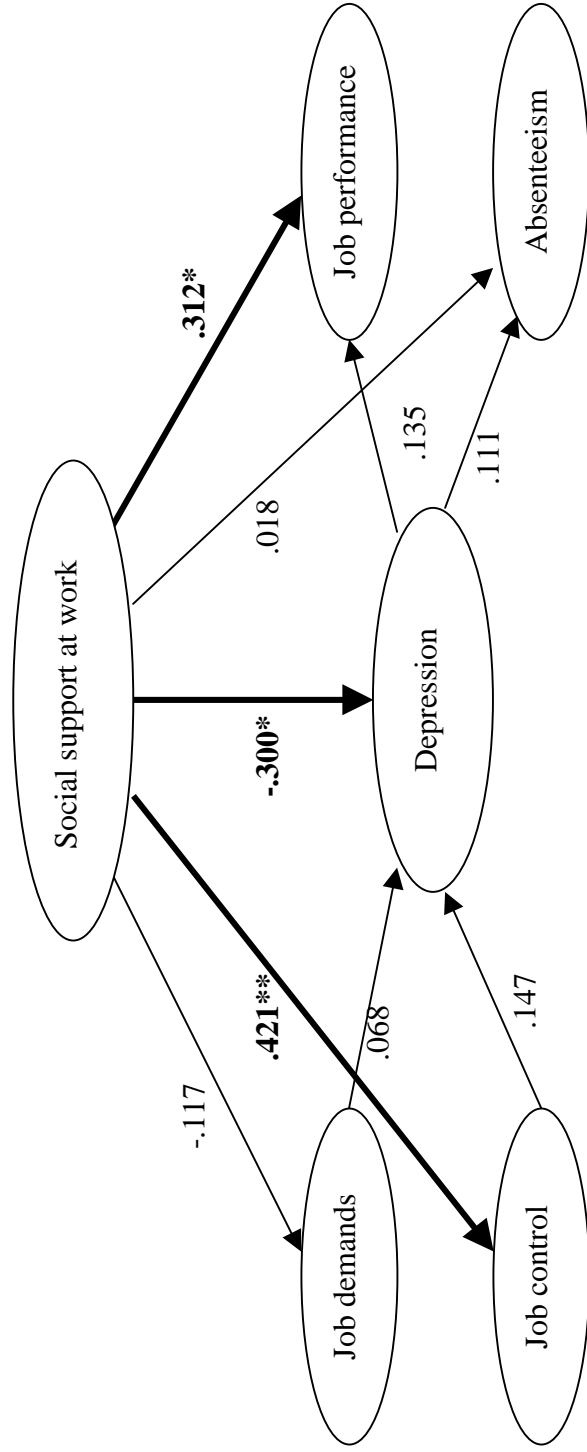
Figure 4.1. The main effects of social support at work on job demands, job control, depression, job performance, and absenteeism

Note. Numbers on the lines = Standardized parameter estimates

*: $\underline{p} < .05$ ($\underline{t} > 1.960$), **: $\underline{p} < .01$ ($\underline{t} > 2.576$)

examined for the relationships between job demands and depression, job control and depression, depression and absenteeism, and depression and job performance.

Social support at work did not buffer the negative effects of work stressors on their outcomes as Figure 4.2 shows standardized estimates in the high support group and in the low support group when all parameters were set equal between groups in multi-group analysis. No significant difference between in the high support group and in the low support group was found over all parameters. This result was generated through six analysis steps comparing the changes of chi-square tests at the changes of the degrees of freedom between adjacent nested models shown in Table 4.10. There was no significant increase of the chi-square statistic at one unit increase of the degree of freedom between adjacent models, which means that there was no interaction effect of social support at work on the four parameters linking job demands to depression, job control to depression, depression to job performance, and depression to absenteeism.

The first two analyses were to confirm the basic assumptions of multi-group analysis and the last four analyses were to examine interaction effects among the six analysis steps. First, to confirm the first basic assumption, it was tested whether the two groups had the equal measurement structures. The chi-square to the degrees of freedom ratio and the RNI suggested excellent fit. The chi-square to the degrees-of-freedom ratio was lower than the 3.0 standard and RNI was greater than the .90 good fit standard. The RMSEA reached the .08 acceptable fit standard although somewhat greater than the .05 standard for good fit (Table 4.10). The TLI was slightly smaller than the .90 standard for good fit. However, overall, the model for the equal measurement structure was still within acceptable boundaries because three indices were excellent and the other index

almost reached the good fit criteria. The other basic assumption of multi-group analysis is

that measurement models of the two groups should be equal. That is, all factor loadings

of variables should be equal between groups. The change of the chi-square to the change

of the degrees-of-freedom from the first model to the second model was not significant,

which means the two groups had equal factor loadings. The second model was even more

impressive than the first model. The chi-square to the degrees-of-freedom ratio and TLI

indicated that the second model had better fit than the first model. The chi-square to the

degrees of freedom ratio and RNI strongly supported the acceptability of the second

model. Thus, the two basic assumptions required in the interaction effect test were
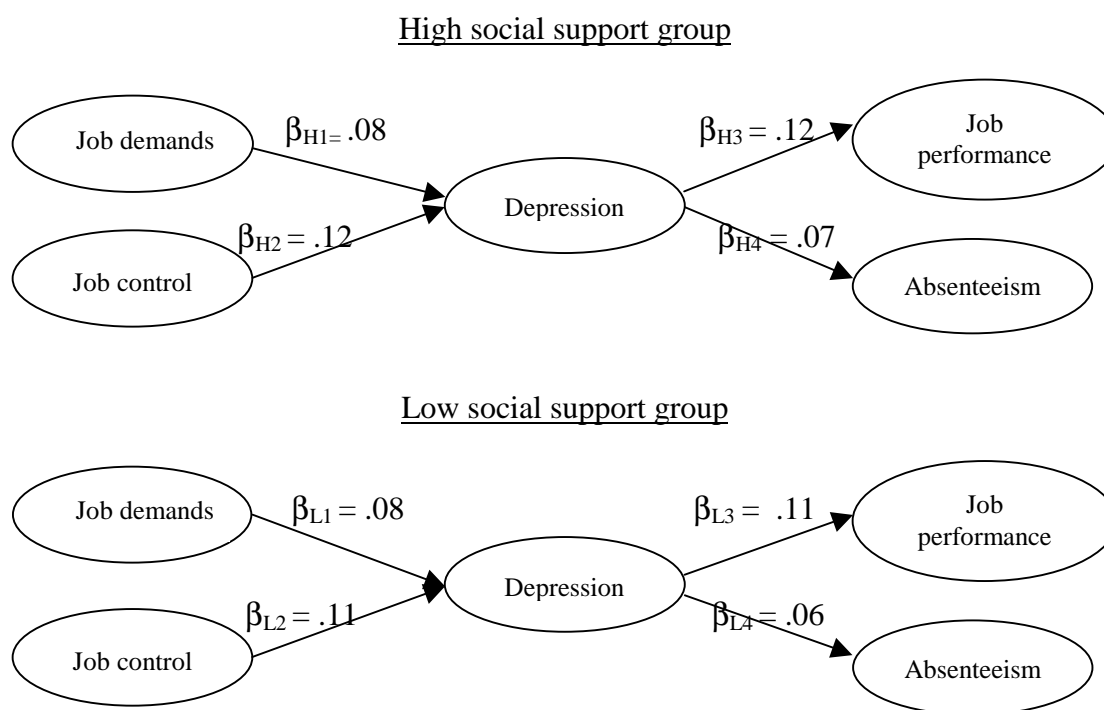
satisfied.

Figure 4.2. Comparison of the parameters between the high support group and the low

support group in the last step of multi-group analysis

Note. Greek characters with subscripts on the arrow lines indicate the designated paths
and all numbers are standardized parameter coefficients in the last step of multi-group
analysis.

Table 4.10

Interaction effects of social support at work on the work stress framework

Step	Test	Null hypothesis	χ^2 (df)	χ^2/df	RMSEA	TLI	RNI
①	Equal factor structures	Measurement structures are equal between groups.	105.47 (56)*	1.88	.08	.88	.91
	① vs. ②		$\Delta\chi^2$ / Δdf =3.44 / 4 (p=.49)				
②	Equal factor loadings	Measurement models are equal between groups.	108.91 (60)*	1.82	.08	.89	.91
	② vs. ③		$\Delta\chi^2$ / Δdf =1.26 / 1 (p=.26)				
③	Interaction of SS on the relationship between job demands and depression	$\beta_{H1} = \beta_{L1}$	110.17 (61)*	1.81	.08	.89	.91
	③ vs. ④		$\Delta\chi^2$ / Δdf = .43 / 1 (p=.51)				
④	Interaction of SS on the relationship between job control and depression	$\beta_{H2} = \beta_{L2}$	110.60 (62)*	1.78	.08	.89	.91
	④ vs. ⑤		$\Delta\chi^2$ / Δdf = .86 / 1 (p=.35)				
⑤	Interaction of SS on the relationship between depression and job performance	$\beta_{H3} = \beta_{L3}$	111.46 (63)*	1.77	.08	.90	.91
	⑤ vs. ⑥		$\Delta\chi^2$ / Δdf = .10 / 1 (p=.75)				
⑥	Interaction of SS on the relationship between depression and job performance	$\beta_{H4} = \beta_{L4}$	111.56 (64)*	1.74	.07	.90	.91

Note. SS=Social support at work. All Greek characters in the null hypothesis column indicate the corresponding parameters in Figure 4.2. $\Delta\chi^2$ / Δdf = The changes of Chi-square tests at the changes of the degrees of freedom between adjacent nested models.

*: p = .00

Steps three through six tested the interaction effects of social support on the proposed work stress process (Table 4.10). The third test step was to identify whether there was a significant interaction effect of social support on the relationship between job demands and depression. This analysis set the parameter estimate of job demands on depression in the high support group equal to that in the low support group. The change of chi-square to the change of the degrees-of-freedom was not significant ($\underline{p}$= .26), which meant that the relationship between job demands and depression did not differ by social support level, and there was no interaction effect of social support between job demands and depression.

In this way, one by one, the other three parameters were set to be equal between the social support groups; however, no interaction effect of support at work was found. The changes of the chi-square to the change of the degrees-of-freedom were .43 (p= .51) for the parameter between job control and depression, .86 (p= .35) for the parameter between depression and job performance, and .10 (p= .75) for the parameter between depression and absenteeism. Although the degrees-of-freedom increased through analysis steps, the chi-square to degrees-of-freedom ratio, RMSEA, and TLI changed toward the better fit criteria, which indicated that the model without interaction effects of social support fit the data well.

Sources of Social Support at Work Affecting Job Control, Depression, and Job Performance

The third hypothesis test examined which sources of support at work drove the effect of social support on job control, depression, and job performance as a post-hoc test of the first hypothesis test. Social support at work was significantly related to job control,

depression, and job performance in the first hypothesis test. Organizational support,

supervisor support, and coworker support were examined as sources of support at work.

All four fit indices suggested the model by source of support (Figure 4.3) was

successful. The chi-square to the degrees of freedom was 1.46 (smaller than 3.0 fit

standard), although the chi-square statistic was rejected (χ^2 (1155) = 1682.69, $\underline{p}$ = .00).

The RMSEA was .04 smaller than .05 good fit standard. The TLI and RNI also suggested

the excellent fit and the values were .92 each greater than the .90 good fit standard.
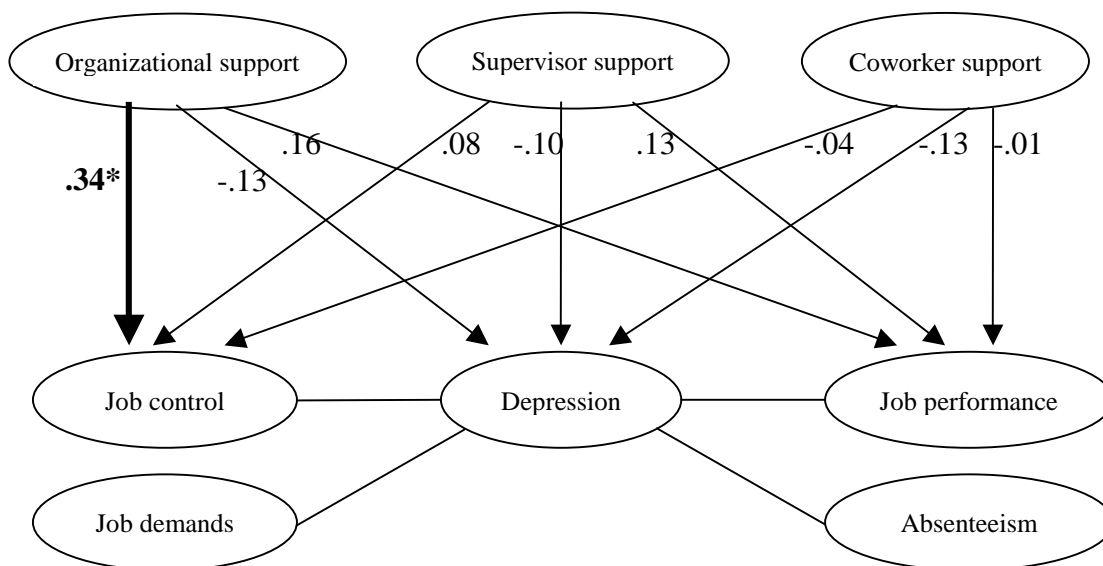
Figure 4.3. The main effects of support at work on job control, depression, and job

performance by source

Note. Numbers on the lines = Standardized estimates, **: $\underline{p}$ < .01 ($\underline{t}$ > 2.576)

Organizational support was significantly related to job control (Figure 4.3). The

greater the organizational support the better the job control. In terms of the

unstandardized parameter, one unit increase of organizational support was associated

with the .260 increase of job control. This suggested that organizational support contributed more to the significant effect of overall social support at work on the proposed work stress framework than supervisor support or coworker support. Supervisor support and coworker support were not significantly associated with job control, depression, and job performance. Thus, perceived high support from the organization had a positive relationship with job control. In contrast, sources of support in the lower levels such as supervisor or coworker were not significantly effective on job control, depression, and job performance.

<div align="center">

Functions of Social Support at Work Affecting Job Control,

Depression, and Job Performance

</div>

The fourth hypothesis test was to identify what functions of support had beneficial effects on the proposed work stress framework. Social support at work was significantly related to job control, depression, and job performance in the first hypothesis test. The fourth hypothesis test examined what functions of support drove the significant effect of social support on job control, depression, and job performance as a post-hoc test of the first hypothesis test. Organizational support, material/information support and emotional/appraisal support from supervisor, and material/informational support and emotional/appraisal support from coworker comprised the functions of support.

The fourth model had a strong fit. The chi-square to the degrees of freedom was 1.46 smaller than the 3.0 fit standard although the chi-square statistic was rejected (χ^2 (1138) = 1656.90, $\underline{p}$ = .00). The RMSEA was smaller .04 under the .05 good fit standard. The TLI and RNI also suggested the good fit of this model. Their values were both .92, which was greater than the .90 good fit standard.

Only organizational support was significantly related to job control by function of support (Figure 4.4). The scale of organizational support was not eligible by function. Examining the unstandardized estimate, one unit increase of organizational support drove the .33 increase of job control. However, organizational support was not related to depression and job performance. The other parameter estimates were not significant although some estimates were greater than the estimate for the relationship between organizational support and job control. This result was related to the large standard errors of estimates. Significance of a parameter estimate is determined by the ratio of the estimate to the standard error of the estimate. No functions of support from supervisor and coworker affected job control, depression, or job performance consistent with the results of the third hypothesis test.

Comparing the two models by source and function of support, the model by source of support had more stable estimates and standard errors on parameters than the model by function of support. This implied that the data was explained by source better than by function of support.

Summary

In summary, high social support at work had positive main effects on high job control, low depression, and high job performance. However, there was no interaction effect of social support on any parameters in the proposed work stress framework. These two results indicated that social support at work directly decreased both a psychological outcome and an organizational outcome rather than buffered the links between them. Examining main effects of social support by source and function in more detail, only organizational support was related to job control both by source of support and by

function of support. This suggested that organizational support could significantly

contribute to employees' perceptions of controllability over their jobs. The two post-hoc

analyses of the main effect model implied that sources of support were more important

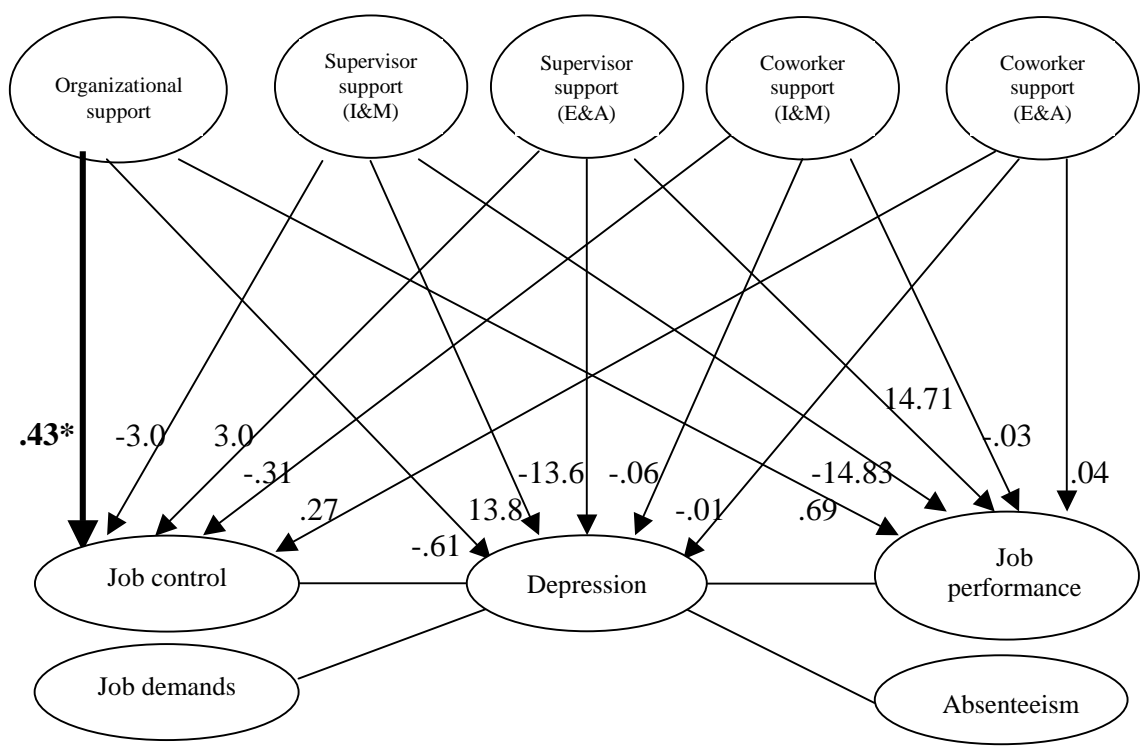than functions of support on employees' work stress.

Figure 4.4. The main effects of support at work on job control, depression, and job

performance by function

Note. Numbers on the lines = Standardized estimates, **: p< .05 (t > 1.960)
(I&M)=Information and material support, (E&A)=Emotion and appraisal support

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

This study examined how social support at work affected job demands, job control, depression, job performance, and absenteeism. The first two hypotheses addressed how social support at work affected the proposed work stress framework. The main and interaction effects of social support were examined on the constructs of job demands, job control, depression, job performance, and absenteeism. The other two hypotheses examined which characteristics of social support had beneficial effects on the proposed work stress framework.

Self-administered questionnaires were distributed to all employees in the Georgia Regional Hospital through the pay slip delivery system. Voice reminders followed over an 8-business day period through the hospital intercom system. The response rate was 31%. After data cleaning, 240 cases were used in statistical analyses. The questionnaires asked about the constructs of job demands and job control as work stressors, social support at work, depression as psychological strain, absenteeism and job performance as organizational outcomes of work stress, and demographics. The social support construct was operationalized in terms of source and function of support at work. This chapter provides the conclusions and implications of this study, focusing on two major findings: (1) how social support at work affects job demands, job control, depression, job performance, and absenteeism and (2) which characteristics of social support are more

effective than others. Additionally, study limitations and recommendations are presented for future work stress research and for interventions to reduce work stress.

Discussion and Conclusion

<u>The Effects of Social Support at Work on Job Demands, Job Control, Depression, Job Performance, and Absenteeism</u>

Social support at work had significant main effects on the proposed work stress framework; however, social support at work did not produce interaction effects. High social support at work was related to high job control, low depression, and high job performance. That is, social support at work affected not only the psychological outcomes but also the organizational outcomes of stress. This finding suggested that social support at work had a comprehensive and beneficial effect throughout the work stress framework, rather than influencing the link from one variable to another variable in the work stress framework.

Cohen and Wills (1985) help explain why this study did not find any interaction effect of social support on work stress. They noted that the main effect was the primary portion of the total effect of social support at work on stress and its outcomes. An interaction effect comprises just an additional portion. House, Landis, and Umberson (1988) reported that social support had general beneficial effects on strain and health, but did not solely or even primarily have interaction effects at work. They also insisted that social support at work had interaction effects on stress and its outcomes although the interaction effect of social support was an additional portion of social support effects. Israel, House, Schurman, Heaney, and Mero (1989) found that positive interpersonal relationships at work were significantly related to low perceived work stressors, high job

satisfaction, low depression, and low illness symptoms; however, they did not mention the interaction effect of social support although the hypothesized model of their study included some interaction terms for social support. Their study implied that social support at work had clear beneficial main effects on the whole work stress process. LaRocco, House, and French (1980) found an interaction effect of social support at work on the relationship between work stressors and general mental health, but failed to find interaction effects on the relationship between work stressors and psychological strain. In a literature review of community-based social support, Cohen and Wills (1985) also mentioned that the main effect of social support on stress was clear but the interaction effect was not clear.

The weak interaction effects of social support at work in the work stress framework might be explained in terms of statistical power. The statistical test for an interaction effect has less power than that for a main effect within a study. Product terms for interaction effect tests require that the statistical power or the sample size be twice that of the main effect tests (Cohen & Cohen, 1983). In other words, the statistical power for the interaction effect test is half that of the power for the main effect test. The sample size of the present study was sufficient for a main effect test but might have been too small for an interaction effect test. Unequal power levels between main and interaction effect tests may partially explain why the absence of interaction effect was found in the present study.

In this study, social support at work had a stronger relationship with job control than with depression and job performance. These results supported the theoretical background of Karasek's (1979) demand-control-support model and of House's (1981)

framework of occupational stress. Karasek suggested that the pattern of social support was correspondent to that of job control, which affects strains and their outcomes. Karasek and Theorell (1990) noted that a change in social support and a change in job control were almost inseparable when work stress was examined in relation to work design. The relationship between social support and job control prompted stimulated House to refer to "participatory work design processes" as a combination of job control and social support changes, implying that social support at work can enlarge the latitude of job control and beneficially affect psychological strain. Stansfeld, Bosma, Hemingway, and Marmot (1998) detected a significant positive relationship between social support at work and job control among 9,302 civil servants in London. Hemmingsson and Lundberg (1998) also reported a significant relationship between the two factors.

According to House's (1981) framework of occupational stress, social support primarily strengthens workers' perceived job control. The increased job control decreases perceived stress such as negative feelings of job and job dissatisfaction before it decreases psychological strain and its outcomes. This mechanism implies that job control has an effect on cutting or decreasing the very beginning of strain in the work stress process. The effects of job control on job dissatisfaction have also been strongly supported by empirical research. Cahill and Landsbergis (1996) found that job control and supervisor support had a succinct relationship with job dissatisfaction, stronger than with psychological strain, sleeping problems, and muscle strain among 4,018 mail handlers. Baker, Israel, and Schurman (1996) reported that job control had a stronger relationship with negative feelings of job than with psychological strain. In accordance with these studies, the strong relationship between social support and job control in this

study implies that job control increased by social support plays an important role in decreasing strains through a work stress process.

This study found that there was a significant main effect of social support at work on job performance. This finding reinforced the premise that organizational outcomes should be considered in a theoretical framework of work stress. Recent organizational health studies included organizational outcomes of work stress such as job performance, turnover, and absenteeism (Beehr, Jex, Stacy, & Murray, 2000; Schaubroeck & Fink, 1998). However, few work stress theories or models consider organizational outcomes as a function of work stress. Most work stress theories or models have considered psychological strain and some health problems as primary outcomes of work stress. This study, which included job performance and absenteeism as organizational outcomes in the proposed work stress framework, found that high support at work was related to high measures of job performance.

Characteristics of Social Support at Work Affecting Job Control, Depression, and Job Performance

Organizational support had a clear beneficial main effect on job control. Strong support from the employee's organization increased employees' perception of controllability over their work. This result suggests that organizational support was a more effective source of support on job control than supervisor support and coworker support. House (1981) discussed the importance of organizational support. He reported that most support at work was affected by what the organization, especially the higher levels of management, advocate, value, and reward. Hutchison and Garstika (1996) have also implied that employees view actions taken by agents or supervisors of the

organization as representative of actions of the organization itself. That is, general social support at work is perceived by employees as dependent on how well their organization is seen to take care of them. In this perspective, this study also supported the strong effect of organizational support on work stress.

The influence of function of support on the work stress framework was minimal. However, in the test of Hypothesis 3, job control was significantly affected by organizational support in terms of source. Supervisor support also had the same relationships with job control in the model as organizational support did although it was not at a significant level. The other parameters also showed stable values of standard errors. However, concerning function of support, most parameters had abnormally big standard errors with the exception of organizational support. This means that the variables in the model were poorly explained by function of support. In fact, no functions of support by supervisor or coworker were related to work stress. This implies that the effect of support was little influenced by the function of support. Other work stress and social support studies reported similar findings to this study (Baker, Israel, & Schurman, 1996; Boxer & Wild, 1993; Havlovic & Keenan, 1991). Baker, Israel, and Schurman (1996) found that psychological strains were different by source of support but not by function of support. They found that supervisor support had beneficial effects on psychological strain, but coworker support did not.

From a measurement perspective, House (1981) mentioned that it was not easy to clearly conceptualize one support as distinct from another by function. Deeter-Schmelz and Ramsey (1997) found some evidence of this point and discussed that validity of social support instruments could be less stable by function than by source in an

evaluation study. House and Wills (1978) conducted a pioneering study of social support instruments and many subsequent social support instruments in occupational health research were developed or modified based on House and Will's instrument. This current study also failed to discriminate between the four functions. Emotion support and appraisal support clustered in a factor, and information support and material support creased another factor.

Relationships within the Proposed Work Stress Framework

Although the five work factors were employed in this study based on careful literature review of work stress and social support, there was no relationship between job demands, job control, depression, job performance, and absenteeism in the proposed work stress framework. Some portion of this result could have resulted from insufficient statistical power.

Study Limitations

This study has several limitations that should be considered. The primary limitation was small sample size. The minimum preferred sample size to attain sufficient statistical power in structural equation modeling should have been 340 but only 263 employees finished the survey and only 240 cases were used in the analysis. To minimize the power problem created by such a small sample size, missing values were controlled by a multiple imputation technique, allowing 47 cases to be saved. In relation to the insufficient statistical power, no significant relationships between work stressors, depression, job performance, and absenteeism were found in this study. Several variables in the proposed work stress framework had significant relationships with each other in correlation and regression analyses, but no relationship was found between them in

structural equation modeling. Job control revealed a significant correlation with job performance in correlation statistics. Emotion/appraisal support from coworkers had a significant relationship with depression in regression analysis although there was no relationship between them in the structural equation modeling approach. In addition, there were stronger the relationships between social support and work stress-related variables in correlation statistics than in the structural equation modeling approach.

Another limitation was related to the measures of social support at work. Measures of social support by source did not generate many problems. However, by function, organizational support had some limitations and could not be divided by function. The original instrument for organizational support was developed using general rather than specific characteristics of support function. This was in contrast to the instruments for supervisor support and coworker support which were developed by four functions of support. Thus, the fourth hypothesis test was not fully examined because organizational support by function was not available for analysis. Accordingly, it is necessary to standardize instruments of social support by characteristics, and well-organized instruments will be a key tool in identifying the characteristics of social support at work that are important in preventing stress at work.

A final limitation was related to the absence of a pilot survey for this study. The measurement model in structural equation modeling approach is very important because the model fit indices are greatly influenced by the measurement model fit and the measurement model could distort the structural model (Lance & Vandenberg, 2002). Thus, a pilot survey is important to obtain a good fit of measurement models in structural equation modeling. However, this study did not conduct a pilot survey because no survey

site was available and all instruments of the survey consisted of representative instruments in each topic area. However, nineteen items (23%) of the total survey were dropped through confirmatory factor analysis. This result serves as a reminder that survey instruments need to be confirmed in terms of the fit of their factor loadings with the target population, particularly in structural equation modeling. Instrument measurement factors, problematic wordings, and unexpected problems can be detected and fixed through pilot surveys.

Recommendations

Based on the experience and findings of this study, several recommendations follow.

For Work Stress Research

Social support at work should be considered in studies examining causes and effects of work stress. This study found that social support at work had main effects on job control, depression, and job performance. This means that social support at work comprehensively affects the entire work stress process and the accurate relationship of causes and effects of work stress can be confounded by social support if the effect of social support is not controlled, as noted earlier by House (1981), Karasek (1979), and Cohen and McKay (1984). Thus, it is desirable to consider the effects of social support in work stress research even though social support is not a major variable.

Research on organizational support measures should be encouraged in the work stress area. This study examined three sources of support at work together and found that organizational support was more predictive of work stress than supervisor and coworker support. However, the comparison of social support by characteristics was not completely

examined in this study because the comparison of social support at work by source was partially limited by function. Few studies have examined those three sources of support together. In most cases, organizational support only or supervisor and coworker support only were tested. No one instrument captures all three sources of support. Supervisor and coworker support instruments have been developed and tested together for a long time in health and social science areas, whereas organizational support instruments do not have such a long history. Therefore, as a next research step in the development of a comprehensive social support instrument, it is necessary to study organizational support, not only because current organizational support instruments are more limited than other support instruments, but also because organizational support was a more effective source than supervisor and coworker in this study.

For Work Stress Intervention

This study found that organizational support had a greater effect on job control than supervisor and coworker support. This means that high-level support is more powerful for changing perceptions of job control in positive ways than low-level support. Thus, organization-wide programs such as those designed to promote a supportive climate at work are strongly recommended to work stress prevention. In this study, social support at work affected the entire work stress framework including work stressors, psychological strain, and job performance. This result enlarged the significance of 'helping and supporting climates' to promote psychological well-being in the worksite. In worksite health promotion research, work stress has been a main body and organizational productivity becomes a big issue in both research areas. Building 'helping and supporting

climates' may produce healthy network strengthening employees to reduce work stress and to increase worksite health promotion both for and by themselves.

Work stress prevention programs need to be conducted and modified using a broader worksite health promotion perspective. It is well documented that work stress is related not only to employees' health but also to organizational performance. This means that work stress comprehensively affects organizational life. Accordingly, some comprehensive intervention strategies should be supplied to reduce work stress and its negative outcomes. In this study, social support at work affected the entire work stress framework, including work stressors, psychological strain, and job performance. The related literature and the findings of this study suggest that work stress negatively influences the entire well-being of an organization and that social support comprehensively decreases work stress and its effects (Baker, Israel, & Schurman, 1996; Iverson, Olekans, & Erwin, 1998). That is, work stress and social support should be essential components of worksite health promotion and work stress prevention programs. However, most stress prevention programs in the worksite have been limited to decreasing physical and psychological symptoms of stress using physical therapy, education in coping strategies, or counseling for stress prevention. These methods work only for strain release and can not treat all of the issues around work stress. Therefore, work stress interventions using high-level support can not only contribute to stress prevention but also help to promote employee well-being.

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APPENDIX A

SURVEY QUESTIONNAIRE

September 10, 2001

Dear employees:

Georgia Regional Hospital continually strives to provide the best possible workplace for our employees. We have been given the opportunity to participate in a survey that will evaluate the work stress and social support of our workplace. The Workplace Health Group at the University of Georgia will administer the survey and tabulate the results. The objective of the survey is to explore work stress and social support at work.

What to Expect When Filling out the Survey
1. The survey will take approximately 10-15 minutes to complete.
2. This is an anonymous survey; nobody from Georgia Regional will ever see your survey results. Georgia Regional will only be given results in summary form, and will not know who completed the survey.
3. **After you complete the survey, place it in the return boxes located <u>around the Nursery room or the Entry in Children's Unit, Administration, Developmental Learning Center, Forensic I, Forensic II, Skilled Unit, Cafeteria, Housekeeping, and Engineering & Maintenance buildings.</u>**
4. The surveys will be sent directly to a data entry expert in the University of Georgia where the data will be entered and summarized.

Completion of this questionnaire is entirely voluntary and you can withdraw your consent at any time and have the results of this participation, to the extent that it can be identified as yours, removed from the research record, or destroyed.

No discomforts, stresses, or risks are foreseen, and completing or not completing this questionnaire will not affect your job standing. The results of this participation will be confidential and will not be released in any individually identifiable form without your prior consent, unless otherwise required by law. All records containing individual data pertinent to this research will be maintained at the University of Georgia.

The researchers will answer any further questions about the research, now or during the course of the project, and can be reached by telephone at (706) 583-0692.

Thank you for taking the time to share your most honest answers and views. Your input will help Georgia Regional be the best employer possible and will help to create a better working environment.

Sincerely,

Kyoung-Ok Park   Mark G. Wilson, HSD

Research Assistant   Associate Professor

_____

Research at the University of Georgia that involves human participants is overseen by the Institutional Review board. Questions or problems regarding your rights as a participant should be addressed to Chris A. Joseph, Ph.D., Institutional Review Board, Office of the Vice President for Research, University of Georgia, 606A Boyd Graduate Studies Research Center, Athens, Georgia 30602-7411; Telephone (706) 542-6514; E-Mail Address IRB@uga.edu.

GENERAL INSTRUCTION: Please answer each question or statement <u>by Circling ONE number</u> of THE RESPONSE which best represents your opinion. If none of the choices fits exactly, choose the option that comes closest. Please answer all questions in each part of the survey. There are no right or wrong answers, and it is very important that you answer each question as honestly as possible. **YOUR RESPONSES WILL BE KEPT STRICTLY CONFIDENTIAL**.

<u>SAMPLE QUESTION</u>:

1=Disagree strongly   2=Disagree   3=Neutral   4=Agree   5=Agree strongly

1. I can learn new things.	1	2	3	4	5

Please respond to each statement in terms of how it applies to <u>your organization</u>.

1=Disagree strongly   2=Disagree   3=Neutral   4=Agree   5=Agree strongly

1. My organization values my contribution to its success.	1	2	3	4	5
2. My organization cares about my opinions.	1	2	3	4	5
3. My organization really cares about my well-being.	1	2	3	4	5
4. My organization definitely considers my goals and values.	1	2	3	4	5
5. Help is available from my organization when I have a problem at work.	1	2	3	4	5
6. My organization cares about my general satisfaction at work.	1	2	3	4	5
7. My organization takes pride in my accomplishments at work.	1	2	3	4	5
8. My organization tries to make my job as interesting as possible.	1	2	3	4	5
9. My organization is willing to help me if I need a special favor.	1	2	3	4	5

Please, respond to each statement in terms of how it applies to <u>Your Immediate Supervisor and Coworkers </u>during <u>the last Four weeks</u>. (Circle one number per item.)

1=Not at all   2=A little   3=Some   4=Quite a bit   5=A great deal

10. My supervisor gave me useful information.	1	2	3	4	5
11. My supervisor showed me care and concern.	1	2	3	4	5
12. My supervisor gave me help in thinking through a problem.	1	2	3	4	5
13. My supervisor gave me help in getting the materials, supplies, or services I needed to do my job well.	1	2	3	4	5
14. My supervisor gave me praise and showed appreciation toward me.	1	2	3	4	5
15. My supervisor gave me criticism that wasn't helpful.	1	2	3	4	5
16. My supervisor undermined or undercut my efforts.	1	2	3	4	5

1=Not at all	2=A little	3=Some	4=Quite a bit		5=A great deal			
17. My coworkers gave me useful information.				1	2	3	4	5
18. My coworkers showed me care and concern.				1	2	3	4	5
19. My coworkers gave me help in thinking through a problem.				1	2	3	4	5
20. My coworkers gave me help in getting the materials, supplies, or services I needed to do my job well.				1	2	3	4	5
21. My coworkers gave me praise and showed appreciation toward me.				1	2	3	4	5
22. My coworkers gave me criticism that wasn't helpful.				1	2	3	4	5
23. My coworkers undermined or undercut my efforts.				1	2	3	4	5

Please respond to each statement in terms of <u>what your job requires you to do.</u>

1=Rarely	2=Occasionally	3=Sometimes	4=Fairly often		5=Very often			
24. My job requires that I work fast.				1	2	3	4	5
25. My job requires that I work hard.				1	2	3	4	5
26. I have enough time to get the job done.				1	2	3	4	5
27. I am not asked to do an excessive amount of work.				1	2	3	4	5
28. My job is very hectic.				1	2	3	4	5
29. I am free from conflicting demands that others make.				1	2	3	4	5
30. I need to concentrate intensely on my job.				1	2	3	4	5
31. I have some tasks that are suddenly interrupted.				1	2	3	4	5
32. I often need to wait on others to finish a job I am working on.				1	2	3	4	5

Please respond to each statement in terms of <u>How you control your job.</u>

1=Not at all	2=A little	3=Some	4=Quite a bit		5=A great deal			
33. I have control over the variety of methods I use in completing my work.				1	2	3	4	5
34. I can choose among a variety of tasks or projects to do.				1	2	3	4	5
35. I have control personally over the quality of my work.				1	2	3	4	5
36. I generally predict the amount of work I have to do on any given day.				1	2	3	4	5
37. I have control personally over how much work I get done.				1	2	3	4	5
38. I have control over how quickly or slowly I have to work.				1	2	3	4	5
39. I have control over the scheduling and duration of my rest breaks.				1	2	3	4	5
40. I have control over when I come to work and leave.				1	2	3	4	5

1=Not at all	2=A little	3=Some	4=Quite a bit			5=A great deal		

41. I have control over when I take vacations or days off.	1	2	3	4	5
42. I can predict what the results of decisions I make on the job will be.	1	2	3	4	5
43. I can control the physical conditions of my work station (lighting, temperature)?	1	2	3	4	5
44. I can decorate, rearrange, or personalize my work area.	1	2	3	4	5
45. I have control over how I do my work.	1	2	3	4	5
46. I can control when and how much I interact with others at work.	1	2	3	4	5
47. I have influence over the policies and procedures in my work unit.	1	2	3	4	5
48. I have control over the sources of information I need to do my job.	1	2	3	4	5
49. I can predict things that affect me at work, even if I can't directly control them.	1	2	3	4	5
50. I have control over the amount of resources (tools, material) I get.	1	2	3	4	5
51. I control the number of times I am interrupted while I work.	1	2	3	4	5
52. I have control over the amount I earn at my job.	1	2	3	4	5
53. I have control over how my work is evaluated.	1	2	3	4	5
54. In general, I have control over work and work-related matters.	1	2	3	4	5

Below is a list of the ways you might <u>have Felt or Behaved</u>.
Please tell me how often you have felt this way <u>during the Past Week</u>.

1=Rarely or none of the time (less than 1 day)　　**2=Some or a little of the time (1-2 days)**
3=Occasionally or a moderate amount of time (3-4 days)　　**4=Most or all of the time (5-7 days)**

55. I was bothered by things that usually don't bother me.	1	2	3	4
56. I felt that I could not shake off the blues even with help from my family or friends.	1	2	3	4
57. I had trouble keeping my mind on what I was doing.	1	2	3	4
58. I felt depressed.	1	2	3	4
59. I felt that everything I did was an effort.	1	2	3	4
60. I felt fearful.	1	2	3	4
61. My sleep was restless.	1	2	3	4
62. I was happy.	1	2	3	4
63. I talked less than usual.	1	2	3	4
64. I felt lonely.	1	2	3	4
65. I enjoyed life.	1	2	3	4
66. I felt sad.	1	2	3	4

The following questions ask you about your <u>Background and demographic information</u>. Please answer each question by circling according to how it applies to you personally.

---

67. How long have you worked for Georgia Regional Hospital?   (   ) years   (   ) months

---

68. What is your age?   (   ) years old

---

69. What is your gender?   ☐① Male   ☐② Female

---

70. What is your marital status?

☐①Single (Never married)   ☐②Divorced/Separated/Widowed   ☐③Married/Living with partner

---

71. What is your Job position?

☐① Nursing (RN, LPN)

☐② Support staff (for example: food service, housekeeping, maintenance)

☐③ Administration

☐④ Technicians (for example: health service, forensic, pharmacy)

☐⑤ Physicians

☐⑥ Program assistants / associates

☐⑦ Other (please specify): _____

---

72. What is your job status?   ☐① Full-time   ☐② Part-time

---

73. On your last performance evaluation, your supervisor rated your performance as:

☐① Outstanding   ☐④ Satisfactory
☐② Very good   ☐⑤ Unsatisfactory
☐③ Good   ☐⑥ Don't know/unsure

---

74. How would you have rated your performance on your last performance appraisal?

☐① Outstanding   ☐④ Satisfactory
☐② Very good   ☐⑤ Unsatisfactory
☐③ Good   ☐⑥ Don't know/unsure

---

75. What proportion of your working hours did you work to your full potential
during the last TWO weeks?
☐① 90% or more/ nearly all the time   ☐③ 50-74%/ some of the time
☐② 75-89%/ most of the time   ☐④ less then 50% /not much of the time

---

76. During the Past 3 months, how many days were you absent when you had been scheduled to work?
(For example, one absence for three-day period equals three days.)

(   ) days

---

77. Among your total absent days during the Past 3 months, how many days were you absent
due to sickness when you had been scheduled to work? (For example, one absence for three-day period
equals three days.)

(   ) days

In each of the following areas, how much stress have you experienced **in the Past Six Months**?					

1=Not at all   2=A little   3=Some   4=Quite a bit   5=A great deal

78. <u>Spouse / Partner</u> (divorce, separation, discord, disease, death, and so on)	1	2	3	4	5
79. <u>Family</u> (discord, disease, death, and so on with a parent, child, or relatives)	1	2	3	4	5
80. <u>Friends</u> (discord, disease, death, and so on)	1	2	3	4	5
81. <u>Financial</u> problems	1	2	3	4	5
82. <u>Health</u> problems	1	2	3	4	5
83. <u>Legal</u> problems	1	2	3	4	5
84. <u>Traumatic</u> experiences (robbery, mugging, physical attack, threat, and so on)	1	2	3	4	5

Thank you for taking the time to share your HONEST answers and views. ☺☺

<u>Please, PUT the completed survey in an Envelope and PLACE it to the Secured Return Boxes (around Nursery room or Entry) in the Designated Buildings.</u>

Location of Survey Boxes
Children's Unit building
Administration Office building
Developmental Learning Center (DLC) building
Forensic I building
Forensic II building
Skilled Unit building
Cafeteria building
Housekeeping building
Engineering & Maintenance building

Georgia Regional creates 'Healthy Work Environments' for you
with Your Strong Support like this. Thanks again!! ☺☺

APPENDIX B

EFFECTS OF DEMOGRAPHIC VARIABLES AND STRESSFUL LIFE EVENTS ON

DEPRESSION: REGRESSION ANALYSIS

The effects of demographics and stressful life events on depression

Variables	B	Beta (Standardized)	t	p
(Constant)	11.541		4.707	.000
Duration of work	-.004	-.087	-1.098	.274
Age	.003	.007	.088	.930
Gender	1.431	.125	1.679	.095
Marital status	.258	.040	.515	.607
Stress1 (spouse)	.169	.037	.446	.656
Stress2 (family)	-.080	-.021	-.233	.816
Stress3 (friends)	.300	.062	.675	.501
Stress4 (financial)	.103	.027	.302	.763
Stress5 (health)	.195	.045	.550	.583
Stress6 (legal)	.350	.040	.479	.632
Stress7 (Traumatic)	.323	.056	.747	.456

$\underline{F}(181,11) = .723$, $\underline{p} = .715$
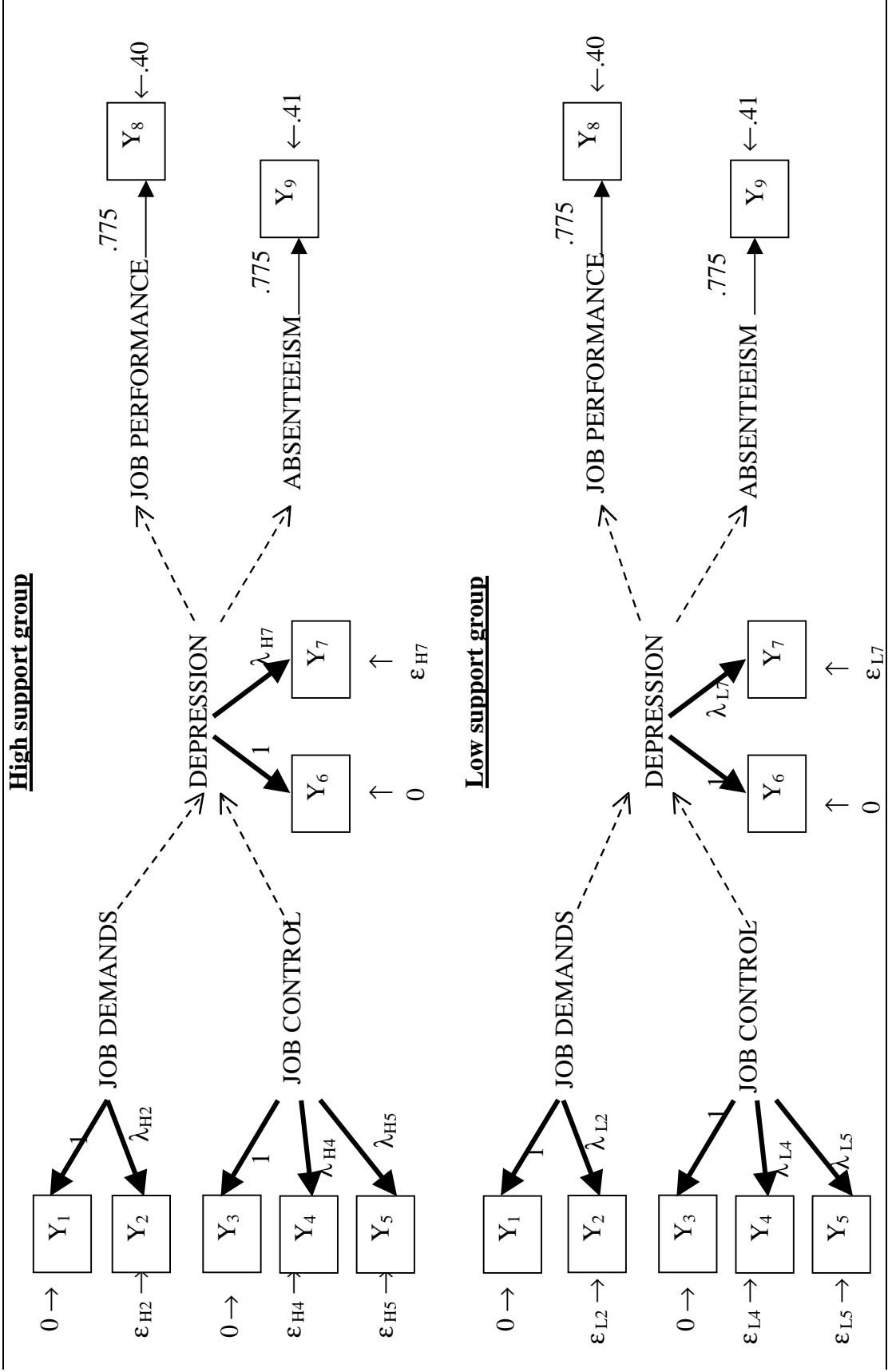
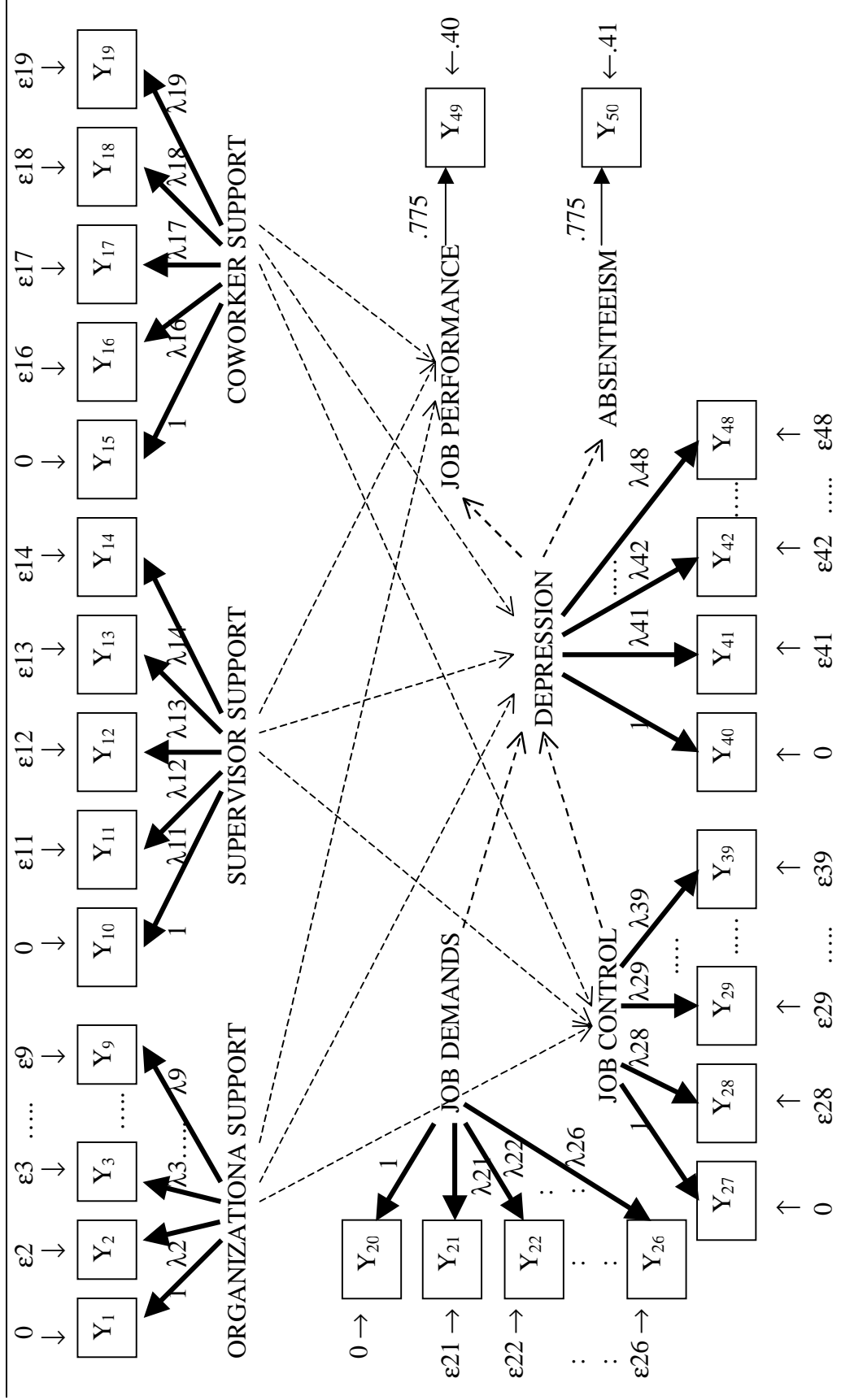# APPENDIX C

MEASUREMENT MODELS FOR HYPOTHESIS TESTS

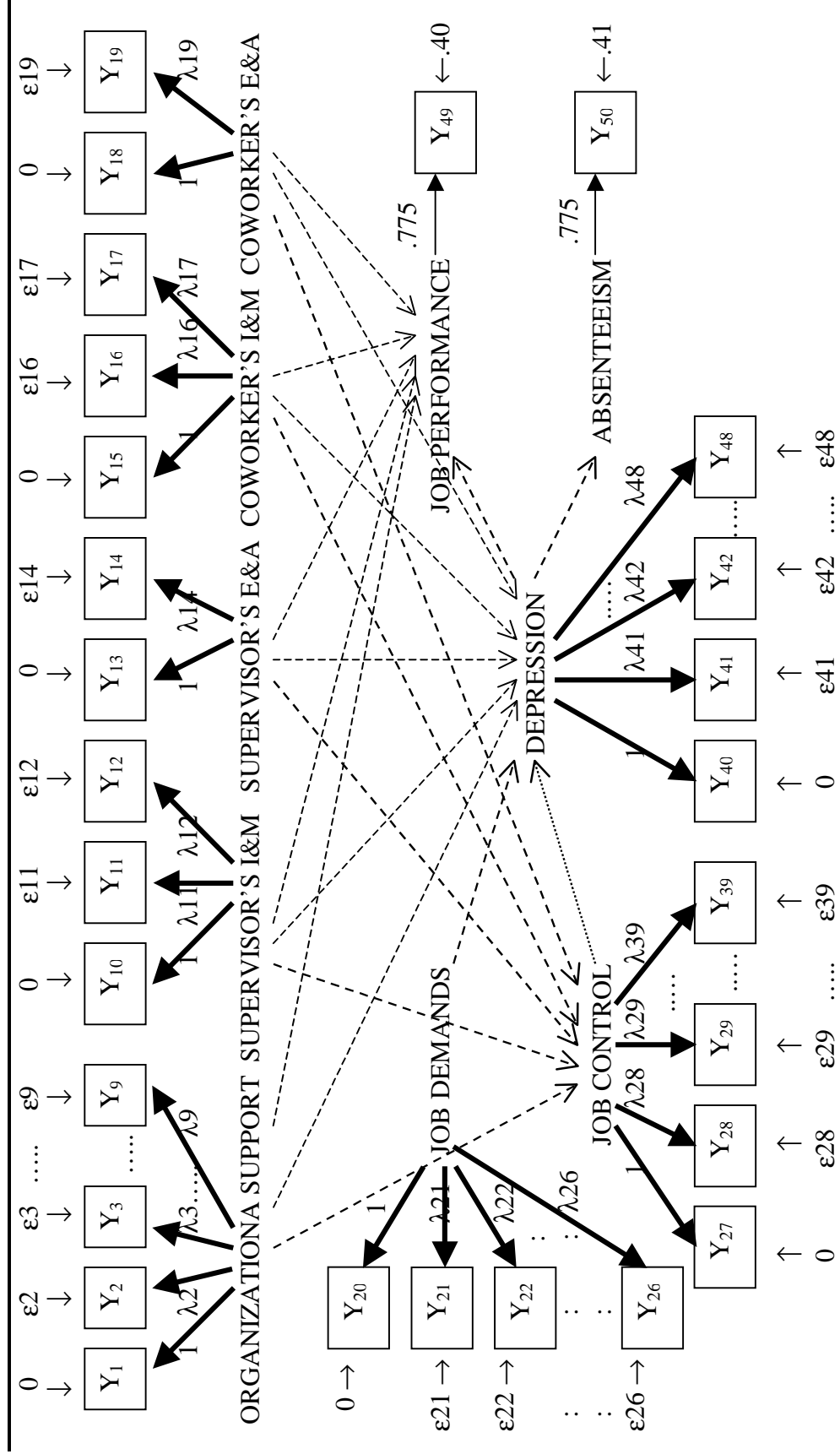Appendix C.1. The measurement model for Hypothesis 1
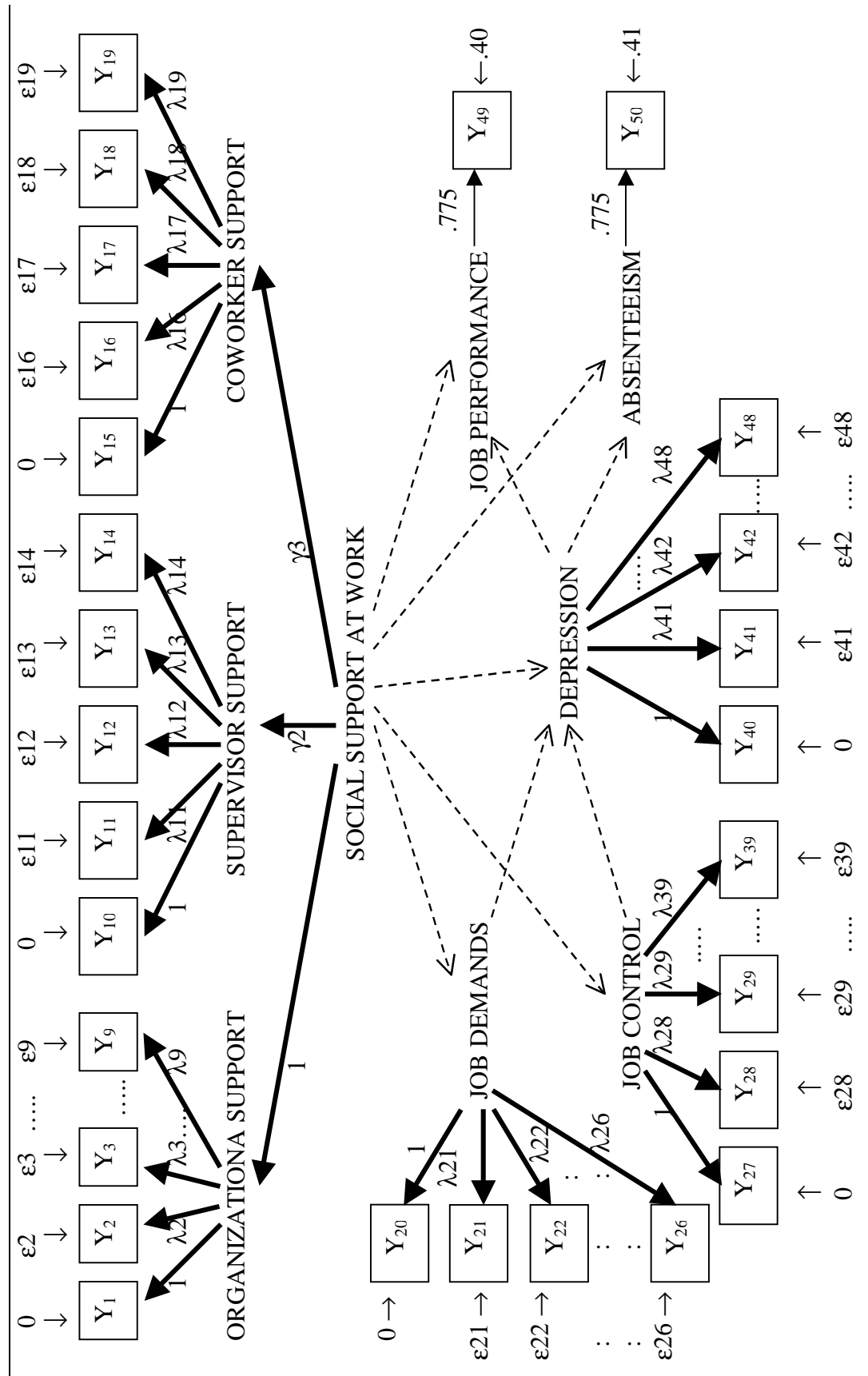
Appendix C.2. The measurement model for Hypothesis 2

Appendix C.3. The measurement model for Hypothesis 3

Appendix C.4. The measurement model for Hypothesis 4

Note. I&M = Information and material support, E&A = Emotion and appraisal support