

RELATIONSHIPS AMONG PERCEIVED WORKING HOURS, GENERAL STRESS,  
WORK CENTRALITY, JOB CONTROL, JOB DEMANDS, AND WORK  
CONDITION CONSTRAINTS

A Dissertation

by

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## ABSTRACT

Although working hours are generally regarded as a major indicator of stress, little exploration has been done about how working hours influence stress with the relevant individual and job characteristics. The purpose of this study was to examine the relationships among perceived working hours, general stress, work centrality, job control, job demands, and work condition constraints for full-time employees in the United States and Korea. A self-administered questionnaire survey approach was used to collect data which were utilized to reflect six variables of this study. The sample size was 805 (U.S.: 397, Korea: 408). As the results from the measurement invariance test indicated that the measurement model was not invariant by country, statistical examinations were conducted separately for each country to test hypotheses.

In the path analysis, for the U.S. sample, Job Demands was significantly associated with Perceived Working Hours. Job Demands and Work Condition Constraints were significantly related to General Stress. There was a significant relationship between Work Condition Constraints and Job Demands. There were significant mediation effects for the relationships between Work Condition Constraints and Perceived Working Hours via Job Demands and between Work Condition Constraints and General Stress via Job Demands. For the Korean sample, in the path analysis, Work Centrality and Job Demands were significantly associated with Perceived Working Hours. Job Demands, Job Control, and Work Condition Constraints were significantly associated with General Stress. There was a significant relationship

between Work Condition Constraints and Job Demands. All the hypothesized mediation effects were significant: from Job Demands via Perceived Working Hours to General Stress, from Work Condition Constraints via Job Demands to Perceived Working Hours, and Work Condition Constraints via Job Demands to General Stress.

It was found that this study overall supported the selected theories and related research. The significance of this study includes contributions to work-life/work-family balance studies that are an emerging research area in HRD, practical implications for sound work-settings, and cultural validations of the theories related to working hours and stress. Limitations, implications for theories, research, and practices were also discussed.

## DEDICATION

To my beloved family,

Minjung and Mingeon (Sean)

&

Chungyum Kim, Sinja Lee, Sangyul Kim, Chunhwa Kim, and Seyong Kim

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## CHAPTER I

### INTRODUCTION

Although the development of technology and management systems has enabled people to work faster than ever, working hours have not been reduced much for several decades due to relentless demands and challenges at work (Lee, McCann, & Messenger, 2007; Schor, 1993). According to the Organization for Economic Co-operation and Development (OECD) 2012 Report, overall working hours among the 34 member countries have decreased by only 3% during the past twelve years. Long working hours, generally regarded as working more than the legal or social standard (40 hours per week in many cases), is prevalent not only in the developing world but also in many developed countries, such as the United States and Korea (Lee et al., 2007).

The long working hours phenomenon that is generally widespread in certain occupational groups (e.g., full-time white collar and hospital employees) has led to extensive research on its negative influences on employee health, well-being, attitudes, as well as organizational performance. Continual overtime tends to cause not only physical health problems (e.g., illness and injury) but also psychological and emotional issues (e.g., anxiety, depression, and fatigue, Dembe, Erickson, Delbos, & Banks, 2005; Ng & Feldman, 2008). Thus, increased working time can negatively impact employee satisfaction, commitment, productivity, retention of gifted workers (Clark, 1996; Thomas & Raynar, 1997), and eventually cause deficits in the business (Peetz & Murray, 2011).

One of the most prominent negative consequences of long working hours is regarded as stress (Gonzalez-Munoz & Gutierrez-Martinez, 2007; Park, Yi, & Kim, 2010; Steinmetz & Schmidt, 2010), a state of tension resulting from the demands that exceed ability to cope (Cohen, Kamarck, & Mermelstein, 1983). Stress generated from work is likely to transfer to non-work life and produce conflicts between work and life, which aggravates both work and non-work related stress symptoms (Barnett, Careis, & Brennan, 2009). Thus, conflicts caused by a lack of time for leisure and family can result in serious stress and a worsening of the quality of life (Brett & Stroh, 2003; Greenhaus, Collins, & Shaw, 2003; Hobfoll, 1998), and conversely, spillover from leisure and family conflicts can increase work stress, bringing about a vicious work-life conflict cycle (Valcour, 2007).

Despite the extensive research on working hours and stress, there is a paucity of empirical evidence regarding how working hours influence stress. The relationship between working hours and stress can be seen as simple and direct because a lack of time for non-work activities is one of the major stressors (Hobfoll, 1998). However, when factors influencing both working hours and stress are considered, their relationship may not be straightforward. Given the relationship between working hours and stress, it is not surprising that both have several common predictors (Feldman, 2002; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007), such as individual personality (e.g., attitude, ethics) and job characteristics (e.g., skills, demands, work conditions, autonomy). By involving these common predictors in a single model, how working hours affects stress can be illuminated. Therefore, a hypothesized conceptual model was

developed to examine the relationship between working hours and stress analyzed as well as the relationships with their common factors.

### **Problem Statement**

This study is needed for four reasons. First, although multiple researchers have underscored the positive relationship between working hours and stress (Gonzalez-Munoz & Gutierrez-Martinez, 2007; Kleiner & Pavalko, 2010; Lim, Eun, Kim, Yang, & Sang, 2010; Saverly & Luks, 2000), very few investigators have focused on how working hours affect stress through individual and job characteristics (Ng & Feldman, 2008). In many investigations that involved working hours as a keyword, the focus has been on the direct relationships between working hours and stressors or between working hours and stress (Ng & Feldman, 2008). Among a number of studies regarding impacts of stressors, few of them involved working hours as a mediator or moderator (Karasek & Theorell, 1990; Love et al., 2007). However, through the segmented relationships, it is difficult to fully understand the dynamics of working hours and stress. For example, while job control and work centrality increase working hours (Ng & Feldman, 2008), these two variables also reduce stress (Karasek & Theorell, 1990; Schaufeli, Taris, & Taris, 2008). Therefore, the incorporation of working hours, stress, and factors influencing working hours and stress is needed to clarify their relationships and to diagnose or solve problems associated with working hours.

Second, few studies examined general stress that encompasses both work and non-work domains of stress along with individual and job characteristics (e.g., Oliver, 2012). Although work stress is closely related to individual psychological well-being

(Love, Irani, Standing, & Themistocleous, 2007; Williams et al., 2001), factors influencing work stress may not always predict overall individual stress because some factors can be positively related to work stress while negatively affecting non-work stress and vice versa (Hobfoll, 2001). Therefore, when a separate domain of stress is employed as a dependent variable, it may be inadequate for uncovering the extent to which individual well-being is impacted by the stress. In this study, general stress was used as a term that represents overall stress in an individual's life.

Third, despite the importance of reasonable working hours to societies, organizations, and individuals, what causes the increase of working hours has not gained much attention from researchers. Most of the previous research on working hours focused on the impacts of long working hours on psychological and emotional problems, workaholism, and work-life (work-family) conflicts. In addition, among studies that involved what predicts long working hours, many researchers have focused mainly on the influences of individual attributes like demographic status (e.g., Böheim & Taylor, 2004; Brett & Stroh, 2003; Drago, Wooden, & Black, 2009; Park et al., 2010; Stier & Lewin-Epstein, 2003; Valcour, 2007). Although multi-faceted factors related to working hours were proposed in previous theoretical studies (e.g., Feldman, 2002; Snir & Harpaz, 2012), only a few factors included in those frameworks have been studied empirically. For example, there are very few studies on work conditions regarding working hours, which was proposed in the theoretical frameworks of Feldman (2002) and Perlow (1997) as a factor affecting long working hours. Empirical research on factors influencing

working hours is necessary to provide appropriate interventions against working-hour-related issues as well as to better understand the impact of working hours on individuals.

Fourth, in many studies regarding working hours, researchers simply asked the number of working hours in a self-report survey and used that as a major variable to predict stress or work-family conflict (e.g., Park et al., 2010; Pisljar, Lippe, & Dulk, 2011). However, the amount of working hours in one context may have a different meaning in another context. Legal guidelines for working hours differ by country (e.g., 35 hours per week in France, 52 hours per week in Kenya), and occupational cultures and environments that affect working hours vary depending on jobs and organizations (Lee et al, 2007). Moreover, the same number of working hours can be perceived differently by individuals even in the same culture and organization due to the extent of concentration on work, work-family conflict, job satisfaction, and career aspirations. Therefore, an assessment of individual perceptions of working hours is more appropriate for a self-report survey research than measuring the number of working hours, especially when other variables are measured in terms of individual perceptions and when their relationships with working hours are tested.

### **Purpose of the Study**

As working hours and stress are closely related and some of the key factors affecting them are shared, it is necessary to explore an integrative association among working hours, stress, and those common factors (e.g., work centrality, job demands, job control, and work condition) in order to better understand how working hours affects stress. The purpose of this study was to examine the relationships among perceived

working hours, general stress, work centrality, job control, job demands, and work condition constraints for full-time employees who were exempt from overtime pay in two countries, the United States and Korea, characterized as having long work time. The endogenous variables, variables that are affected by other variables in a structural model, were perceived working hours and general stress. The exogenous variables, variables that affect a model without being affected by other variables, included work centrality, job control, job demands, and work condition constraints. The foci of the research were on the relationships among the endogenous variables and exogenous variables as well as on the mediating and the moderating effects among the variables.

### **Research Hypotheses**

Based on the purpose of this study, the following research hypotheses were formulated. The details of these hypotheses are described in Chapter 2.

*Hypothesis 1.* There will be a significant positive relationship between perceived working hours and general stress.

*Hypothesis 2.* There will be a significant positive relationship between work centrality and perceived working hours.

*Hypothesis 3.* There will be a significant negative relationship between work centrality and general stress.

*Hypothesis 4.* There will be a significant moderating effect of job control on the relationship between perceived working hours and general stress. When job control is high, the relationship between perceived working hours and general stress will be weak.



*Hypothesis 5.* There will be a significant negative relationship between job control and general stress.

*Hypothesis 6.* There will be a significant positive relationship between job demands and perceived working hours.

*Hypothesis 7a.* There will be a significant positive relationship between job demands and general stress.

*Hypothesis 7b.* There will be a significant mediating effect of perceived working hours on the relationship between job demands and general stress.

*Hypothesis 8a.* There will be a significant positive relationship between work condition constraints and job demands.

*Hypothesis 8b.* There will be a significant mediating effect of job demands on the relationship between work condition constraints and perceived working hours.

*Hypothesis 9a.* There will be a significant positive relationship between work condition constraints and general stress.

*Hypothesis 9b.* There will be a significant mediating effect of job demands on the relationship between work condition constraints and general stress.

### **Significance of the Study**

This study is significant in three ways. First, despite its considerable relevance to human resource development (HRD), working hours and stress as research themes have received little research attention in HRD. Although individual satisfaction and organizational productivity are some of the major emphases in HRD (McLean & McLean, 2001) and the number of work-life balance studies have rapidly increased in

HRD (Ghosh, Kim, Kim, & Callahan, 2014), very few studies focused on examining working hours and stress. In light of their significant associations to individual well-being and organizational performance (Adkins & Premeaux, 2012; Brett & Stroh, 2003; Ng & Feldman, 2008; Valcour, 2007), it is important to explore from an HRD perspective how employees are affected by working hours and stress.

Second, the findings of this study may help organizations to clarify issues related to working hours and stress and how to deal with those issues effectively. Merely forcing employees to change their behaviors cannot be a sound solution (Perlow, 1997). By exploring the integrative relationships among working hours, stress, and the relevant factors in work settings, organizations can take into account various conditions and dynamics in the workplace so that they can create effective and long-term interventions for individual and organization development (OD).

Third, by testing the samples from U.S. and Korean employees, it helps determine whether theories on working hours and stress apply in both cultural contexts. As most theories on working hours and stress were derived from studies in western contexts, involving a non-western sample is necessary to test the application of western-based theories and their relevancy in the non-western context.

### **Operational Definitions**

Key terms in this study are defined below:

#### **Working Hours**

Working hours are generally defined as any period during which the worker is working or at the employer's disposal and carrying out her/his activities or duties (The

European Parliament and the Council of European Union, 2003). In this study, working hours were measured as a perception of an individual's mental state regarding the amount of working hours using the term perceived working hours.

### **General Stress**

General stress is defined as a state of tension resulting from the demands that exceed ability to cope (Cohen et al., 1983) regardless of contexts, which involves specific stresses such as work stress and family/leisure stress.

### **Work Centrality**

Work centrality is a belief of the extent to which individuals regard the work in their lives as important (Paullay, Alliger, & Stone-Romero, 1994). In this study, work centrality was identified as one of the factors that may affect the relationship between perceived working hours and general stress.

### **Job Control**

Job control is defined as the employee's level of decision-making authority and opportunities to participate in the organization using their own abilities (Karasek & Theorell, 1990). In this study, job control was identified as one of the factors that may affect the relationship between perceived working hours and general stress.

### **Job Demands**

Job demands are defined as the intensiveness of a job for a long period of time, which may include overload and time constraints in accomplishing the work (Love et al., 2007). In this study, job demands were identified as one of the factors that may affect the relationship between perceived working hours and general stress.

## **Work Conditions Constraints**

Work conditions represent common situational environments or activities that influence job performance, such as work equipment, organizational rules, useful information, work interruptions, and necessary training (Peters & O'Connor, 1980). In this study, the focus regarding work conditions was on constraints. Work condition constraints were identified as one of the factors that may affect the relationship between perceived working hours and general stress.

## **Exempt Employees**

Exempt employees are defined as employees who are exempt from the legal overtime requirements because of their positional duties and responsibilities and level of decision making authority. The samples in this study were exempt employees in the United States and Korea.

## **Summary**

In Chapter I, the background information on the study was provided. There is a need for exploring the relationships among perceived working hours, stress, and the relevant individual and job characteristics as their relationships may not be simply direct. The purpose of this study was to examine the relationships among perceived working hours, general stress, work centrality, job control, job demands, and work condition constraints for full-time employees in the United States and Korea. To this end, a hypothesized conceptual model and hypotheses were formulated. The significance of this study includes contributions to work-life/work-family balance studies that are an emerging research area in HRD, practical implications for sound work-settings, and

cultural validations of the theories related to working hours and stress. For an understanding of the key terms, operational definitions were provided. The review of literature regarding the foundational theories and key variables will be explained in Chapter II.

## CHAPTER II

### REVIEW OF LITERATURE

In this chapter, a summary of theory and research related to this study is presented. The first section of this chapter is focused on how literature was identified and analyzed. In the second section, the review of the theoretical background of this study is provided. The next section involves the literature review that supports the research hypotheses. Finally, a hypothesized conceptual model for this study is proposed.

#### **Literature Review Procedure**

To determine what has been studied that relates to the topics of this research, relevant literature on the variables in this study was reviewed. The review procedure involved (1) searching articles, book chapters, books, and research reports, (2) selecting appropriate and useful literature, (3) analyzing the literature and combining the contents.

#### **Literature Search**

The identified literature involved keywords related to the variables in this study: perceived working hours, general stress, work centrality, job control, job demands, and work condition constraints. Through search engines, EBSCO and SciVerse, the literature was searched in several academic databases such as Academic Search Complete, Business Source Complete, Human Resource Abstracts, Psychology and Behavioral Sciences Collection, ScienceDirect, and Vocational and Career Collection. After the first search, the following journals in which multiple articles on working hours and stress

were published were also searched: *Journal of Applied Psychology*, *Journal of Organizational Behavior*, *Journal of Occupational Health Psychology*, *Journal of Occupational and Organizational Psychology*, and *Work & Stress*. Publications commonly cited in the obtained literature were also searched. The search process was conducted in 2012 and 2013.

### **Selection Criteria**

The literature to be reviewed had to meet two criteria: the year of publication, and relevance to the research purpose. For scholarly publications including both peer-reviewed and non-peer-reviewed, the search period was set to include the most recent 24 years (1990 to 2013) because of the important literature published in the early 1990s (e.g., Schor, 1993; Karasek & Theorell, 1990). To select literature appropriate for this study, the abstracts, findings, and conclusions were reviewed by the researcher. Publications which did not satisfy the above criteria were excluded from the literature review. In total, 95 publications were selected.

### **Analysis**

The analysis of the identified literature was focused on theoretical background, contextual aspects of the studies, and relationships among the dependent and independent variables. The information obtained from the literature was summarized in a spreadsheet according to authors, titles, samples, methods, and findings. The identified contents were analyzed to clarify and synthesize various perspectives, arguments, and theories. As a result, a theoretical framework, a series of hypotheses, and a conceptual model were identified and formulated to guide this study.

## **Theoretical Framework**

The theoretical framework of this study was established based on the Economic Model of Overtime, Conservation of Resources theory, and the Job Demands-Resources model. This theoretical framework was used to identify the relationships among perceived working hours, general stress, work centrality, job control, job demands, and work condition constraints.

### **Economic Model of Overtime**

From the perspective of conventional economics, individual working hours result from external changes (Schor, 1993). However, in recent research, it was found that endogenous factors in the organization affect working time in the workplace as much as exogenous factors (Golden, 2006). The economic model of overtime involves theories about the causes and results of the discrepancy between desired and actual working time, which is related to employees' work attitudes and organizational productivity (Emmerik & Sanders, 2005). The model is divided into two areas according to the scope of the perspective: micro and macro.

In the microeconomic model of overtime, the key assumption is that desired working hours of employees and the hours demanded by the organization are eventually matched (Golden, 2006). For example, if required working hours keep exceeding desired hours, employees may leave the organization. Thus, in order to retain their labor force, organizations may need to compromise with the employees on the working hours. However, in many cases, employees seek preferred working hours through job mobility rather than persuading the employer to decrease working time because employers tend to



regard the advantages of long working hours as more important than losing employees resulting from long working hours (Perlow, 1997).

According to Golden (2006), there are three types of long working hours in the macroeconomic model: structural, cyclical, and frictional. Structural long working hours tend to result from the structural benefits provided by organizations. Employers create a work environment where long working hours are taken for granted by providing increased salary, status, work conditions, bonuses, and training costs as well as better benefits, such as premium health insurance. Structural long working hours can also stem from job characteristics rather than from employer's direct restrictions. For instance, increased autonomy of employees can lead to a preference of more work hours when low job demands are given (Echtelt, Glebbeek, & Lindenberg, 2006). This phenomenon may be prevalent when governmental regulations or unions have little power to restrain working time (Berg, Appelbaum, Bailey, & Kalleberg, 2004).

Cyclical long working hours occur when the demand for labor is surging. When the market is booming or business is unpredictably going well, organizations need more human resources quickly to produce goods or services for their customers. As utilizing current employees is quicker, more economical, and convenient, employers are likely to choose to induce their employees to work longer instead of hiring new employees (Schor, 1993). In this type of phenomenon, overtime can intensify when the need for labor increases (Golden, 2006).

Frictional long working hours are mainly due to incomplete information about the work in employment contracts. When employers and employees do not know each

other in terms of what they expect and prefer, the mismatch between desired and required working time occurs (Golden, 2006). Frictional long working hours can also occur when there is a gap between the needed and current skills/knowledge for employees. This discrepancy can either worsen or be ameliorated when individuals or organizations change their preferences (Golden, 2006).

For this study, the macro aspect in the economic model of long working hours was used to frame the relationships between perceived working hours and some of the exogenous variables (work centrality, job demands, and work condition constraints). From the frictional perspective, employee's working hours can depend on information about the job and their desire to work, which is related to work condition constraints and work centrality. If employees are not ready enough for their job due to a lack of knowledge or a necessary training that was not provided, perceived working hours may increase because employees are expected to achieve goals for their job in the organization (Feldman, 2002; Kim, Park, & McLean, 2012; Perlow, 1997). If employees highly value working and desire to work, their working hours are also likely to increase without much resistance (Kim et al., 2012). From the cyclical perspective, when organizations need more supply of human resources, they may demand the increase of working hours instead of hiring new employees. Thus, it is assumed that job demands are positively related to perceived working hours (Ng & Feldman, 2008; Greenhaus, Peng, & Allen, 2012). The positive relationship between work condition constraints and perceived working hours (Gievska et al., 2005; Jett & Geroge, 2003) can be explained from the structural perspective in which long working hours result from the job

characteristics and work environment. The details of the relationships among these variables and the research hypotheses for this study are addressed in the latter part of this chapter.

### **Conservation of Resources Theory**

Unlike the economic model of overtime in which external influences on working hours is emphasized, the focus of the Conservation of Resources (COR) theory (Hobfoll, 1998; 2001) is on general stress that involves both individual and environmental stress processes. According to Hobfoll (1998), individuals' stresses are predominantly affected by resources created in their various individual, social, cultural, and economic contexts. Resources are things an individual values that include, but are not limited to, objects, personal characteristics, and physical, psychological, and emotional conditions. In the COR theory, there are three situations in which stress occurs: (1) when individual resources are in danger of loss, (2) when individuals actually experience loss of resources, and (3) when efforts for resource gain fail after substantial resource investment (Hobfoll, 2001). The relative importance of resources is determined by how individuals reflect values of resources in their social and cultural contexts (Hobfoll, 2001). Hobfoll (1998) found 74 comprehensive resources that are associated with general stress. Among them, there are 12 resources that represent the variables for this study (e.g., time for work, time with loved ones, necessary tools for work, feeling independent, and sense of commitment).

There are two principles proposed in the COR theory. First, "resource loss is disproportionately more salient than resource gain" (Hobfoll, 2001, p. 343). Thus, for

instance, loss of time for leisure or family due to long working hours may have a greater impact on individual stress than more income or accomplishment at work, even though those gains are significant. In addition, as little or no gain after resource loss is likely to cause anger or depression, resource gain is important for individuals who experience substantial loss of resources (Wells, Hobfoll, & Lavin, 1999).

The second principle is that “people must invest resources in order to protect against resource loss, recover from losses, and gain resources” (Hobfoll, 2001, p. 349). Individuals need to maintain a strong pool of resources in case of loss. When individuals perceive that the value of the loss is greater than that of resources gained, stress will occur. For example, people tend to invest in working hours for better performance, financial payoff, job experience, and recognitions at work. They probably expect that the value of those outcomes is at least equal to the value of the loss in personal life and health due to the working hour investment.

Initial resource gain can produce further gain but, on the other hand, a loss of resources can lead to a cascade of losses, resulting in a loss cycle (Hobfoll, 2001). For instance, when employees experience a lack of skill, information, or support, their working hours increase, and this may lead to loss of time for family, and eventually result in a loss of relationships with family.

In this study, the components of the COR theory was used to support several relationships among the variables. First, perceived working hours, which can be both a resource for work activities and a factor influencing loss of non-work resources, may be related to general stress. When work hours increase, work related resources (e.g., job

performance, accomplishment, and recognition) can be conserved while there may be a loss of time for rest, leisure, and family due to the long working hours. Although whether or not individuals experience stress depends on the balance between the gain and loss of resources, and given the principle of the COR theory that the impact of loss is generally greater than that of gain, it is assumed that perceived working hours is positively associated with general stress. In several studies, a positive significant relationship between working hours and general psychological stress was found (Geiger-Brown et al, 2004; Park et al., 2010; Sayvery & Luks, 2000; Steinmetz & Schmidt, 2010).

Second, job control and work centrality, which are resources in the COR theory, may mitigate general stress while influencing other work-related resources like working hours. There are several studies in which job control and work centrality led to strong job motivation and commitment and resulted in an increase in working hours (Drago et al., 2009; Greenhaus et al., 2012; Sharabi & Harpaz, 2010; Tucker & Rutherford, 2005; Wallace, 1997). Although job control and work centrality can increase work hours that are positively associated with general stress, many researchers revealed that work centrality and job control predict a low level of stress (Daniel, Tregaskis, & Seaton, 2007; Karasek & Theorell, 1990; Lewig et al., 2007; Schaufeli et al., 2008; van Yperen & Hagedoorn, 2003). Thus, this supports the assumption that work centrality and job control are directly or indirectly related to perceived working hours and they are negatively related to general stress.

In addition, the relationships between job demands and general stress and between work condition constraints and general stress can be explained based on the COR theory. Job demands and work condition constraints are regarded as factors influencing loss of the resources of time, advancement in a job, and necessary tools or help at work. Thus, it is assumed that job demands and work condition constraints are positively associated with general stress. This assumption is supported in several studies on occupational stress and work-life/family conflict (Dorman & Zapf, 1999; Fernandes & Tewari, 2012; Hamaideh, 2011; Jackson, Dawson, & Wilson, 2003; Lewig et al., 2007; Love et al., 2007; Raghavan, Sakaguchi, & Mahaney, 2008; Sargent & Terry, 2000).

### **Job Demands-Resources Model**

While the COR theory emphasizes an integrative process of stress including internal and environmental contexts, the Job Demands-Resources (JD-R) model is used to specifically focus on occupational settings. This model plays a role in predicting the relationships between general stress and other variables. The JD-R model was developed to specify how job strain (a state of worry and tension caused by job stress) and motivation are generated by job factors related to stress with an assumption that every job has its own work environment characteristics (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). In this theoretical model, the work environment characteristics are classified into two categories: job demands and job resources (Bakker & Demerouti, 2007). The genesis of the JD-R model can be found in the demand-control model proposed by Karasek (1979). Although the JD-R model inherited the basic principles of

Karasek's model in which a combination of job demands and job control is an important predictor of stress (Karasek, 1979), the JD-R model involves more specific job demands and a higher-level of components (job resources) such as job control so that the model can reflect more various aspects of job situations regarding stress than can Karasek's model (Demerouti et al., 2001). In the JD-R model, three aspects are mainly considered: job demands, job resources, and the interaction between job demands and job resources.

Demands for a job (e.g., physical, psychological, and/or emotional) are generally regarded as factors influencing negative job strain (Bakker & Demerouti, 2007). In a high job demand situation, employees tend to experience physical, psychological, or emotional exhaustion that leads to stress and health problems (Demerouti et al., 2001). Job demands on an individual can vary from physical, psychological, social, to organizational aspects (Bakker & Demerouti, 2007). Examples of job demands that cause negative consequences are poor job designs (e.g., work overload, time pressure), harmful work environments, and negative social interactions.

Job resources are predictors of job motivation that lead to organizational commitment and work engagement (Demerouti et al., 2001). From individual, social, and organizational aspects, job resources have positive functions in developing individual abilities, building good teamwork, and eventually enhancing excellent performance (Bakker & Demerouti, 2007). Examples of job resources are rewards, career opportunities, job security at the organizational level, role clarity, participation, relationships with people at the team level, and task significance, autonomy, performance feedback at the task level (Bakker & Demerouti, 2007). In addition,

individual characteristics can be included in the job resources of the JD-R model. Xanthopoulou et al., (2007) examined the model with individual characteristics as personal resources and found that personal resources mediated the relationship between job resources and work engagement.

In the JD-R model, job resources tend to reduce negative impacts of job demands, such as exhaustion and stress (Bakker & Demerouti, 2007). For example, employees with greater job autonomy may cope with stressful situations better than employees with less job autonomy because job demands (e.g., physical and psychological overload) can be spread out allowing for custom-made work schedules for individual preferences (Llorens, Bakker, Schaufeli, & Salanova, 2006; van Yperen & Hagedoorn, 2003). Supervisor's support may also buffer the impact of physical and mental demands when individuals have a good relationship with their supervisors (Fernandes & Tewari, 2012). Therefore, whether or not job demands negatively influence individuals depends on the individual and job characteristics as job resources in the workplace (Bakker & Demerouti, 2007).

In this study, the JD-R model was used to formulate the conceptual model in three ways. First, work centrality was adopted as a job resource. It was expected that work centrality offsets the impacts of job demands on general stress. When work centrality is high, employees' excessive workload may result in less stress than that of those who reveal low work centrality. Second, work condition constraints that tend to increase job demands and work hours may be negatively associated with stress. Moreover, based on the JD-R model, it is assumed that job demands are positively



associated with general stress while job control is negatively associated with general stress.

As illustrated in Figure 1, in order to support the relationships among the variables of this study, the theoretical framework was established based on three theoretical perspectives: the Economic Model of Overtime, Conservation of Resources theory, and Job Demands-Resources model.

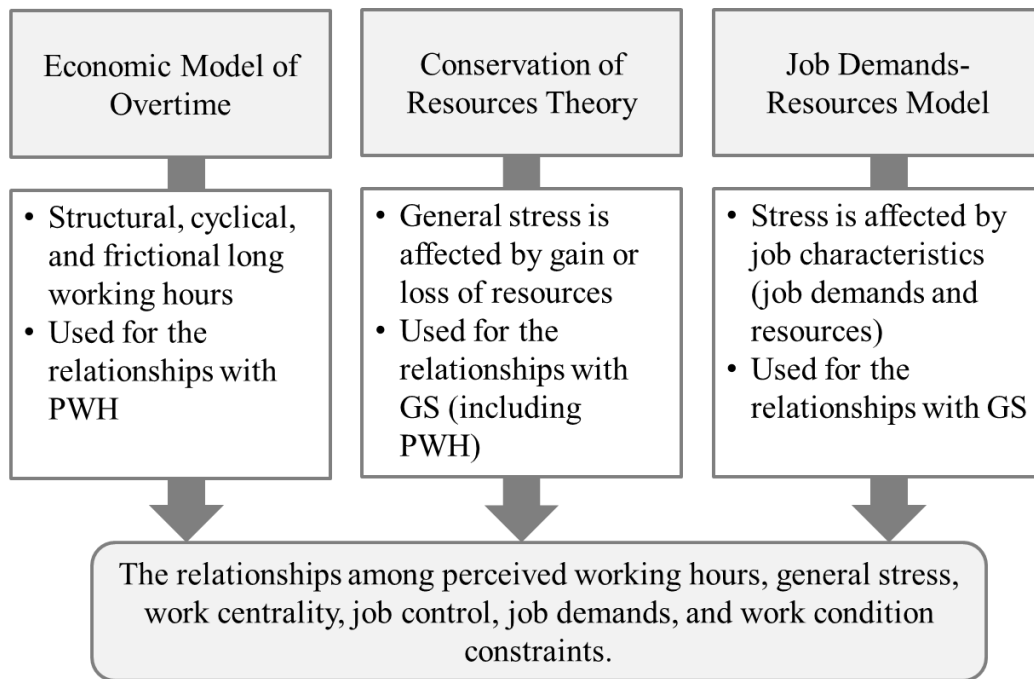


Figure 1. The theoretical framework and the purpose of the study

### Variables and Hypotheses

In this section, the variables for this study are discussed based on the literature review. The endogenous variables were perceived working hours and general stress. The

exogenous variables included work centrality, work condition constraints, job demands, and job control. Literature regarding each variable was explored focusing on definition, relevance, importance, and relationships with the endogenous variables, perceived working hours and general stress. Research hypotheses were proposed based on the theoretical framework and the supported research.

### **Perceived Working Hours**

In this study, perceived working hours was used by measuring individual perceptions of working hours, which is distinct from measuring the number of working hours. First, working hours and long working hours were explained and then the necessity of using perceived working hours was described.

#### *Working Hours*

Working hours are regarded as any period during which the worker is working, at the employer's disposal and carrying out his activities or duties (The European Parliament and the Council of European Union, 2003). Working hours do not reflect the intensity or efficiency of time spent on work (ILO, 2008). Many countries and international organizations (e.g., ILO, OECD) stipulate the optimum working time for their labor as 40 hours per week (Lee et al., 2007).

However, actual working hours of employees tend to be longer than the legal guidelines due to a mix of individual, institutional, and/or economic factors (Lee et al., 2007). Using the data collected in the U.K., Böheim and Taylor (2004) found that the majority of full-time exempt employees are constrained to work excessively. This is the case not only for the U.K. but for many countries in the world. According to the study

with the International Social Survey Program from 27 countries, Stier and Lewin-Epstein (2003) found that the majority of full-time employees in most countries, except for a few Eastern and South European countries, are not satisfied with their working hours because of the excessiveness imposed on them. For the factors influencing working hours, Feldman (2002) proposed a general conceptual model which involved four aspects: individual, organizational, job, and economic factors. Individual factors include demographic, family status, personality, and interests. The organizational factors consisted of leadership and culture, selection and attrition processes, and socialization processes. Visibility of work, performance evaluation criteria, intrinsic motivation, work schedules, and work conditions were included in the job factors. Finally, the economic factors involved competitive pressures, declining profitability, and threat of layoffs.

In addition, Lee et al. (2007) argued that the reported average working hours are different from the actual hours in many cases. Some of the major reasons for the discrepancy include the failure to measure all-inclusive working time, the increased number of part-time and temporary-contract workers whose working time is not separated from that of regular full-time workers (Ogura, 2009), and the number of exempt employees whose actual working hours are underestimated for non-paid overtime (Drago et al., 2009).

### *Long Working Hours*

When working hours and their impacts on employees and organizations are studied, the focus tends to be on the extent of long working hours (Lee et al., 2007). Long working hours are regarded as working hours that are longer than the boundary of

standard work hours (40 hours per week in many cases) in the organization or society. Through the British Workplace Employee Relations Survey conducted in 1998, Bryan (2007) found that, for long working hours, about 42 percent of the variance was ascribed to the effect of individual characteristics and conditions. About 30 percent of the explained variation in working hours was attributed to organization differences, and the rest was due to the extent of workers' job characteristics.

Many researchers have verified that working hours are negatively associated with individual health problems in psychological, emotional, and physical ways (Dembe, Erickson, Delbos, & Banks, 2005; Kleiner & Pavalko, 2010; Savery & Luks, 2000). Through the National Longitudinal Survey in the U.S. from 1979 to 1994, Kleiner and Pavalko (2010) found that individuals who worked between 40 and 59 hours per week had worse mental and physical health than those working less than 40 hours per week. This finding is consistent with those of studies conducted in Australia (Savery & Luks, 2000), European countries (Pisljar et al., 2011) and Korea (Park et al., 2010). In particular, Park et al. (2010) found that working over 60 hours per week is related to serious psychological health problems such as a large increase in the level of stress complaints.

Working hours are also negatively associated with satisfaction with work-family balance (Adkins & Premeaux, 2012; Greenhaus et al., 2003). This conflict over marital or parental roles is likely to become not only a social issue but also one of the stressors which influence individual health (Barnett et al., 2009). When individuals who highly value a marital role or parental role are not satisfied with their work-family balance, they

tend to think about leaving their jobs (Barnett, Gareis, & Carr, 2005; Böheim & Taylor, 2004).

In addition to losing good human resources, long working hours can create harm to organizational effectiveness due to resultant low productivity. Thomas and Raynar (1997) conducted a study with construction employees and found that individual work efficiency showed a bell-curve in a week and there was a 10-15% loss of productivity when employees worked longer than 40 hour a week. This may be because employees whose working time is more than they desire are disengaged, distracted, and alienated at work (Barnett, Gareis, & Brennan, 1999). A similar phenomenon has been reported in studies with various groups of employees (Landrigan et al., 2004; Shepard III, Clifton, & Kruse, 1996).

Despite the negative impacts of long working hours, it seems it is difficult for many individuals to reduce their working hours in the workplace. From the organization's perspective, employee working time is closely related to efficiency and productivity. Employers tend to give extra work to their employees instead of hiring new employees due to the cost saving (Schor, 1993). In light of the global competition and rapid market changes, employers may enforce increased working hours on their employees to meet their business objectives on time (Perlow, 1997). In addition, working hours can also be influenced by the embedded organizational system or culture (Boulin, Lallement, & Michon, 2006) and by the management who requires employees' commitment, initiative, and responsibility (Perlow, 1997; Schor, 1993). From the individual perspective, employees may be concerned about being penalized for not

following tacit overtime directions, especially when the organization is downsizing (Golden, 2006). Employees may perceive that the longer they work, the more advantages they may in recognition, promotion, and development (Boulin et al., 2006; Golden, 2006).

### *Perceived Working Hours*

Although researchers have found that working hours are related to economic efficiency as well as the welfare of employees and their families (Barnett et al., 2009; Brett & Stroh, 2003; Savery & Luks, 2000), it is difficult to conclude that the number of working hours sufficiently predicts productivity and well-being. This is because individuals are likely to have a different preference and tolerance to working hours. Moreover, they may work in different occupational conditions and organizational cultures and have different relationships with co-workers, supervisors, and families (Adkins & Premeaux, 2012; Hughes & Parkes, 2007; Lee et al., 2007; Valcour, 2007). Thus, when the impacts of working hours are explored, it may be necessary to measure what individuals perceive as their working hours rather than simply asking how many hours they work (Wooden, Warren, & Drago, 2009).

In addition, statistically, measuring regular and average hours worked by using a single-item scale may not be valid and reliable (e.g., Park et al., 2010; Tucker & Rutherford, 2005; Wallace, 1997). Most measures of working hours were designed to ask employees about the number of hours worked (e.g., Greenhaus et al., 2012).

Although multi-source and multi-item measures are needed to enhance the methodological rigor in research, asking supervisors or obtaining working hour logs are

highly demanding and very few researchers have used multiple items to measure working time (Ng & Feldman, 2008). In this study, to measure perceived working hours, a multi-item psychometric scale was used. This self-reported measure was designed to ask a perception of an individual's mental state regarding the length of working hours. The details are explained in Chapter III, the methods section.

When it comes to the scope of working hours in general, the entire time for work activities is considered regardless of the location. Thus, working hours included not only direct working time, but also business trips, customer meetings, waiting time, on-call duty, training time, working at home, and even short resting times, which are necessary for productive activities (Lee et al., 2007). In this study, less working time than the regular working hours, proficiency in the job, or the extent of concentration on work was not considered. It is assumed that employees should come to the workplace on time and work for the amount of time stipulated in their contract. For the same task that normally takes eight hours to complete, some may spend 12 hours because they are less proficient or have less concentration. However, as the focus of this study is on working hours, productivity or efficiency was not taken into account.

### **General Stress**

As described in the previous section, one of the largest impacts of long working hours is the deterioration of individual health. A healthy working environment should not only be free from any danger, but also foster mental and social well-being (ILO, 1986). General stress is defined as the extent to which individuals perceive that the demands exceed their ability to cope (Cohen, et al., 1983). This psychological stress

tends to be more prevalent in white-collar employees who are pressured to generate commitment, responsibility, and knowledge in their jobs (Perlow, 1997).

In this study, general stress was measured based on self-ratings in non-specific settings. The reasons that this study did not focus on a specific type of stress (e.g., work stress) was, first, because perceived response to a particular stressor may not be accurately measured due to being confused with other sources of stress (Cohen et al., 1983). The second reason was working hours are related not only to work stress but also to stress resulting from societal demands (e.g., social support, work-leisure, or work-family conflict, Greenhaus et al., 2012; Lingard & Francis, 2005).

Conventionally, the focus of stress theories and research was on psychological stressors in the workplace (Karasek, 1979). According to the World Health Organization (Leka, Griffiths, & Cox, 2004), stress in the workplace is a combination of physical, mental, and emotional strain occurring when work demands and pressures are not matched to individual knowledge and abilities and which challenges individual's capacity to cope. Although some pressure at work may be necessary to motivate and challenge employees and enable them to learn new skills and knowledge, excessive and unmanageable pressure easily leads to stress, which damages health and business performance (Geiger-Brown, Muntaner, Lipscomb, & Trinkoff, 2004; Leka et al., 2004; Williams et al., 2001). In many cases, stress occurs incrementally so that its symptoms are not easily recognized but can result in serious emotional, psychological, and physical problems for employees throughout their lives (Leka et al., 2004).



Recently, research on stress has included non-work (external) stressors, such as family, social network, and leisure, as major sources of general stress (Burr & Klein, 1994; Fernandes & Tewari, 2012; Karasek et al., 1998). While work stress is still the major focus in stress research, non-work stressors are important to understand how stress occurs (Karasek & Theorell, 1990).

Although there are multiple theories on stress, those theories have used common umbrella terms that encompass diverse concepts regarding problems in human behavior and health (e.g., job demands, job control, Karasek & Theorell, 1990). Many researchers in occupational health and psychology purported that the relationship between a single stressor and the observed effect is neither simple nor direct (Dormann & Zapf, 1999; Nahum-Shani & Bamberger, 2011; Spell & Arnold, 2007). Factors influencing stress are considered from individual, family, job, or work environment aspects, and they tend to be interwoven with each other. Thus, the structure and components of the model determined by stress may be well-suited to complex systems involving various kinds of factors and their interactions.

#### *Relationship between General Stress and Perceived Working Hours*

Several studies conducted by researchers in different countries and with different jobs underscore the positive association between working hours and the level of stress. Through a nation-wide survey for Australian employees (n=37,200), Sayvery and Luks (2000) found that working hours are significantly related to the work-related stress level. In studies with German (Steinmetz & Schmidt, 2010), Korean (Park et al., 2010), Mexican (Gonzalez-Munoz & Gutierrez-Martinez, 2007), and U.S. employees (Geiger-

Brown et al., 2004), similar results were found that working hours are positively and significantly associated with strain symptoms such as depression, anxiety, and exhaustion.

In addition to working hours itself, work-leisure or work-family conflicts resulting from long working hours may bring about stress if individuals value out-of-working time for family and personal leisure (Barnett et al., 2009; Brett & Stroh, 2003). For instance, Gonzalez-Munoz and Gutierrez-Martinez (2007) found that individuals in Mexico with working hours longer than 40 hours per week, especially women, were at great risk for a high stress level in the workplace because they feel a greater responsibility outside work due to such things as child care and housekeeping. Based on the evidence reviewed above, a research hypothesis was formulated as:

*Hypothesis 1.* There will be a significant positive relationship between perceived working hours and general stress.

### **Work Centrality**

Work centrality is a belief of the extent to which individuals regard the work in their lives as important (Paullay, Alliger, & Stone-Romero, 1994). People who reveal a high level of work centrality are preoccupied by and immersed in their work (Diefendorff, Brown, Kamin, & Lord, 2002). Positive and meaningful work experiences such as promotion, advancement, and recognition tend to enhance work centrality whereas scarce impressive work experiences tend to lead to a low level of work centrality (Sharabi & Harpaz, 2010).

#### *Relationship between Work Centrality and Perceived Working Hours*

The higher the work centrality, the more ambitious the worker and the more effort put into the work (MOW - Meaning of Work International Research Team, 1987). Individuals with higher willingness and eagerness to work fulfill higher levels of job performance and work longer compared to those with lower work centrality (Sharabi & Harpaz, 2010; Wallace, 1997). Work centrality is positively related to work ethics, in which individuals are intrinsically motivated and believe that work itself is desirable, but is negatively related to leisure ethics which represent work as a means for leisure activities (Hirschfeld & Feild, 2000). In the same vein, Snir and Harpaz (2012) found that employees who have a greater tendency to work indicated longer working hours compared to a leisure-oriented group. Although when a workload is large, individuals work long hours regardless of the strength of their work centrality, when workload is small, work centrality positively influences working hours (Greenhaus et al., 2012). Through a qualitative study, Kim et al. (2012) found that individuals with high work centrality consider that long working hours are necessary to achieve and satisfy their own work-related desires. Based on the above arguments, a research hypothesis was proposed as:

*Hypothesis 2.* There will be a significant positive relationship between work centrality and perceived working hours.

#### *Relationship between Work Centrality and General Stress*

Schaufeli et al. (2008) indicated that a positive and fulfilling work-related state of mind is negatively associated with physical, emotional, and psychological burnout. Kim et al. (2012) also found that although long working hours resulted in physical fatigues,

little distress and psychological pressure were revealed when work centrality was high. Based on the findings above, the following research hypothesis was proposed.

*Hypothesis 3.* There will be a significant negative relationship between work centrality and general stress.

### **Job Control**

Job control (often referred to as decision latitude) refers to an employee's level of decision-making authority and opportunities to participate in the organization using their own abilities (Karasek & Theorell, 1990). With a high level of decision latitude, employees can control tasks using their own expertise and develop their skills. Thus, when employees have a high degree of autonomy with high job demands, the productivity of the organization can be maintained (Love et al., 2007). Although Karasek and Theorell (1990) distinguished job control between skill discretion and decision authority, several researchers pointed out the ambiguity among the two concepts and merged them into one which describes autonomy (Demerouti et al., 2001; Peeters & Rutte, 2005; Spell & Arnold; 2007; van Yperen & Hagedoorn, 2003). Following this, a single construct of job control that involves both skill discretion and decision authority were employed in this study.

### *Relationship between Job Control and Perceived Working Hours*

Strong job motivation and commitment resulting from job control tend to increase working hours (Greenhaus et al., 2012; Sharabi & Harpaz, 2010; Tucker & Rutherford, 2005). This supports the previous research that employees in managerial positions tend to work longer than ones in non-managerial positions because of the

different degrees of autonomy regarding work (Drago et al., 2009). While there is a paucity of research that provides a clear answer about how job control increases hours worked, there are some studies in which the interaction effect of job control on the relationship between working hours and individual well-being such as job satisfaction and work-life balance was found (Hughes & Parkes, 2007; Valcour, 2007). In other words, because job control moderates the association between working hours and well-being, individuals can work longer with less psychological and emotional burnout when they have authority to control their working time and activities (Shirom et al., 2010).

Based on the evidence reviewed above, a research hypothesis was proposed as:

*Hypothesis 4.* There will be a significant moderating effect of job control on the relationship between perceived working hours and general stress. When job control is high, the relationship between perceived working hours and general stress will be weak.

#### *Relationship between Job Control and General Stress*

Consistent with the JD-R model, job control is regarded as one of the stressors leading to an individual's burnout. It was found that job control can be used to predict a low level of stress (Shirom, Nirel, & Vinokur, 2006; van Yperen & Hagedoorn, 2003). A lack of autonomy in the job was related to increased stress symptoms such as fatigue, dissatisfaction, depression, and anxiety (Daniels et al., 2007; Spell & Arnold, 2007), as well as stress-related health problems (Boerjan, Simone, Bleichrodt, van Weel-Baumgarten, & Goor, 2010; Tucker & Rutherford, 2005). In a meta-analysis, Ng and Feldman (2012) found that perceptions of lack of job control are negatively related to

job stress ( $r = -.33, p < .05$ ). However, Love et al. (2007) found that job control predicts job satisfaction but not mental health including stress symptoms. Lewig et al. (2007) also indicated a similar result that there was no significant relationship between stress symptoms and job control in their study. The disparity in results may be because the latter two studies' samples were different from the samples used in the other studies. The participants of Love et al.'s (2007) study were U.K. IT professionals who have considerable skill discretion and those of Lewig et al.'s (2007) study were Australian volunteers so that their job attitudes and autonomy may be different from ordinary employees. Another possible reason is that those studies included social support as a predictor, and it interfered with the relationship between job control and stress. As this study's sample was white collar employees from Korea and U.S.A and the research model does not include social support, a research hypothesis was formulated as:

*Hypothesis 5.* There will be a significant negative relationship between job control and general stress.

### **Job Demands**

Job demands are defined as the intensiveness of a job for a long period of time, which include overload and time constraints in accomplishing the work (Love et al., 2007). Snir and Harpaz (2012) perceived job demands as one of the major external predictors of the increase in working hours, which are uncontrollable, stable, and employer-directed in the organization. Although job demands can refer to physical, social, or organizational aspects regarding the work that require both physical or mental efforts (Demerouti et al., 2001), in many cases, job demands are used as psychological

needs and burdens, which are separated from a physical quantity of work (Karasek and Theorell, 1990; Kristensen, Bjorner, Christensen, & Borg, 2004; Lewig et al., 2007; Love et al., 2007). In this study, the psychological aspect of job demands was used.

#### *Relationship between Job Demands and Perceived Working Hours*

It may be obvious that high overload increases working hours. When individuals feel pressured by too much workload, they tend to work longer to accomplish the impending tasks. In their meta-analysis, Ng and Feldman (2008) found that, among 39 relevant variables, job demands had the largest association ( $r = .41$ ) with working hours. Job demands have been found to be positively associated with individuals' working hours regardless of their feeling of belonging and satisfaction in terms of work (Greenhaus et al., 2012). Based on the arguments above, a research hypothesis was formulated as:

*Hypothesis 6.* There will be a significant positive relationship between job demands and perceived working hours.

#### *Relationship between Job Demands and General Stress*

Several researchers have found significant relationships between stress and job demands (e.g., Demerouti et al., 2001; Lewig et al., 2007; Shirom et al., 2010). They perceived that job demands influenced higher levels of stress reactions such as emotional exhaustion, fatigue, job-related depression, psychosomatic complaints, and anxiety. Although, in a study through a survey of UK IT professionals, Love et al. (2007) found that demands at work did not predict stress symptoms when a strong social support was given, other researchers revealed a significant relationship between job demands and

stress in the model with job control (e.g., Iverson, Olekalns, & Erwin, 1998; Lewig et al., 2007). In multiple studies, the relationship between job demands and stress was mediated by working hours (Karasek & Theorell, 1990; Love et al. 2007). Based on the argument above, two research hypotheses were formulated as:

*Hypothesis 7a.* There will be a significant positive relationship between job demands and general stress.

*Hypothesis 7b.* There will be a significant mediating effect of perceived working hours on the relationship between job demands and general stress.

### **Work Condition Constraints**

Work conditions represent common situational environments or activities that influence job performance in the organization (Peters & O'Connor, 1980). Work conditions can play a role in either job resources or job demands depending on whether or not they provide positive impacts on one's work. For example, fast and precise equipment may enable individuals to get their jobs done satisfactorily. On the other hand, if the equipment individuals frequently use for their jobs is slow and produces many errors, it will cause more job demands. Work condition constraints (also called organizational constraints) can involve equipment for a job that works poorly, obstructive organizational rules, useful information that has not been received, interruptions by co-workers, and necessary training that has not been provided (Peters & O'Connor, 1980). Highly constrained work conditions can increase working hours and cause employees' negative attitudes and dissatisfaction. In this study, the focus regarding work conditions was on constraints.



### *Relationship between Work Condition Constraints and Perceived Working Hours*

There were very few studies in which the relationships between work condition constraints and working hours were examined. Using multisource data, Spector, Dwyer, and Jex (1988) found that there were no significant direct relationships between working hours and work condition constraints measured by employees themselves and their supervisors. Although in a meta-analysis including various cases, Spector and Jex (1998) found that constraints by work conditions were significantly positively associated with working hours ( $r = .19$ ), its effect size ( $r^2 = .04$ ) was small. Given the high correlation between workload and work condition constraints in both studies ( $r = .55$  and  $.44$ ), there may be an indirect relationship between work condition constraints and perceived working hours via job demands.

Although the variable of work condition constraints was not used for the integrative use, researchers in several studies focused on specific factors of work condition constraints, such as interruptions and insufficient information, and examined their influence on working hours via job demands. First, interruptions by co-workers tend to cause employees to stop what they were concentrating on and respond. Even after the interruption ends, employees may not be able to instantly get back to their work and it usually takes a significant amount of time to recover their concentration, increasing time constraints (Jackson et al., 2003). When the interruption is unexpected and tasks are complex, time-consuming, and highly cognitive requiring full attention, the influence of the interruption on job demands is especially high (Gievska et al., 2005; Mandler, 1964). In addition, insufficient information for the job or use of substandard

equipment also stimulates job demands and eventually increases working hours (Wajcman & Rose, 2011). This may be related to whether or not employees received the necessary training important for productivity. A lack of knowledge or information for a task results in a work slowdown and more time constraints at work (Jett & George, 2003). Repeated environmental constraints can also produce an organizational culture in which individuals work less in the daytime postponing their tasks until evening, night, or even holidays when they work productively (Kim et al., 2012). Based on the evidence reviewed above, the following research hypotheses were proposed.

*Hypothesis 8a.* There will be a significant positive relationship between work condition constraints and job demands.

*Hypothesis 8b.* There will be a significant mediating effect of job demands on the relationship between work condition constraints and perceived working hours.

#### *Relationship between Work Condition Constraints and General Stress*

It is generally regarded that the greater the constraints on work conditions, the higher the level of stress. When equipment does not work properly, work procedures are too complicated, or work is frequently interrupted, individuals may feel irritated and unfulfilled (Jackson et al., 2003; Mandler, 1964). Time pressures caused by work condition constraints are likely to increase feelings of stress and anxiety because individuals who are interrupted recognize that less time spent on work may lead to failure in their tasks, a bad performance evaluation, or problems with work-family balance (Jett & George, 2003; Perlow, 1999).

In several studies, a positive significant relationship was found between work condition constraints and job stress factors, such as job dissatisfaction, work anxiety, frustration, and somatic symptoms (e.g., Fox, Spector, & Miles, 2001; Penny, Hunter, & Perry, 2011; Spector & O'Connell, 1994). In their meta-analysis, Spector and Jex (1998) found that work condition constraints were significantly related not only to job stress, but also negative affectivity ( $r = .30$ ) and intention to quit ( $r = .46$ ). Recently, in another meta-analysis, there was a significant negative relationship ( $r = -.33$ ) between dissatisfaction with work conditions and job stress (Ng & Feldman, 2012). In a test for staff at a university, Oliver (2012) found that work condition constraints were positively associated with general stress. Given the relationship among work condition constraints, job demands, and general stress, research hypotheses were formulated as:

*Hypothesis 9a.* There will be a significant positive relationship between work condition constraints and general stress.

*Hypothesis 9b.* There will be a significant mediating effect of job demands on the relationship between work condition constraints and general stress.

### **Hypothesized Model**

A hypothesized conceptual model of this study was formulated based on the literature reviewed. In the model, the dependent variables (perceived working hours and general stress) were located on the right side while the independent variables (work centrality, job demands, job control, work condition constraints) were positioned on the left side. Job demands, perceived working hours, and general stress are endogenous variables and the rest are exogenous variables.

Overall, the researcher hypothesized that perceived working hours will significantly predict general stress and each of the independent variables were significantly related to both perceived working hours and/or general stress (see Figure 2). These structural relationships and paths among the variables will be examined through the methodology and methods described in Chapter III.

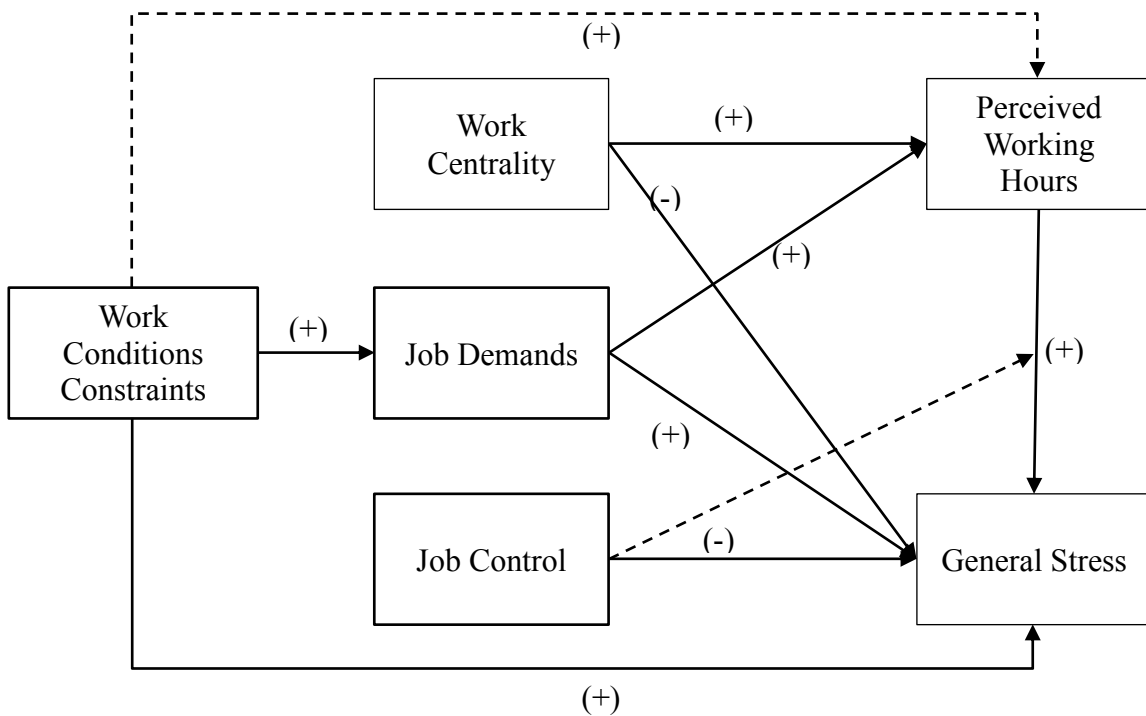


Figure 2. The hypothesized conceptual model of the study

### Summary

Chapter II included a review of literature on six variables employed in this study: perceived working hours, general stress, work centrality, job demands, job control, and work conditions constraints. Through the literature review, three theoretical perspectives

(economic model of overtime, JD-R model, and COR theory) and relevant studies were used to establish the theoretical framework and research hypotheses. Based on the literature, the hypothesized model was proposed that work condition constraints predict job demands; work centrality and job demands predict perceived working hours; work centrality, job demands, job control, and work condition constraints predict general stress. The mediation and moderation relationships among variables were also hypothesized. How the hypothesized model was tested is introduced in Chapter III.

## CHAPTER III

### METHODOLOGY AND METHODS

The purpose of this study was to examine the relationships among perceived working hours, general stress, work centrality, job control, job demands, and work condition constraints. The current research was designed to gather data which reflect these six variables from full-time exempt employees in the United States and Korea and to determine the associations in the hypothesized model. To this end, a self-administered questionnaire survey approach was employed as it has the advantage of measuring perceptions of individuals (Bartlett, 2005). Inferential statistics focusing on correlational methods were used to examine the research hypotheses. This chapter includes descriptions of the participants of this study, measures used for data collection, data collection procedures, statistical assumption checks, and data analysis methods.

#### **Participants**

The population of interest for this study included full-time exempt employees working in companies in the United States and Korea. In the U.S., full-time employees working in managerial or professional positions and paid on a salary basis are usually exempted from overtime pay. In Korea, although there is no legal stipulation on exempt status, full-time white collar employees are exempted from overtime pay in most cases. Part-time and blue-collar workers were excluded because their working time is usually strictly fixed by their contract or their unions' bargaining power and their overtime is paid in most cases. A measurement invariance test, described in the analysis section, was

conducted to check if the measured constructs have the same factor loadings regardless of country.

From 25 companies in the United States (n = 11) and Korea (n = 14), 812 employees (401 from the U.S and 411 from Korea) responded to the survey (also see the Data Collection Procedure in the latter section of this chapter). Among them, seven cases that were considered as not acceptable were excluded: four cases did not meet the population criteria (full-time and exempt status) and three cases had straight-line answers for all questions. Although there were 153 missing values (0.4%) with 44 missing cases (5.5%), all missing cases were included in the analyses of this study due to the missing pattern (missing completely at random) and the use of the Full Information Maximum Likelihood (FIML) estimation for the missing data treatment. As a result, the sample of 805 respondents (397 from the U.S. and 408 from Korea) was used for the analyses.

Overall demographic characteristics are presented in Table 1. The total number of males (n = 410, 51.3%) was similar to that of females (n = 390, 49.7%). In the U.S. sample, there were slightly more female (n = 217, 54.7%) than male (n = 180, 45.3%) participants. In the Korean sample, there were more male (n = 230, 57.1%) than female (n = 173, 42.9%) participants. Regarding the age of the participants, the largest group was 31-40 years old (U.S.: n = 120, 30.2%, Korea: n = 182, 44.9%) while the smallest group was over 61 years old (U.S.: n = 31, 7.8%, Korea: n = 4, 1.0%) in both of the samples. More than half of the participants held a bachelor's degree or above in both the U.S. (n = 224, 56.6%) and Korean (n = 381, 94.1%) samples. The industries of the

participants' organization were somewhat diverse. The major industries were manufacturing (U.S.: n = 39, 9.8%, Korea: n = 90, 22.2%), educational service (U.S.: n = 43, 10.8%, Korea: n = 66, 16.3%), and Information technology (U.S.: n = 22, 5.5%, Korea: n = 75, 18.5%). Regarding the length of service in the current organization, the largest group was 1-5 years (U.S.: n = 148, 37.2%, Korea: n = 164, 40.5%) followed by 6-10 years (U.S.: n = 104, 26.1%, Korea: n = 110, 27.2%) in both countries. More than half of the participants were in a non-managerial position (U.S.: n = 234, 58.9%, Korea: n = 271, 67.6%). The married (U.S.: n = 250, 63.0%, Korea: n = 234, 58.4%) exceeded the single (U.S.: n = 147, 37.0%, Korea: n = 167, 41.6%) in the both samples. Regarding children, there were slightly more participants who did not have a child living together in the Korean sample (n = 214, 53.1%) while, in the U.S. sample, more participants had a child or children living together (n = 211, 53.1%).

Table 1

*Demographic Characteristics*

Characteristics		Korean		U.S.		Total	
		N	%	N	%	N	%
Gender	Male	230	57.1	180	45.3	410	51.3
	Female	173	42.9	217	54.7	390	48.7
Age	21-30 years old	79	19.5	48	12.1	127	15.8
	31-40 years old	182	44.9	120	30.2	302	37.7
	41-50 years old	90	22.1	92	23.1	182	22.7
	51-60 years old	50	12.3	106	26.8	156	19.5
	Over 61 years old	4	1.0	31	7.8	35	4.4



Table1 Continued

Characteristics		Korean		U.S.		Total	
		N	%	N	%	N	%
Education	High school/GED	20	4.9	139	34.9	159	19.8
	Bachelor's degree	303	74.8	164	41.2	467	58.2
	Master's degree	61	15.1	51	12.8	112	14.0
	Doctoral degree	17	4.2	9	2.3	26	3.2
	Others	3	.7	34	8.5	37	4.6
Industry	Administration service	36	8.9	16	4.0	52	6.5
	Construction	17	4.2	21	5.3	38	4.7
	Educational service	66	16.3	43	10.8	108	13.5
	Finance	43	10.6	25	6.3	68	8.5
	Food	6	1.5	16	4.0	22	2.7
	Healthcare	15	3.7	39	9.8	54	6.7
	IT	75	18.5	22	5.5	97	12.1
	Manufacturing	90	22.2	39	9.8	129	16.1
	Others	54	15.5	176	44.3	230	29.1
Position	Managerial	130	32.4	163	41.1	293	36.7
	Non-managerial	271	67.6	234	58.9	505	63.3
Length of service	Less than 1 year	31	7.6	26	6.5	57	7.1
	1-5 years	164	40.5	148	37.2	312	38.9
	6-10 years	110	27.2	104	26.1	214	26.7
	11-15 years	46	11.4	49	12.3	95	11.8
	16-20 years	24	5.9	33	8.3	57	7.1
	More than 21 years	28	6.9	37	9.3	65	8.1
Marital status	Single	167	41.6	147	37.0	314	39.3
	Married	234	58.4	250	63.0	484	60.7
Spouse employment	Yes	157	67.1	193	77.8	350	72.6
	No	77	32.9	55	22.2	132	27.4
Children	Yes	189	46.9	211	53.1	400	50.0
	No	214	53.1	186	46.9	400	50.0

Note: percentages do not include missing values

## Measures

To examine the conceptual model and the hypothesized structural relationships, the survey in this research included six measures. These measures were selected taking quality (validity and reliability) and usability (difficulty and length) into account. The total number of items was 50 (See Appendix B). Two screening questions were included to ensure that respondents were full-time and overtime exempt employees. The estimates of Cronbach's alpha for each measure are presented in Table 2.

Table 2

### *Estimates of Reliability for Measures*

Measure	Number of items	Cronbach's alpha
Perceived Working Hours	8	.92
General Stress	8	.91
Work Centrality	8	.89
Work Condition Constraints	5	.87
Job Demands	5	.86
Job Control	5	.86

### **Perceived Working Hours**

Despite the necessity of developing a more precise way of measuring working time (Ng & Feldman, 2008), the majority of cited studies relied on a single self-reported

item to gauge actual work hours by asking how many hours individuals worked on average (Brett & Stroh, 2003; Emmerik & Sanders, 2005; Hughes & Parkes, 2007; Jex & Bliese, 1999; Park et al., 2010; Reynolds & Aletraris, 2010; Tucker & Rutherford, 2005; Wallace, 1997). Some researchers employed more specified approaches although the items were still simple in which respondents were asked their average working hours for a specific duration such as in the most recent two or four weeks (Brown & Booth, 2002; Steinmetz & Schmidt, 2010). For example, Valcour (2007) used the sum of the two items: “how many hours do you work in a typical week, including paid breaks but excluding lunch and overtime?” and “how many hours of overtime do you work in a typical week?” (p. 1517). Greenhaus et al. (2012) asked for the average number of hours worked each typical day including weekends and then they produced average weekly work hours for each individual.

However, work hours measured by directly asking employees their average work hours through a single question may be different from what individuals actually work, unless they record the number of working hours every day. Thus, using a psychometric measure with multiple items can be expected to provide better observations in terms of working hours, though a risk of common method variance exists. In addition, as the focus of this study regarding working hours was on its impacts and relationships, measuring what employees perceive as their working hours rather than to simply ask how many hours they work was judged to be more appropriate.

A scale to measure perceived working hours was developed based on Golden’s (2006) theoretical model of overtime. In the model, there are three types of long working

hours: structural, cyclical, and frictional. Structural long working hours are related to work environments, cyclical hours are related to labor demands, and frictional hours are related to discrepancies of expectations between employees and employers. As presented in Table 3, the scale consisted of eight items that represented the four aspects (three types and one overall) of long working hours forming a construct.

Table 3

*Items of the Perceived Working Hours Scale and Their Principle Component*

*Coefficients*

Aspect	Items	Coefficient
Structural	▪ I feel uncomfortable when I leave my office right after the regular work hours end.	.63
	▪ I take working beyond the regular work hours for granted.	.69
Cyclical	▪ It is hard for me to avoid overtime in the circumstances surrounding my job.	.86
	▪ Working longer than regular work hours is necessary to get my job done.	.85
Frictional	▪ It is important for me to work longer than the regular work hours.	.74
	▪ I am required to work more than I expected.	.80
Overall	▪ I find myself continuing to work after the regular work hours end.	.86
	▪ Overall, I work longer than the regular work hours.	.90

There are two items that describe overall long working hours and two items for each aspect. The seven-point Likert scale ranged from strongly disagree to strongly

agree. Detailed instructions were given with the items that responses to the questions should be made based on the experience in the recent month, and regular work hours were the standard length of productive working time recognized in the organization. The participants were also instructed that the scope of working hours included not only working hours at the workplace, but also business trips, customer meetings, waiting time, on-call duty, training time, working at home, and even short breaks. Lunch, dinner, and non-paid activity (e.g., non-work related leave and long rest times) were to be excluded.

In this study, the validity and reliability of the Perceived Working Hours scale were tested. In the exploratory factor analysis, a single factor was extracted accounting for 63.61% of the total variance among the eight items ( $KMO = .92$ ,  $df = 28$ ,  $p < .01$ ). The principle component coefficients of each item were ranged from .63 to .90. Cronbach alpha for this scale was .92.

### **General Stress**

The extent to which situations in one's life are stressful was measured using the General Stress Scale as a single construct variable which consists of ten items (Cohen et al., 1983). Their initial scale involved fourteen items but after repeated tests, the scale was revised to contain ten items (Cohen, Kaplan, & Salonen, 2006). There is a short version of General Stress Scale with four items but the abridged scale may result in an internal reliability issue (Cohen et al., 1983). Several studies have been conducted in medical science, health science, and psychology by using the General Stress Scale with various ethnic groups, occupations, and regions. Cronbach's alpha for the ten-item scale ranged from .78 to .92 (Cohen et al., 2006; Miller, Cohen, & Ritchey, 2002; Remor,

2006). The sample items are “In the most recent month, how often have you felt confident about your ability to handle your personal problems?” and “In the most recent month, how often have you felt difficulties were piling up so high that you could not overcome them?” Respondents were asked to indicate the extent to which they agreed with each item with a range of (1) never to (5) very often. In this study, Cronbach’s alpha for the ten-item scale of general stress was .91.

### **Work Centrality**

Work centrality was measured as a single construct variable using eight items from the scale developed by Paullay et al. (1994). Cronbach alphas for this scale in previous studies were .76 (Diefendorff et al., 2002) and .80 (Hirschfeld & Feild, 2000). Examples of the items are “The major satisfaction in my life comes from my work” and “I would probably keep working even if I didn't need the money.” A seven-point Likert scale with a range of (1) strongly disagree to (7) strongly agree was employed. In this study, Cronbach’s alpha for this scale was .89.

### **Work Condition Constraints**

As a single construct variable, work condition constraints was measured using five items from the Organizational Condition Scale developed by Spector and Jex (1998) which was based on the work of Peter and O’Connor (1980). The average of Cronbach alpha of this scale was .85 in eight studies (Spector & Jex, 1998). Sample items are “I find it difficult/impossible to do my job because of interruptions by other people” and “I find it difficult/impossible to do my job because of poor equipment or supplies.” The

seven-point Likert scale ranged from 1) strongly disagree to 7) strongly agree. In this study, Cronbach's alpha for this scale was .87.

### **Job Demands**

Five items from the Job Demands Scale developed by Karasek (1979) were used as a single construct variable of job demands. These items included demands regarding work quantity, constraints, and conflicts. Cronbach alphas in previous studies using this scale ranged from .63 to .81 (Butler, 2007; Karasek et al., 1998; Xie, 1996). Sample items are "My job requires working very fast" and "I have enough time to get the job done." A seven-point Likert scale with a range of (1) strongly disagree to (7) strongly agree was employed. In the current study, Cronbach's alpha for this scale was .86.

### **Job Control**

Job control, a single construct variable, was measured using five items from a scale suggested by Smith, Tisak, Hahn, & Schmieder (1997). The scale was developed from Karasek's (1979) and Ganster's (1989) works. Karasek's measure has two dimensions, skill discretion and decision authority, while Ganster's involves general control and predictability. Due to the similarity between those measures (Smith et al., 1997) and a more relevancy of the predictability dimension than the skill discretion dimension for this study, a combination of Karasek's decision authority and Ganster's predictability dimensions was used. In a recent study using this scale, a Cronbach alpha of .71 was observed (Spell & Arnold, 2007). Examples of the items are "How much control do you have over the variety of methods you use in completing your work?" and "How much are you able to predict what the results of decisions you make on the job

will be?” A seven-point Likert scale with a range of (1) strongly disagree to (7) strongly agree was employed. In this study, Cronbach’s alpha for this scale was .86.

### **Demographic Variables**

Items to obtain demographic variables were presented. The demographic variables included gender, ethnicity, length of service, marriage, spouse job, children, education, position, and industry. In addition, for descriptive purpose, the number of working hours per week was asked after providing an explanation about what activities are included or excluded in working hours. The question was “How many hours do you typically work in a week including the weekend?” The information of the number of working hours was also used in the Discussion section to support justifications for the results.

### **Data Collection Procedure**

All data collection actions were performed after an IRB approval for this study (Appendix A). To recruit participants, the researcher contacted HR professionals in 27 companies in the U.S. and Korea through personal connections and asked them to invite employees in their organizations to take part in the survey. After obtaining an acceptance from those of 25 companies, the detailed procedure for the data collection was discussed and a letter of invitation and a reminder letter were provided to them. To ensure participants’ anonymity and confidentiality, the online survey was distributed by contacted HR professionals and the collected data, which did not include any information about personal identity, were accessed only by the researcher.



The electronic survey questionnaire (Appendix B) was developed both in English and Korean for this study. To check any cultural and translation issues in the Korean version survey, two Korean doctoral students who had relevant academic and practical experiences of cultural study and translation between English and Korean reviewed the survey by back translations. Based on their feedback, minor changes in wordings for the Korean survey were made by the researcher.

A pilot test was conducted with individuals who had similar demographic attributes to the research sample in order to identify whether the survey administration or the questionnaire needed any improvement before the survey was sent out to the potential participants. In total, 35 people (15 Koreans and 20 Americans) participated in the pilot test. Based on the feedback from participants, minor changes (e.g., font size, position of scales, and page breaks) were made to improve the survey.

Online surveys were conducted in mid-February 2014 for a two-week time frame. One week after the invitation email was distributed, a reminder email was sent through HR professionals to the potential participants. During the first wave, 496 (61.1%) employees participated in the survey and 316 (38.9%) responded in the second wave, making the total number of respondents 812.

### **Statistical Assumptions**

After the survey, the collected data were tested in order to ensure statistical assumptions by checking missing data, outliers, normality, linearity, homoscedasticity, and multi-collinearity. All assumption tests were conducted using IBM SPSS 21.

### **Missing Data**

In the collected data, there were 153 missing values (0.4%) with 44 missing cases

(5.5%). As patterns of missing data can influence relationships between the variables and the missing values (Meyers, Gamst, & Guarino, 2013), it is important to identify whether the pattern is accidental or random. Generally, there are three types of missing data patterns: Missing Completely at Random (MCAR), Missing at Random (MAR), and Not Missing at Random (NMAR) (Graham, 2009). In this study, the pattern of the missing data was tested using Little's MCAR test. As a result, the collected data were shown as MCAR. Although a small number of missing values are ignorable when the sample size is large and the pattern of missingness is random (Meyers et al., 2013), many researchers recently suggested that modern imputation approaches for missing data provide better statistical results (e.g., Enders, 2010; Graham, 2009). Because the pattern of missing data was MCAR and an SEM software program, Mplus, was mainly used for this study, the Full Information Maximum Likelihood (FIML) approach was employed. The FIML estimation is one of the most widely used missing data estimations in SEM and expected to produce unbiased parameter estimates and standard errors when MCAR or MAR missing data are given (Kline, 2011).

### **Outliers**

When scores are very different from the rest of the cases, the normality assumption can be violated and the results of analyses may not be accurate. Box plots were used to identify univariate outliers (outliers in a single variable). In the box plot, the center line of the box is the median (the 50<sup>th</sup> percentile) and the borders of the box are set at the 25<sup>th</sup> and the 75<sup>th</sup> percentile. Two lines connected with whiskers are called

inner fences and scores placed outside those fences are generally considered outliers.

The box plots for each variable are presented in Appendix C. In the data of this study, 22 cases (2.9%) were identified as univariate outliers: 15 cases in General Stress; 8 cases in Job Control (one case was overlapped).

Multivariate outliers (outliers in a combination of multiple variables) were inspected by computing the Mahalanobis Distance of each case. The Mahalanobis Distance values were evaluated with a chi-square distribution ( $df = 5, p < .001$ ). In this dataset, a value of any case that was equal to or greater than the critical value (20.52) was considered a multivariate outlier. As a result, 11 cases (1.4%) were detected and seven were overlapped with the univariate outliers. In total, 26 outliers were detected. To check whether those outliers affect the analyses, the hypothesized model was tested with and without the outliers. There were no significant differences between the two analyses. As the number of outliers is small and their impact is not significant, outliers were included in the data for this study.

### **Normality**

As this study relied mainly on SEM-based assumptions of normal distributions in the multivariate condition, multivariate normality was checked. Multivariate normality includes normalities in all the univariate distributions, the joint bivariate distributions of any pair of the variables, and the linear combinations of the variables (Kline, 2011). The degrees of skewness and kurtosis were measured for each distribution. If the skew index is less than  $\pm 3.0$  (z score), the data distribution may be symmetrical. If the kurtosis index is greater than  $\pm 10.0$  (z score), the data may have highly peaked distributions (Kline,

2011). In the sample of this study, there was no significant skewness or kurtosis. As seen in Appendix D, the skew indices of the items were between  $-.47$  and  $.31$  while the kurtosis indices were between  $-.72$  and  $.68$ . Thus, the data distribution is fairly symmetrical and not highly peaked.

### **Linearity and Homoscedasticity**

Linearity and homoscedasticity (uniform distributions) were checked by plots for residuals. As linearity and homoscedasticity tend to be affected by outliers in the data (Kline, 2011), tests for these were conducted after treating outliers. As presented in each plot in Appendix E, for the normal probability plots regarding the standardized regression residuals, there is a diagonal line which represents points of expected and observed cumulative probabilities for the residuals in each plot. Thus, the relationships between endogenous and exogenous variables are likely to be linear. Appendix E also includes scatterplots of the standardized residuals against the standardized predicted scores. Although the residuals in both plots are not evenly scattered around zero, their distribution forms an oval, which is acceptable for homoscedasticity of the data.

### **Multi-Collinearity Diagnoses**

Multi-collinearity occurs when variables are highly correlated (Meyers, et al., 2013). Multi-collinearity can be detected by using a correlation matrix or variance inflation factors (VIF) and tolerances (Field, 2013). The VIF is supposed to be below 10 and the tolerances should be above  $.10$  (Stevens, 2009). In the collected data, when Perceived Working Hours was a dependent variable, the VIF was between 1.11 and 1.40 while the tolerance was between  $.72$  and  $.90$ . When General Stress was a dependent

variable, the VIF was between 1.14 and 1.95 while the tolerance was between .51 and .88. Thus, mean-centering was not necessary for the variables but only for testing an interaction effect in this study.

### **Data Analysis**

The analyses in this study involved statistical approaches for common method variance, measurement invariance, construct validity, descriptive information, correlation, and structural equation modeling. IBM SPSS 21.0 and Mplus 7.11 software were used for these tests.

#### **Common Method Variance**

To reduce the effects of method biases, several procedural approaches recommended by Podsakoff, MacKenzie, Lee, and Podsakoff (2003) were adopted in the survey design stage. Measures were separated from each other by different pages and had individual instructions. The same Likert scale format was not applied throughout the survey. The order of the measurement of the predictor and criterion variables was counterbalanced. During the pilot test, the researcher asked participants to give feedback on the questionnaire quality (accuracy and easiness) and survey procedure to improve survey and scale items.

However, as all data were self-reported and collected through the same questionnaire during the same period of time, there might exist a common method variance (CMV) which influences observed relationships among the constructs and causes errors and bias (Podsakoff & Organ, 1986). Harman's single-factor test was conducted to diagnose if the data involved a common method effect. For the test, an

exploratory factor analysis (EFA) was performed using rotated/un-rotated principal component factor analysis and rotated/un-rotated principal axis analysis (See Table 4). As a result, six factors were detected from each of the factor analyses which accounted for the majority variance of the data. This led to a conclusion that there may be little common method biases in the data.

Table 4

*Results of Harman's Single-Factor Test*

EFA method	factor	Non-rotation		Rotation	
		Eigenvalue	Variance (%)	Eigenvalue	Variance (%)
Principal component analysis	1	10.27	26.33	5.16	13.23
	2	5.47	14.03	5.12	13.15
	3	3.67	9.40	4.83	12.41
	4	2.59	6.63	3.62	9.29
	5	2.02	5.17	3.36	8.63
	6	1.33	3.40	3.22	8.27
Principal axis analysis	1	9.88	25.34	5.31	13.62
	2	5.06	12.99	4.77	12.24
	3	3.31	8.49	4.47	11.47
	4	2.18	5.60	3.23	8.28
	5	1.62	4.11	2.97	7.64
	6	.89	2.28	2.19	5.61

Although Harman's single-factor test is one of the most widely used approaches to check the CMV, there is criticism that the test is somewhat insensitive in detecting method biases (Podsakoff et al., 2003). Given the limitation of Harman's single-factor test, a single-method-factor approach in SEM was also employed in this study. Thus, a common latent variable for all items of each measure, which represents the CMV, was added in the measurement model to control the effects of measurement error (Carlson & Kacmar, 2000; Podsakoff et al., 2003). In a CFA, the average factor loading estimates for the common factor was .40 which represents 16.0% of variance explained by the common method factor in the model. This satisfied the guidelines that the average variance should be less than 25% (Williams, Cote, & Buckley, 1989) and led to a conclusion that there was little influence of common method variance on items in this study. The measurement model with a common latent factor is presented in Appendix F.

### **Measurement Invariance Test**

As the instruments were developed in the western culture and the data were collected in two culturally different countries (the U.S. and Korea), measurement invariance was tested to check whether the measurement model can be analyzed and interpreted in the same way across different countries. To do this, hypotheses on measurement invariance were tested using the multi-group CFA technique where the measurement model is concurrently fitted to the covariance matrices of the two samples (Kline, 2011). Then a chi-square difference between an unconstrained model and a constrained model for the U.S. and Korean samples was tested. As presented in Table 5, in a comparison between the model with all parameters free and the model with equal

factor loadings, there was a statistical difference ( $\Delta\chi^2 = 152.07$ ,  $\Delta df = 33$ ,  $p < .05$ ). Thus, in this study, constructs may have different meanings by country so that both the U.S. and Korean data were treated separately in the further tests.

Table 5

*Chi-Square Comparisons for a Measurement Invariance Test*

Model	$\chi^2$	df	$\Delta\chi^2$	$\Delta df$
Unconstrained (all parameters free)	3449.49	1374	152.07*	33
Constrained (equal factor loadings)	3601.56	1407		

Note: \*  $p < .05$

**Descriptive Statistics**

The descriptive information of the sample regarding the demographic variables was identified focusing on the number of each response, means, and standard deviations. The results of the descriptive analysis are presented in Chapter IV.

**Correlation Analysis**

To identify the associations among the variables, bivariate correlation analyses were conducted for each country. The threshold level for the p-value was .05. It is generally regarded that the relationship is weak when the correlation coefficient (r) is less than .30; the relationship is moderate when the coefficient is between .30 and .49; and the relationship is strong when the coefficient is equal to or greater than .50 (Coolidge, 2006). The results of the correlation analysis are presented in Chapter IV.



## Structural Equation Modeling

In this study, SEM was conducted for two tests: a measurement model and a path model. A confirmatory factor analysis (CFA) was conducted by using the SEM technique to test the construct validity of the measurement model in the data. A path model was employed to examine the hypothesized path model and structural relationships among the variables. There are five steps in an SEM analysis: model specification, estimation, model evaluation, model modification, and interpretation (Kline, 2011; Meyers et al., 2013).

First, in the measurement model, all the items were loaded to their latent variables making it a second-order model. The relationships among the latent variables were also tested. In the path model, the variables and the paths between the variables were included in the hypothesized model. Endogenous variables included job demands, perceived working hours, and general stress. Exogenous variables were work centrality, work condition constraints, and job control. The paths between the latent variables were the same as those in the hypothesized model previously shown in Figure 1. To verify if the model satisfies the necessary condition for SEM tests, model identification was conducted using the  $t$ -rule approach. If  $p$  is the number of endogenous variables,  $q$  is the number of exogenous variables, and  $t$  is the number of parameters, the formula for a necessary condition of a model is:

$$t \leq \frac{(p+q)(p+q+1)}{2}$$

In this study, both the measurement model and path model satisfied a necessary condition for SEM.

Second, as an estimation method for the SEM analysis, maximum likelihood (ML) estimation was used. ML estimation is to “maximize the likelihood that the data were drawn from the population” (Kline, 2011, p. 154). As a full-information method in that the estimates of all model parameters are computed at the same time, ML estimation is generally regarded as more unbiased, efficient, and consistent than other partial-information estimation methods (Kline, 2011). The conditional assumption for the use of the ML estimation is multivariate normal distribution (Meyers et al., 2013) and, as indicated earlier, the data in this study satisfied this assumption.

Third, model evaluations were conducted to test the fit of model in the data. Model fit indices, such as the chi-square statistic, comparative fit index (CFI), standardized root mean square residual (SRMR), and root mean square of approximation (RMSEA), were used to evaluate the overall model fit according to the fit criteria suggested by Hair et al. (2006). In detail, a p-value for the chi-square should be greater than .05, an index of CFI should be equal to or greater than .90, while indices of SRMR and RMSEA should be equal to or less than .08. The descriptions and criteria for each fit index are shown in Table 6.

Fourth, if the overall model fits are acceptable, further analyses for this study can be conducted. If the standards are not satisfied, the measurement model and/or path model need to be modified through modification indices information or expected parameter change based on theories (Kline, 2011).

Table 6

*Model Fit Indices*

Fit index	Description	Criterion
Chi-square statistic	The difference between the predicted and the observed models	$p > .05$
Comparative fit index (CFI)	The degree of fit between the hypothesized and null measurement models	$> .90$
Standardized root mean square residual (SRMR)	Standardized value of the average residuals between observed and estimated model in prediction	$< .08$
Root mean square error of approximation (RMSEA)	The error in prediction (a model fit for the population, not for a sample used)	$< .08$

Source: Hair et al. (2006); Kline (2011)

Fifth, regarding interpretation, for the measurement model, the amount of correlations between factors and standardized factor loading coefficients between factors and items were considered. It is recommended that a correlation between factors should be less than .80 (Kline, 2011). The standardized factor loading coefficients are expected to be statistically significant ( $p < .05$ ) and be greater than .3 (Meyers et al., 2013). In the path model, using composite variables, standardized path coefficients were calculated to test the hypotheses on the relationships among the variables. R-square values of each construct were identified to determine the accuracy of the prediction through regression

estimates. The SEM analyses in this study included not only single directionalities but also indirect and interaction effects among the variables. For the hypotheses regarding mediation effects, the significance and standardized estimates of the indirect relationship were tested. For the hypotheses regarding moderation effects, all the independent variables for interactions were centered by their means to avoid multi-collinearity and tested in the path model. The results of the SEM are presented in Chapter IV.

### **Summary**

In this chapter, the methodological process and operations for this study were addressed. Specifically, descriptions of the participants of this study, measures used for data collection, data collection procedures, statistical assumption checks, a common method variance test, a measurement invariance test, and data analysis methods were included. To test hypotheses, a questionnaire survey was used to collect data which were utilized to reflect six variables of this study. The sample size was 805 (397 U.S. and 408 Korean employees). The collected data were tested to ensure statistical assumptions by checking missing data, outliers, normality, linearity, homoscedasticity, and multi-collinearity. The data satisfied all the statistical assumptions. As a result of Harman's single-factor test and a single-method-factor approach using CFA, there was little influence of CMV in the data of this study. The results from the measurement invariance test indicated that the measurement model was not invariant by country. Thus, statistical examinations to test hypotheses were conducted separately for each country. In Chapter IV, the results of the data analyses, such as a descriptive analysis, correlation analysis, CFA, and path analysis, are illustrated.

## CHAPTER IV

### RESULTS

Based on the study design addressed in Chapter III, the data collected from Korea and the U.S. were statistically analyzed. The size of the sample used for testing the hypotheses was 805 (408 Korean and 397 U.S. employees). In Chapter IV, the results of the descriptive analysis, correlation analysis, CFA, and structural model analysis are reported.

#### **Descriptive Statistics**

The mean, standard deviation, and number of cases were calculated. For the descriptive analysis of variables, composite variables in which the values of items were averaged for each variable were used. Interestingly, the average number of working hours per week of U.S. employees (45.61) was smaller than that of Korean employees (51.85) while, for the means of the Perceived Working Hours scale, the score of U.S. employees (4.34 out of 7) was slightly larger than that of Korean employees (4.27 out of 7).

Regarding the means of other variables, General Stress for U.S. employees (2.94 out of 5) was smaller than that for Korean employees (3.26 out of 5), Work Centrality for U.S. employees (3.59 out of 7) was smaller than that for Korean (4.30 out of 7), and Work Condition Constraints for U.S. employees (2.86 out of 7) was smaller than that for Korean (3.60 out of 7). For Job Demands and Job Control, the means for U.S. employees

(respectively 4.50 and 4.94 out of 7) were larger than those for Korean employees (4.43 and 4.38 out of 7). In Table 7, descriptive statistics for six variables are presented.

Table 7

*Descriptive Statistics*

Variable	U.S.		Korea	
	M	SD	M	SD
The number of working hours (per week)	45.61	9.61	51.85	12.49
Perceived Working Hours	4.34	1.56	4.27	1.24
General Stress	2.94	.77	3.26	.66
Work Centrality	3.59	1.34	4.30	1.20
Work Condition Constraints	2.86	1.35	3.60	1.20
Job Demands	4.50	1.37	4.43	1.09
Job Control	4.94	1.23	4.38	1.12

Note: N = 805 (397 U.S. and 408 Korean employees)

**Correlation Analysis**

Bivariate correlations among the six variables for each country are presented in Table 8. In the U.S. sample, although some of the strengths of association were weak according to the guidelines of this study (Coolidge, 2006), Perceived Working Hours was significantly correlated with General Stress ( $r = .28, p < .01$ ), Work Centrality ( $r = .41, p < .01$ ), Work Condition Constraints ( $r = .38, p < .01$ ), and Job Demands ( $r = .63,$

$p < .01$ ). General stress was significantly correlated with Work Centrality ( $r = .12$ ,  $p < .05$ ), Work Condition Constraints ( $r = .46$ ,  $p < .01$ ) and Job Demands ( $r = .45$ ,  $p < .01$ ) and negatively correlated with Job Control ( $r = -.21$ ,  $p < .01$ ).

Table 8

*Bivariate Correlations for the U.S. and Korean Samples*

	1	2	3	4	5	6
1. Perceived Working Hours		.36**	.23**	.24**	.64**	.01
2. General Stress	.28**		-.06	.39**	.45**	-.23**
3. Work Centrality	.41**	.12*		.01	.14*	.44**
4. Work Condition Constraints	.38**	.46**	.17**		.39**	-.01
5. Job Demands	.63**	.45**	.18**	.54**		-.02
6. Job Control	-.07	-.21**	.13**	-.36**	-.17**	

Note: the gray cells represent the Korean sample.

\* $p < .05$ , \*\* $p < .01$

Similarly, in the Korean sample, Perceived Working Hours was significantly correlated with General Stress ( $r = .36$ ,  $p < .01$ ), Work Centrality ( $r = .23$ ,  $p < .01$ ), Work Condition Constraints ( $r = .24$ ,  $p < .01$ ), and Job Demands ( $r = .64$ ,  $p < .01$ ). General Stress was significantly correlated with Work Condition Constraints ( $r = .39$ ,  $p < .01$ ) and Job Demands ( $r = .45$ ,  $p < .01$ ) and negatively correlated with Job Control ( $r = -.23$ ,  $p < .01$ ). Among exogenous variables, there was a moderate negative relationship

between Work Condition Constraints and Job Control ( $r = -.36, p < .01$ ) and a strong relationship between Work Condition Constraints and Job Demands ( $r = .54, p < .01$ ) in the U.S. sample while there were moderate relationships between Work Centrality and Job Control ( $r = .44, p < .01$ ) and between Work Condition Constraints and Job Demands ( $r = .39, p < .01$ ) in the Korean sample.

### Confirmatory Factor Analysis

CFAs were conducted to test the validity of the measurement model for the U.S. and Korean samples. The model fit with the collected data was evaluated by four fit indices: Chi-square, CFI, SRMR, and RMSEA. The results of the CFAs are presented in Table 9. Although chi-square tests for both the U.S. ( $\chi^2 = 1217.35, df = 649, p < .05$ ) and Korean ( $\chi^2 = 1319.28, df = 649, p < .05$ ) samples were significant, given that a chi-square test is sensitive to a large sample size (Kline, 2011; Meyers et al., 2013), it is necessary to consider other model-fit indices.

Table 9

#### *Model Fit Indices for CFAs*

	$\chi^2$	df	CFI	RMSEA	SRMR
U.S.	1217.35	649	.93	.05	.04
Korea	1319.28	649	.91	.05	.06

For the U.S. employees, the CFI index (.93) was also greater than .90; and the indices for RMSEA (.05) and SRMR (.04) were less than .08. For the Korean employees,



the index for CFI (.91) was greater than .90; and the indices for RMSEA (.05) and SRMR (.06) satisfied the guideline (less than .08). Thus, the model fit the data well for both the U.S. and Korean samples.

In both samples, the standardized correlation coefficients ( $r$ ) between factors were less than .80 (between -.36 and .64). The standardized factor loading coefficients for each factor in the both samples are presented in Appendix G. All the standardized factor loading estimates were statistically significant and ranged between .45 and .93, which were greater than the benchmark of .30 (Meyers et al., 2013).

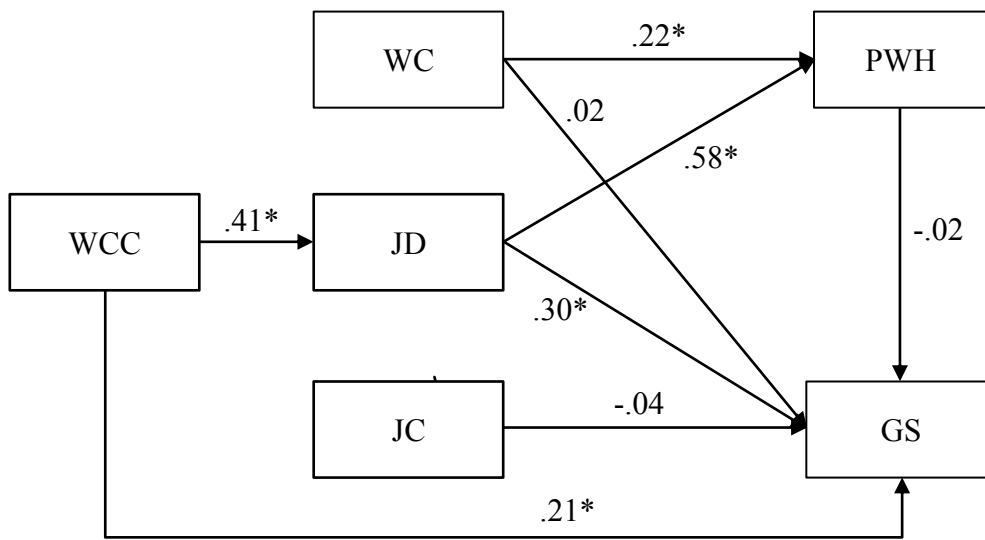
### **Path Model Analysis**

The hypothesized path model for U.S. and Korean samples was tested. The standardized path coefficients were examined to test the hypotheses. The mediation and moderation effects were also tested in the sample from each country.

#### **U.S. Sample**

The fit indices indicated the hypothesized path model fit the data well for the U.S. sample. The Chi-square test was not significant ( $\chi^2 = 6.41$ ,  $df = 4$ ,  $p > .05$ ); the CFI index was .99; indices for RMSEA and SRMR were respectively .04 and .03. The standardized path coefficients of the hypothesized model for the U.S. employees are presented in Figure 3. There was no positive significant relationship between Perceived Working Hours and General Stress ( $\beta = -.02$ ,  $p > .05$ ), which did not support Hypothesis 1. Work Centrality ( $\beta = .22$ ,  $p < .01$ ) and Job Demands ( $\beta = .58$ ,  $p < .01$ ) were significantly associated with Perceived Working Hours supporting Hypothesis 2 and Hypothesis 6. Work Centrality ( $\beta = .02$ ,  $p > .05$ ) and Job Control ( $\beta = -.04$ ,  $p > .05$ ) were

not significantly associated with General Stress, which did not support Hypothesis 3 and Hypothesis 5. On the other hand, Job Demands ( $\beta = .30, p < .01$ ), and Work Condition Constraints ( $\beta = .21, p < .01$ ) were significantly related to General Stress, supporting Hypothesis 7a and Hypothesis 9a.

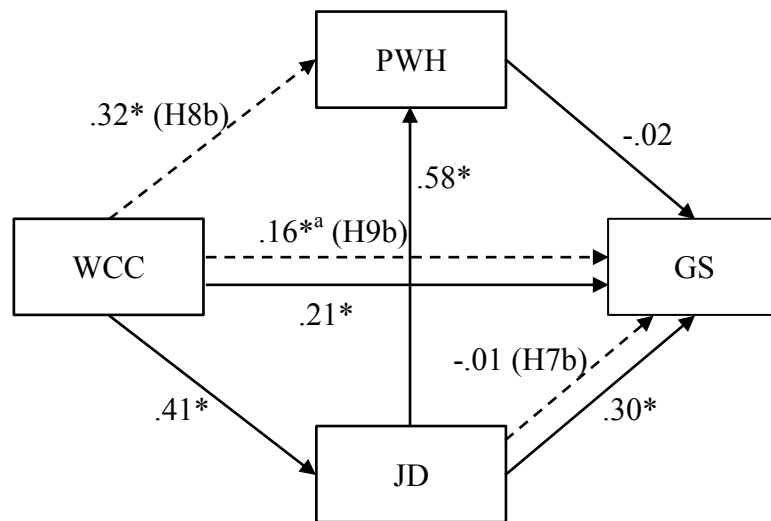


\*  $p < .01$

Figure 3. Standardized path coefficients of the model for the U.S. sample

There was a positive significant relationship between Job Demands and Work Condition Constraints ( $\beta = .41, p < .01$ ). Thus, Hypothesis 8a was supported for the U.S. sample. In the hypothesized model, R-squared for Perceived Working Hours was .46 and that for General Stress was .28. This indicates that, for the U.S. sample, the model accounts for 46% of the variance in Perceived Working Hours and 28% of the variance in General Stress.

The results for the three hypothesized mediation effects are presented in Figure 4. There were three hypothesized mediation relationships tested in the model: Job Demands – Perceived Working Hours – General Stress (Hypothesis 7b), Work Condition Constraints – Job Demands – Perceived Working hours (Hypothesis 8b), and Work Condition Constraints – Perceived Working Hours – General stress (Hypothesis 9b).



\* $p < .01$       ———▶ Direct effect    - - - -▶ Indirect effect

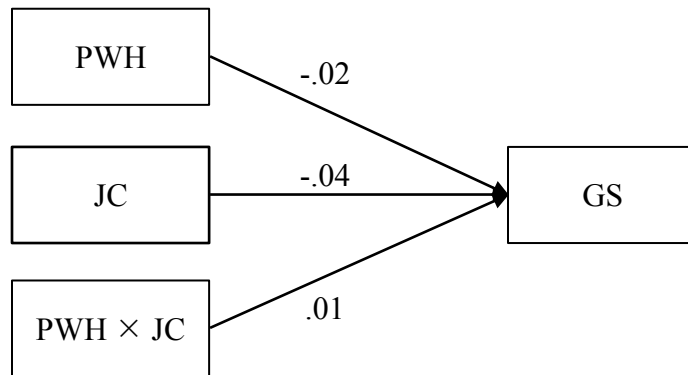
<sup>a</sup> Indirect effect of WCC – GS includes effects via JD and via JD and PWH

Figure 4. Direct and indirect effects among Work Condition Constraints, Job Demands, Perceived Working Hours, and General Stress for U.S. employees

The mediation effect of Perceived Working Hours to the relationship between Job Demands and General Stress was not significant ( $\beta = -.01, p > .05$ ). Therefore, Hypothesis 7b was not supported for U.S. employees. There was a significant indirect relationship between Work Condition Constraints and Perceived Working Hours via Job Demands ( $\beta = .32, p < .01$ ), supporting Hypothesis 8b (the total effect was not computed

due to no direct effect for this relationship in the model). Supporting Hypothesis 9b, the indirect relationship between Work Condition Constraints and General Stress through Job Demands was also significant ( $\beta = .16, p < .01$ ), which led to the total effect being .37 (direct effect + indirect effect = .21 + .16).

As shown in Figure 5, the interaction between Job Control and Perceived Work Hours was not significant in predicting General Stress ( $\beta = .01, p > .05$ ) in the hypothesized model. Thus, Hypothesis 4 was not supported.



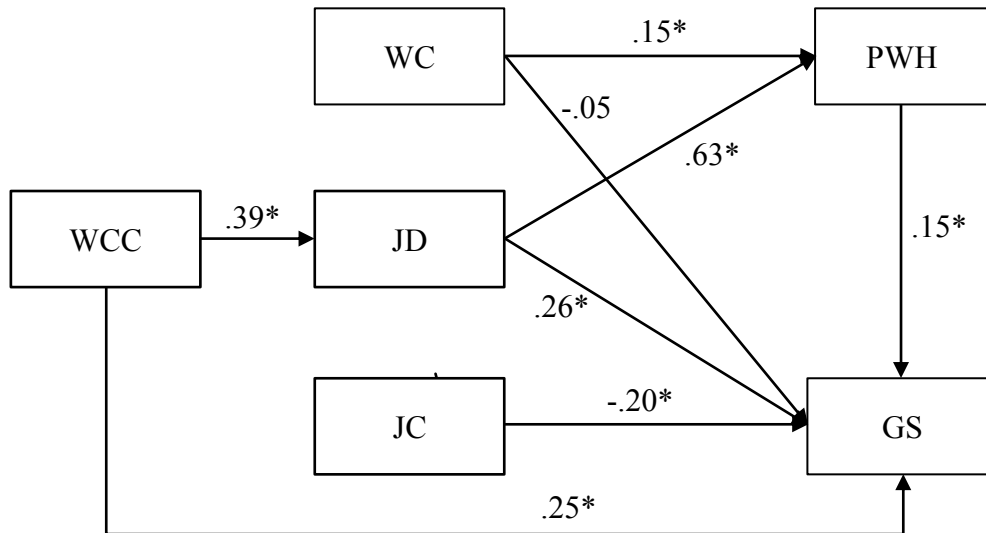
*Figure 5.* Moderation effect of Job Demands to the relationship between Perceived Working Hours and General Stress for U.S. employees

### **Korean Sample**

Model-fit indices of the hypothesized path model for the Korean employees satisfied the guidelines presented in Chapter III. The Chi-square test was not significant ( $\chi^2 = 8.67, df = 4, p > .05$ ); the index for CFI was .98; and the indices for RMSEA and SRMR were .05 and .03.

Figure 6 includes the standardized path coefficients from exogenous to endogenous variables in the hypothesized model for Korean employees. There was a

positive significant relationship between Perceived Working Hours and General Stress ( $\beta = .15, p < .01$ ), supporting Hypothesis 1. Work Centrality ( $\beta = .15, p < .01$ ) and Job Demands ( $\beta = .63, p < .01$ ) were significantly associated with Perceived Working Hours, which supports Hypothesis 2 and Hypothesis 6. Job Control ( $\beta = -.20, p < .01$ ), Job Demands ( $\beta = .26, p < .01$ ), and Work Condition Constraints ( $\beta = .25, p < .01$ ) were significantly associated with General Stress, which respectively supports Hypothesis 5, Hypothesis 7a, and Hypothesis 9a.



\*  $p < .01$

Figure 6. Standardized path coefficients of the hypothesized model for the Korean sample

There was no significant relationship between Work Centrality and General Stress ( $\beta = -.05, p > .05$ ). Thus, Hypothesis 3 was not supported in the model. There was a positive significant relationship between Work Condition Constraints and Job

Demands ( $\beta = .39, p < .01$ ), supporting Hypothesis 8a. In the hypothesized model, R-squared for Perceived Working Hours was .43 and that for General Stress was .31. This indicates that, for the Korean sample, the model accounts for 43% of the variance in Perceived Working Hours and 31% of the variance in General Stress.

The results of the mediation effect tests for Korean employees are presented in Figure 7. The mediation effect of Perceived Working Hours to the relationship between Job Demands and General Stress was significant ( $\beta = .09, p < .01$ ), resulting in the total effect between Job Demands and General Stress being .35 (direct effect + indirect effect =  $.09 + .26$ ). Thus, Hypothesis 7b was supported.

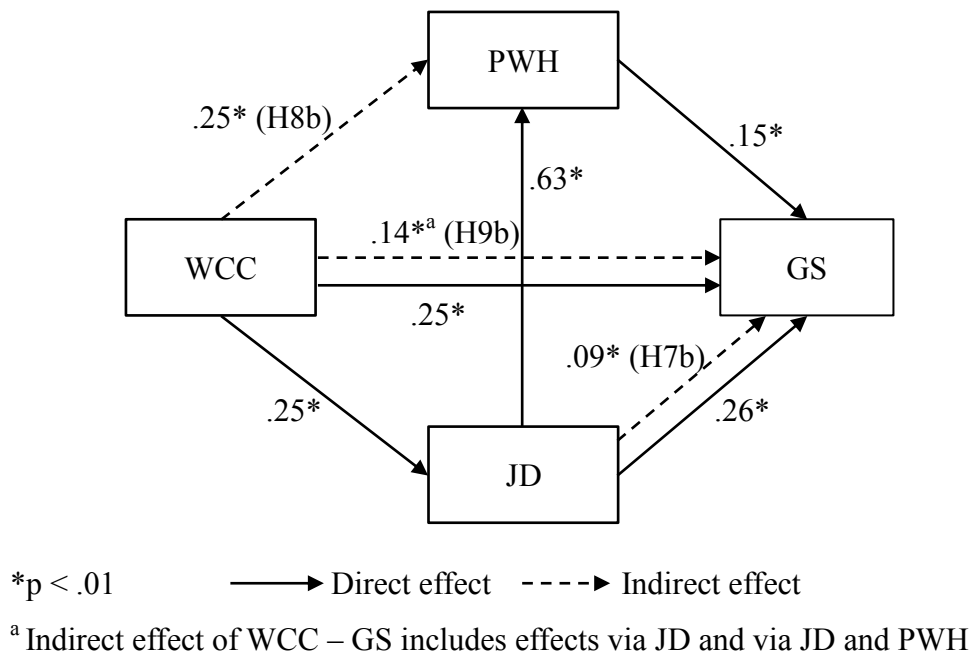


Figure 7. Direct and indirect effects among Work Condition Constraints, Job Demands, Perceived Working Hours, and General Stress for Korean employees

There was a significant indirect relationship between Work Condition Constraints and Perceived Working Hours via Job Demands ( $\beta = .25, p < .01$ ), supporting Hypothesis 8b (the total effect was not computed due to no direct effect for this relationship in the model). Supporting Hypothesis 9b, the indirect relationship between Work Condition Constraints and General Stress through Job Demands was also significant ( $\beta = .14, p < .01$ ), which led to the total effect being .39 (direct effect + indirect effect =  $.25 + .14$ ).

The moderation effect of Job Control was tested in the hypothesized model for Korean employees. As shown in Figure 8, the interaction between Job Control and Perceived Work Hours was not significant in predicting General Stress ( $\beta = .05, p > .05$ ). Thus, Hypothesis 4 was not supported.

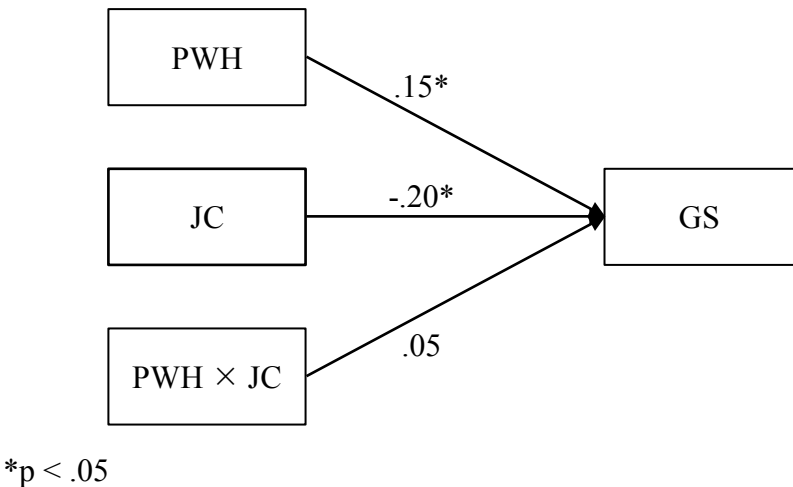


Figure 8. Moderation effect of Job Demands to the relationship between Perceived Working Hours and General Stress for Korean employees

## Summary

In Chapter IV, the results of tests for the hypothesized model and research hypotheses were reported. These statistics included descriptive statistics, correlation analysis, CFA, and SEM. As a result, the model fits of the measurement model and the hypothesized structural model were acceptable. In the path analyses for both the U.S. and Korean samples, the standardized path coefficients between the exogenous and endogenous variables were examined and hypothesized mediation and moderation effects were tested.

In the path analysis, for the U.S. sample, Job Demands was significantly associated with Perceived Working Hours. Job Demands and Work Condition Constraints were significantly related to General Stress. There was a significant relationship between Work Condition Constraints and Job Demands. However, Work Centrality was not significantly associated with Perceived Working Hours and General Stress. Job Control was also not significantly related to General Stress. There were significant mediation effects for the relationships between Work Condition Constraints and Perceived Working Hours via Job Demands and between Work Condition Constraints and General Stress via Job Demands while Perceived Working Hours did not significantly mediate the relationship between Job Demands and General Stress. There was no significant interaction effect of Job Control and Perceived Working Hours in predicting General Stress.

For the Korean sample, in the path analysis, Work Centrality and Job Demands were significantly associated with Perceived Working Hours. Job Demands, Job Control,



and Work Condition Constraints were significantly associated with General Stress. There was a significant relationship between Work Condition Constraints and Job Demands. However, Work Centrality was not significantly related to General Stress. All the hypothesized mediation effects were significant: from Job Demands via Perceived Working Hours to General Stress, from Work Condition Constraints via Job Demands to Perceived Working Hours, and Work Condition Constraints via Job Demands to General Stress. However, there was no significant interaction effect of Job Control and Perceived Working hours in predicting General Stress. A detailed discussion of the results is provided in Chapter V.

## CHAPTER V

### DISCUSSION, IMPLICATIONS, AND CONCLUSION

In this chapter, the results of this study are first discussed in relation to the research hypotheses and the literature. Following that, the implications for theory and practice are presented. Next, the limitations of the study and recommendations for future research are addressed. This chapter concludes with a summary of this dissertation project and highlights of the key study results and contributions.

#### **Discussion**

The purpose of this study was to examine the relationships among Perceived Working Hours, General Stress, Work Centrality, Job Control, Job Demands, and Work Condition Constraints for full-time employees who are exempt from overtime pay in the United States and Korea. Data for 805 employees obtained from a questionnaire survey were used for the analyses. As the measurement model was different for each country, the tests for the hypotheses were separately conducted for each country using an SEM. The model fit indices for the measurement model and path model satisfied the guidelines in both countries.

Overall, the results of the correlation analyses corresponded with the hypotheses while some of the SEM results did not. This discrepancy may be because other predictors of the model that influence relationships between the variables are not controlled in correlation analyses. As a correlation coefficient represents a simple association between two variables, the association can be different when other variables

are included in the same model and their influences are controlled. In this study, factors influencing both working hours and stress were incorporated and tested all together.

### **Hypothesis 1: Perceived Working Hours and General Stress**

In the U.S. sample, Perceived Working Hours did not significantly predict General Stress in the path analysis, not supporting the hypothesis and previous studies (e.g., Brett & Stroh, 2003; Steinmetz & Schmidt, 2010). Interestingly, the correlation coefficient between Perceived Working Hours and General Stress for U.S. employees was statistically significant ( $r = .28$ ,  $p < .01$ ) though the strength of association was somewhat weak. The reason why the results of the SEM and correlation analysis are different may be the influences of other variables in the model that are associated with Perceived Working Hours and/or General Stress. Thus, when other variables were controlled, the relationship between Perceived Working Hours and General Stress became not significant.

On the other hand, in the Korean sample, there was a significant positive relationship between Perceived Working Hours and General Stress in the path analysis as hypothesized. In other words, Perceived Working Hours significantly predicted General Stress for Korean employees when other variables were controlled. This corresponds with the COR theory and studies that as one of the major indicators of stress, working time is likely to increase work and/or non-work stress of employees (Barnett et al., 2009; Brett & Stroh, 2003; Geiger-Brown et al., 2004; Gonzalez-Munoz & Gutierrez-Martinez, 2007; Hobfoll, 2001; Park et al., 2010; Steinmetz & Schmidt, 2010).

The different results for Hypothesis 1 by country may be explained based on the COR theory and national culture. In the COR theory, stress occurs when a loss of resources is greater than a gain of resources. Assuming that the extent of resource gain from work time is not different by country, for the U.S. employees, time for work might not be great enough to affect general stress. In other words, even though the U.S. employees perceived that their working hours were long, their overall stress was not increased much because they might still have sufficient time for family or leisure. On the other side, the strong collectivistic culture in Korean organizations might influence Korean employees to place a great value on social relations with coworkers (Shim, Kim, & Martin, 2008). Even though their work is done after regular work hours, employees in Korea tend to not leave their office waiting for or helping their colleagues (Kim et al., 2012). Dining and/or drinking together with colleagues after work is very common among Korean employees and often these social activities go on until the next morning (Kim et al., 2012). This means that, despite similar working hours, Korean employees may invest much more time in work-related activities while losing more time resource for non-work life (leisure and/or family) compared to their U.S. counterparts. Because an impact of resource loss tends to be greater than that of resource gain (Hobfoll, 1998; 2001), even though Korean employees experienced substantial satisfaction with their work by spending much time on work-related activities, the gain may not sufficiently offset the stress in their non-work lives caused by the work-life conflict. This finding corresponds with that of Park et al. (2010) that the relationship between working hours and stress is significant only when the total time for work is extreme. In this study,

further tests for how relevant factors affect the relationship between Perceived Working Hours and General Stress were not examined. Additional investigations are needed in the future to illuminate these relationships.

### **Hypothesis 2: Work Centrality and Perceived Working Hours**

The data of both countries supported Hypothesis 2 that there would be a positive significant relationship between Work Centrality and Perceived Working Hours. This can be interpreted that the degree to which individuals regard their work as important may be one of the major factors that influence their working hours in both the U.S. and Korea. As employers generally desire that their employees have a strong motivation for and commitment to work, high work centrality can be encouraged in the organization and directly increase employees' working hours (Golden, 2006; MOW, 1987). On the other hand, when work centrality is low, employees may resist working long hours even though the employer encourages them to work overtime (Golden, 2006). The results for Hypothesis 2 are aligned with those in previous studies that individuals in high work centrality are highly motivated to work and have a greater tendency to work long hours (Greenhaus et al., 2012; Hirschfeld & Field, 2000; Kim et al. 2012; Sharabi & Harpaz, 2010; Wallace; 1997).

### **Hypothesis 3: Work Centrality and General Stress**

In the path analyses, Work Centrality was not significantly associated with General Stress for both U.S. and Korean employees, which does not support Hypothesis 3. There was no significant bivariate correlation between Work Centrality and General Stress in the Korean sample. Although the correlation coefficient was significant in the

U.S. sample, the strength of association was weak ( $r = .12$ ,  $p < .05$ ). This implies that the relationship between Work Centrality and General Stress became insignificant when other variables in the model were controlled.

Although the results for Hypothesis 3 did not correspond with the previous research (e.g., Kim et al., 2012; Schaufeli et al., 2008), some possible reasons for the non-significant results are elicited based on the relevant theories and research. First, Work Centrality may be related to occupational stress, but not to General Stress. Although studies on job stress were employed to establish the hypothesis, no research that includes the relationship between Work Centrality and General Stress was found for this study. Based on the COR theory (Hobfoll, 1998), work centrality may enhance work-related resources, such as time for work, motivation, and engagement, which decreases occupational stress. However, work-orientation may reduce resources for non-work life, which leads to non-work stress. For the samples of this study, the impacts of the gain and loss from work centrality may not be much different so that there may be no significant relationship between Work Centrality and General Stress.

Second, the relationship between Work Centrality and General Stress might be influenced by job resources (e.g., job control). In a study that included personalities (optimism, self-esteem, and efficacy) in the JD-R model (Demerouti et al., 2001), Xanthopoulou et al. (2007) found that personality was highly correlated with job resources and significantly mediated the relationship between job resources and job strain/engagement. In this study, for both countries, there was a significant correlation between Work Centrality and Job Control (U.S.:  $r = .13$ , Korean:  $r = .44$   $p < .01$ ).

Although a comprehensive relationship between job resources and work centrality could not be identified in the current study because only one variable that represented job resource was involved, taking into account the previous research, there might be an influence of job control on the relationship between Work Centrality and General Stress. Thus, the relationship between Work Centrality and General Stress may be rather indirect.

#### **Hypothesis 4: Job Control, Perceived Working Hours, and General Stress**

In either country, the data of this study did not support Hypothesis 4 that there would be a significant moderating effect of Job Control on the relationship between Perceived Working Hours and General Stress. Although there were significant correlations between Job Control and General Stress (U.S.:  $r = -.21$ , Korea:  $r = -.23$ ,  $p < .01$ ) and between Perceived Working Hours and General Stress (U.S.:  $r = .28$ , Korea:  $r = .36$ ,  $p < .01$ ), the interaction between Job Control and Perceived Working Hours did not significantly predict General Stress. In other words, the relationship between Perceived Working Hours and General Stress was not affected by authority to control work time and activities. This result did not support findings from previous studies, that is, job control moderated the association between working hours and stress so that individuals can work longer with less psychological and emotional burnout when they have authority to control their working time and activities (Hughes & Parkes, 2007; Shirom et al., 2010; Valcour, 2007).

One possible explanation for these non-significant results lies in the use of different dependent variables. In this study, the dependent variable for the interaction

test was General Stress that encompassed both work and non-work concepts of stress while the dependent variable for the previous studies (Hughes & Parkes, 2007; Valcour, 2007) was work-family conflict/satisfaction that focused on the non-work domain. When job control is endowed, employees can compromise between time for work and time for family. Based on the COR theory (Hobfoll, 1998), as the aggregate time resource is usually fixed, when employees use their time for family or leisure, non-work stress may be reduced while work-related stress can be unaffected or even increased. Therefore, General Stress may not be significantly associated with the simultaneous influence of Job Control and Perceived Working Hours.

#### **Hypothesis 5: Job Control and General Stress**

There was a significant negative relationship between Job Control and General Stress for Korean employees supporting the hypothesis. However, Job Control was not significantly associated with General Stress for U.S. employees, which does not correspond with the findings of Ng and Feldman (2012) and Shirom et al. (2010), but supports those of Lewig et al. (2007) and Love et al. (2007). Even though the correlations between Job Control and General Stress were significant in both countries, when other variables were controlled, Job Control did not significantly predict General Stress in the U.S. sample. This may be due to Job Demands and Work Condition Constraints that are significantly related to both Job Control and General Stress in the U.S. sample. In other words, because Job Control for U.S. employees was significantly related to job demands ( $r = -.17, p < .01$ ) and work condition constraints ( $r = -.36, p$



< .01), when other predictors including these two variables were controlled, Job Control might become no longer associated with General Stress.

One of the reasons for the different results for Hypothesis 5 may be national culture that is related to two main functions of job control, discretions regarding workload and time allocations. According to Hofstede, Hofstede, and Minkov (2010), the U.S. has a weak power distance and strong individualistic culture while Korea is one of the strongest power distance and collectivistic culture countries. Thus, when autonomy is given, the U.S. employees can be more independent and less interrupted from their supervisor, co-workers, and other stakeholders. This may lead to less work condition constraints and job demands explaining why the correlations of General Stress with Work Condition Constraints and Job Demands were significant in the U.S. sample. On the other hand, given the strict hierarchical structure and strong dependency on the supervisor and other employees being widespread in Korean organizations (Shim et al., 2008), job control may not ensure significant changes in work condition constraints and job demands. Rather, it is assumed that job control works differently for Korean employees having more influence of discretion as to time allocation on stress.

#### **Hypothesis 6: Job Demands and Perceived Working Hours**

Supporting Hypothesis 6, which was derived from Golden's (2006) model of overtime, results from this study revealed a significant relationship between Job Demands and Perceived Working Hours in the path analysis for both countries. Namely, the more Job Demands, the higher the Perceived Working Hours when Work Centrality is controlled. This is consistent with previous research that job demands are positively

related to work hours (Ng & Feldman, 2008; Shirom et al., 2010), and when work overload and psychological burdens are high, individuals work long hours regardless of their work identities (Greenhaus et al., 2012). Similar to Ng and Feldman's (2008) findings, the strength of the association with Job Demands was the greatest for Perceived Working Hours among the all variables in the sample for both countries (U.S.:  $r = .63$ , Korea:  $r = .64$ ). Thus, it is suggested that working time is highly dependent on the intensiveness of a job regardless of culture.

### **Hypothesis 7: Job Demands, General Stress, and Perceived Working Hours**

Supporting Hypothesis 7a, there was a significant positive relationship between Job Demands and General Stress for both the U.S. and Korean employees. This result is consistent with the JD-R model and many other related studies, which focused on job strains (e.g., Demerouti et al., 2001; Lewig et al., 2007; Shirom et al., 2010). The result that general stress may be influenced by job demands implies that job demands negatively impact on both work and non-work stress because high job demands not only deprive employees of energy but also reduce time for leisure and/or family resulting in psychological and emotional pressures.

For Hypothesis 7b, Perceived Working Hours significantly mediated the association between Job Demands and General Stress in the Korean sample. This supported the findings of previous studies that work hours played a mediator role between job demands and stress (Karasek & Theorell, 1990; Love et al. 2007). However, no significant mediation was found for the U.S. employees. In other words, there was a significant indirect effect between Job Demands and General Stress via Perceived

Working Hours only for the Korean employees. The positive indirect effect was expected in the Korean sample because Job Demands were significantly associated with both Perceived Working Hours and General Stress while Perceived Working Hours were significantly related to General Stress. This means that the impact of job demands on general stress may be greater when the indirect effect is considered. The reason why the mediation effect was not significant in the U.S. sample may be the non-significant relationship between Perceived Working Hours and General Stress.

### **Hypothesis 8: Work Condition Constraints, Job Demands, and Perceived Working Hours**

The data of this study supported Hypothesis 8a for both the U.S. and Korean employees that there would be a significant positive relationship between Work Condition Constraints and Job Demands. This result corresponds with the findings of previous studies that work condition constraints were related to workload (Spector & Jex, 1998) and increased psychological burden (Gievska et al., 2005; Mandler, 1964).

As stated in Hypothesis 8b, there was a significant positive mediating effect of Job Demands between Work Condition Constraints and Perceived Working Hours for both U.S. and Korean employees. In other words, Work Condition Constraints indirectly influenced Perceived Working Hours via Job Demands in both countries. Thus, it is expected that the more the work conditions are constrained, the longer the employees work. This result upheld Golden's (2006) model that the work environment including work conditions is one of the major factors influencing long working hours. In addition, the results of the association among Work Condition Constraints, Job Demands, and

Perceived Working Hours supported previous research that work conditions are likely to affect working hours positively via job demands (Spector & Jex, 1998; Wajcman & Rose, 2011) and repeated working condition constraints may result in a long work-hour culture in the organization (Kim et al., 2012).

### **Hypothesis 9: Work Condition Constraints, Job Demands, and General Stress**

As predicted in Hypothesis 9a, there was a significant positive relationship between Work Condition Constraints and General Stress for both the U.S. and Korean employees, supporting the COR theory and the relevant research (Fox, Spector, & Miles, 2001; Jackson et al., 2003; Ng & Feldman, 2012; Oliver, 2012; Penny, Hunter, & Perry, 2011; Spector & Jex, 1998; Spector & O'Connell, 1994). In the COR theory, one of the major resources affecting stress is work conditions (Hobfoll, 1998). As stress occurs when individuals are threatened with or actually experience loss of resources, work condition constraints are likely to increase stress.

Supporting Hypothesis 9b, there was a significant mediating effect of Job Demands on the relationship between Work Condition Constraints and General Stress in both countries. This is consistent with findings of previous studies that job demands caused by work condition constraints are likely to increase feelings of stress and anxiety because those experiences tend to lead to failure in the tasks, a bad performance evaluation, or problems with work-family balance (Jett & George, 2003; Perlow, 1999). Therefore, Work Conditions Constraints may be directly related to General Stress as well as indirectly affect General Stress via Job Demands.

## **Theoretical Implications**

As one of the main purposes of HRD is to achieve individual well-being (McLean & McLean, 2001) that is closely related to working hours and stress under this study, the findings of this study provide several important theoretical contributions to HRD. First, in this study, factors influencing perceived working hours were tested. Because most related studies included working hours as a predictor of stress (e.g., work stress and work-family conflict), despite a number of studies that involved working time, few empirical studies were conducted to illuminate the effect of employees' working hours. As stress-related issues have received the increasing attention from HRD researchers (Gosh et al., 2013) and working hours has been identified as a major stressor (e.g., Hobfoll, 1998), it becomes even more important to examine the impact of individual stress through factors of working hours. Three variables (work centrality, job demands, and work condition constraints) were employed as predictors to test their relationships with perceived working hours. In the conceptual model formulated based on the theory and research, it was hypothesized that work centrality and job demands are directly related to perceived working hours, and work condition constraints are indirectly related via job demands. The test results that supported these hypotheses in both the U.S. and Korean samples may contribute to the utilization of the Economic Model of Overtime and related theoretical studies (e.g., Feldman, 2002; Snir & Harpaz, 2012) for working-hours-related research in the U.S. and Korea. As this study focused on only three out of the several potential factors in the theoretical model, future research is encouraged to look at additional variables, such as performance appraisal justice, gaps

between needed and current skills, organizational structure, social support, and managerial styles.

Second, involving the COR theory as a theoretical framework, general stress, which encompasses not only work-related stress but also non-work stress was employed as a key dependent variable in this study. However, most literature reflected in the research hypotheses used one of those distinct terms of stress rather than using an integrative term of stress like general stress. This led to a difficulty in predicting whether some factors for stress are influential to one's life because factors negatively related to work stress may be positively or insignificantly related to non-work stress and vice versa (e.g. work centrality). Although, in a few studies, work interference with family and family interference with work were distinguished (e.g., Adkins & Premeaux, 2012; Brett & Stroh, 2003; Hughes & Parkes, 2007), they could not sufficiently account for how employees experience stress in their lives. As this study was designed to examine how variables regarded as factors influencing stress function with general stress, the findings contributed to the COR theory and studies in which this theory was used.

Third, the results of this study support that the principles and resources for stress in the COR theory can be applied to a non-western culture. The COR theory was developed based on the western culture (Hobfoll, 1998, 2001) and most studies that used this theory as a theoretical framework were conducted in western cultural contexts (e.g., Lapointe, Vandenberghe, & Panaccio, 2011; Penny, Hunter, & Perry, 2011). In this study, the tests for the model and hypotheses supported the theoretical framework and even the results that did not satisfy some hypotheses could be explained by the COR

theory. As this study provides just a part of an application of the COR theory in a non-western culture, more cross-cultural research will be needed to verify the general utility of the theory regardless of culture.

Fourth, this study may contribute to the application of the JD-R model. As the JD-R model is focused mainly on job strains and engagement not general stress, there may be a limit to the implications of this model. However, in the current study, how major components of the JD-R model (e.g., job demands, job control) are related to general stress was tested and this shed light on the influences of job demands and job resources on not only work stress but also non-work stress. As work and non-work stress tend to be closely related, reciprocal, and have many common factors, the involvement of non-work stress in the JD-R model may contribute to understanding how individuals are stressed or motivated in their overall lives. For example, in this study, the relationship between job control and general stress was significant for Korean employees, but not for U.S. employees. Reasons for this difference may be uncovered when the extent to which job control influences strains and satisfaction is identified in both the work and non-work domains. Likewise, in the future, the JD-R model may be applied to the general stress concept including six constructs: job demands, job resources, job strains, job satisfaction (motivation), non-work strains, and non-work satisfaction.

### **Practical Implications**

This study has several implications for HRD practitioners, managers, and policy makers. First, there may be multifaceted aspects for organizations to consider when issues regarding working hours and/or stress occur. In this study, it was found that work

centrality, job characteristics (job demands, job control, and work condition constraints), and culture may be factors influencing employee working hours and/or general stress. Based on the findings, organizations may need to consider that these issues cannot be simply addressed by a single treatment like coercively controlling working time or giving employees ad hoc rewards. Not only may haphazard approaches be ineffective in addressing working time and/or stress issues, but also they can bring about serious side effects, such as confusion, de-motivation, less job commitment and satisfaction, and distrust of leaders. For example, if, in an effort to avoid harming employee satisfaction, organizations force their employees to shorten their hours, those individuals who have high work centrality may feel upset and deprived because they may not want to reduce their hours. In this case, improving work conditions (e.g., setting up efficient tools or system, providing appropriate training, quiet working time) which affects both working hours and stress, can be a good solution because low work centrality individuals can have decreased working hours while high work centrality individuals can maintain their working hours with less stress.

Second, approaches to treating working hours and stress can be conducted from a long-term perspective. The phenomena of excessive working hours and stress may look simplistic because the control over activities related to them seems to solve the issues at hand. However, without long-term efforts to change the system and culture, organizations may experience failures after all when they hastily plan and execute interventions as organizational system and culture are inextricably interwoven with employee behaviors. For example, in her case study with a company, Perlow (1997)



pointed out that interventions (e.g., quiet working time and flexible work schedules) to reduce working time and increase productivity seemed to succeed at first. However, in several months, employee behaviors regarding working time had regressed to the previous status because managers' expectations and the company-wide system were not changed. It may not be easy to find an optimal work time, workload, and environment for all employees. Determining appropriate interventions and successfully implementing them in the long-term strategy may be even more difficult and complicated. However, it will be worth devoting effort for individual well-being, sustainable development of the organization, and a healthy society.

Third, for employees' well-being and overall satisfaction, HRD practitioners or policy makers may consider integrative approaches to lessening both work-related and non-work-related stress. Organizational interventions focusing on work stress can result differently from those focusing on general stress. As found in this study, some variables regarded as factors influencing work stress may not be significantly related to general stress (e.g., work centrality, working hours, and job control). For instance, if an employee was endowed with decision making authority for job control, and if there is no change in their job demands and work conditions, stress may not be significantly reduced. Thus, focusing on factors related only to work stress may not be an effective way to improve employees' overall well-being and satisfaction.

Fourth, for multi-national enterprises or global organizations, ways to handle issues regarding employee stress may be different by national culture. As culture tends to influence employee behaviors considerably in the organization, how stress occurs can

be affected by individual cultural background. For instance, in this study, job control significantly predicted general stress for Korean employees, but not for U.S. employees. This result may be attributed to the strongly hierarchical social structure in Korean organizations, which leads to highly unequal power distributions in the workplace. In this culture, individuals are likely to experience de-motivation and emotional suppression when job authority is not given (Hofstede et al., 2010). Therefore, providing more job control can be a good approach for Korean employees to reduce their stress while the same approach may not be greatly effective for U.S. employees. It may be important for organizations to consider that the extent to which stress is affected by a certain intervention or condition can be different depending on where their organizations are and who the employees are.

### **Limitations and Recommendations for Future Research**

There are several limitations in this study and suggestions for future research. First, although several procedural treatments were conducted to prevent common method variance and little influence of the CMV on the data was identified by statistical tests, the data may not be entirely free from common method biases because only a single self-reported questionnaire was employed for this study. For example, a scale of general stress was employed to measure the degree to which individuals perceived stress in their lives. Although asking for individuals' perceptions may be convenient and work well with other variables of perceptions, due to relying on the same single source, common method biases that threaten the validity of the results might occur. Even though the impact of the CMV is not considerable, the biases may still exist. Therefore, further

research can include alternative sources, such official documents, 360 degree assessments (supervisor, co-workers, and subordinates), and repeated measuring in a longitudinal study.

Second, there was no distinction by demographic variables in the hypothesis tests because the intent of this study was to test overall associations in the model. However, the relationships among the variables in the model can be significantly different from the results of the current study when some demographic attributes, such as position, and marital status are controlled (Feldman, 2002; Greenhaus et al., 2012). Future studies on working hours and stress may involve control of conditions at the design stage given the research purpose.

Third, how the Perceived Working Hours Scale is different from the number of working hours was not empirically investigated. In this study, the Perceived Working Hours Scale was created based on Golden's (2006) model of overtime, assuming that this new scale was more valid for measuring working hours than simply asking the average number of working hours because perceptions regarding working hours are relative to individuals, organizations, countries, and cultures. Although the scale functioned well as hypothesized in the data and exhibited good reliability and validity, more tests are needed in various occupational and cultural settings for the corroboration of its applicability. In addition, as the scale development was not the main focus of the current research, discriminant validity and concurrent validity were not tested. Thus, this study could not clearly support that the different results from previous studies regarding the relationships with perceived working hours (e.g., hypotheses 1 and 4) are not due to

the use of the new scale. Future research can involve a comparison between the Perceived Working Hours Scale and unrelated measures and between the scale and the numerical working hours (from a question, How many hours do you work weekly on average?) for scale evaluations. As most previous studies on working hours have relied on a numerical working hours scale, researchers can also examine how the relationships regarding working hours found in previous studies are applied with the Perceived Working Hours Scale.

Fourth, in a similar vein, although literature on work stress and work-family/leisure conflict was used to establish research hypotheses, their relationships with general stress were not dealt with in this study. General stress was employed as a dependent variable to examine the impacts of the predictors on not only work stress but also non-work stress. Following the COR theory, it was assumed that general stress depends on the balance between the impacts on work and non-work stress. However, findings of previous studies that supported the hypotheses of this study were not on general stress but on work stress or work-family/leisure conflict. This led to some discrepancies between the findings of the current study and the previous research. In further studies, those specific stress variables may be added to provide empirical evidence that general stress can represent the integration of work stress and work-family/leisure conflict.

Fifth, studies that include various stress factors in a prediction model may help to better understand how general stress occurs. In the path model of this study, five variables were tested for their relationships with general stress: perceived working hours,

work centrality, job control, job demands, and work condition constraints. These variables accounted for general stress by 28% (U.S. employees) and 31% (Korean employees). Other relevant variables, such as time for family/leisure and social support, may need to be included to increase the model's practical significance. In addition, when these variables are included in the hypothesized structural model, the relationships between the old variables and general stress can be different because of the associations among the new predictors. Thus, involving more variables that can significantly predict general stress can provide a better understanding of stress phenomena. For example, many studies that employed the JD-R model as a theoretical framework involved social support as a factor for job resources (e.g., Demerouti et al., 2001; Nahum-Shani & Bamberger, 2011; van Yperen & Hagedoorn, 2003). Some researchers found that justice or fairness in performance appraisals or organizational decisions may be related to individual satisfaction or stress (Brown, Hyatt, & Benson, 2010; Gabris & Ihrke, 2001).

Sixth, studies that focus on specific factors of work conditions can provide more comprehensive knowledge on the relationships among work conditions, working hours, and stress. The construct of work condition constraints consists of several factors that have somewhat different attributes from each other: availability of equipment or supplies, organizational rules and procedures, interruptions from the supervisor and/or other employees, and needed knowledge/information. Although work condition constraints has usually been treated as a single-factor variable in most organizational studies assuming that the larger summated value indicates more constraints (Spector & Jex, 1998), individual factors of this scale may represent distinct attributes of work

conditions (Peters & O'Connor, 1980; Spector & Jex, 1998). Thus, individuals can experience constraints in one factor while being well-supported in another factor. In this study, work condition constraints was tested as a global construct, but what factor in the construct significantly affected general stress and perceived working hours was not tested. In future studies, researchers may explore the relationships between each factor of work conditions and working hours/stress.

Moreover, this study provides an important implication to cross-cultural research. The measures used in this study were developed based on western culture and have not been rigorously tested in non-western contexts. Although the research assumption was that the cultural difference with the measures was minimal and the data from each country overall fit the measurement model, as revealed in the current study, the measurement model was not invariant and the relationships between some predictors and general stress were quite different between Korea and the U.S.A. These results imply that there may be a cultural difference in perceptions of the variables used in this study as well as in the relationships among the variables. Therefore, caution may be needed when conducting research on working hours and stress in different cultures taking into account cultural attributes (e.g., strong power distance in the Korean culture). Therefore, more empirical studies that involve multiple cultures and test their differences will be necessary to verify if the adopted theories or research models can be applied in different cultures. Efforts for exploring indigenous factors and models may also be needed for the further research (McLean, 2010).

## **Conclusion**

As interests in individual well-being are greater than ever, stress has become one of the popular topics in human resources and organizational studies. Although working time is generally regarded as a key indicator of stress, little exploration has been undertaken about their relationship. The purpose of this study was to examine the relationships among perceived working hours, general stress, work centrality, job control, job demands, and work condition constraints for full-time employees in the United States and Korea. Based on the three theoretical perspectives (economic model of overtime, JD-R model, and conservation of resources) and the related research, the hypothesized model was proposed that work condition constraints predict job demands; work centrality and job demands predict perceived working hours; work centrality, job demands, job control, and work condition constraints predict general stress. The mediation and moderation relationships among the variables were also hypothesized.

A self-administered questionnaire survey approach was used to collect data which were utilized to reflect six variables of this study. The sample size was 805 (408 Korean and 397 U.S. employees). Statistical examinations, such as a correlation analysis and structural equation modeling were conducted separately for each country to test hypotheses. As a result, in the path analysis, for the U.S. sample, Job Demands was significantly associated with Perceived Working Hours. Job Demands and Work Condition Constraints were significantly related to General Stress. There was a significant relationship between Work Condition Constraints and Job Demands. However, Work Centrality was not significantly associated with Perceived Working

Hours and General Stress. Job Control was also not significantly related to General Stress. There were significant mediation effects for the relationships between Work Condition Constraints and Perceived Working Hours via Job Demands and between Work Condition Constraints and General Stress via Job Demands while Perceived Working Hours did not significantly mediated the relationship between Job Demands and General Stress. There was not a significant interaction effect of Job Control and Perceived Working Hours in predicting General Stress.

For the Korean sample, in the path analysis, Work Centrality and Job Demands were significantly associated with Perceived Working Hours. Job Demands, Job Control, and Work Condition Constraints were significantly associated with General Stress. There was a significant relationship between Work Condition Constraints and Job Demands. However, Work Centrality was not significantly related to General Stress. All the hypothesized mediation effects were significant: from Job Demands via Perceived Working Hours to General Stress, from Work Condition Constraints via Job Demands to Perceived Working Hours, and Work Condition Constraints via Job Demands to General Stress. However, there was not a significant interaction effect of Job Control and Perceived Working hours in predicting General Stress.

The findings suggested that individual and job characteristics play important roles in the relationship between perceived working hours and general stress while perceived working hours alone can affect general stress depending on a culture. The differences in the measurement and path models by country echoed the argument of cultural researchers (e.g., McLean, 2010; Popov et al., 2012) that caution is required



when participants or theories are from different cultures. As a general aspect of stress was focused, the results of this study shed light on the impacts of stressors on individuals' overall well-being and satisfaction. All in all, providing new knowledge regarding the relationships among working hours and stress, this study may serve as a basis for further inquiry that includes related multi-faceted factors in an integrated model to illuminate how individuals work long hours and experience stress.

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## APPENDIX A

### IRB APPROVAL LETTER

DIVISION OF RESEARCH

Research Compliance and Biosafety



**DATE:** January 31, 2014

**MEMORANDUM**

**TO:** Jia Wang  
TAMU - College Of Education - Educational Adm & Human Resource Develop

**FROM:** Human Subjects Protection Program  
Institutional Review Board

**SUBJECT:** Initial Review Approval

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**Study Number:** IRB2014-0051

**Title:** Relationships among Perceived Working Hours, General Stress, Work Centrality, Work Condition Constraints, Job Demands, and Job Control

**Review Type:** Expedite

**Approval Date:** 01/31/2014

**Continuing Review Due:** 12/15/2014

**Expiration Date:** 01/15/2015

**Documents Reviewed and Approved:**

Title	Version Number	Version Date	Outcome
Cultural evaluation	Version 1.0	01/22/2014	Approved
Dissertation Proposal	Version 1.0	01/27/2014	Approved
Recruitment Materials (Kor)	Version 2.0	01/27/2014	Approved
Recruitment Materials (Eng)	Version 2.0	01/27/2014	Approved
Translation Confirmation	Version 2.0	01/27/2014	Approved
Cultural Evaluation	Version 2.0	01/27/2014	Approved
Survey questionnaire (Korean)	Version 1.0	01/22/2014	Approved
Survey questionnaire (English)	Version 1.0	01/22/2014	Approved
Translation confirmation	Version 1.0	01/22/2014	Approved
Recruitment materials (Korean)	Version 1.0	01/22/2014	Approved
Recruitment materials (English)	Version 1.0	01/22/2014	Approved
Training completion report (Sehoon Kim)	Version 1.0	01/22/2014	Approved
Information Sheet (Korean)	Version 1.0	01/22/2014	Approved
Information Sheet (English)	Version 1.0	01/22/2014	Approved

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**Provisions:**

**Comments:**

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This research project has been approved. As principal investigator, you assume the following responsibilities:

1. **Continuing Review:** The protocol must be renewed by the expiration date in order to continue with the research project. A Continuing Review application along with required documents must be submitted by the continuing review deadline. Failure to do so may result in processing delays, study termination, and/or loss of funding.
2. **Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB.
3. **Unanticipated Problems and Adverse Events:** Unanticipated problems and adverse events must be reported to the IRB immediately.
4. **Reports of Potential Non-compliance:** Potential non-compliance, including deviations from protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB for review. The Amendment must be approved by the IRB before being implemented.
6. **Consent Forms:** When using a consent form or information sheet, you must use the IRB stamped approved version. Please log into iRIS to download your stamped approved version of the consenting instruments. If you are unable to locate the stamped version in iRIS, please contact the office.
7. **Audit:** Your protocol may be subject to audit by the Human Subjects Post Approval Monitor. During the life of the study please review and document study progress using the PI self-assessment found on the RCB website as a method of preparation for the potential audit. Investigators are responsible for maintaining complete and accurate study records and making them available for inspection. Investigators are encouraged to request a pre-initiation site visit with the Post Approval Monitor. These visits are designed to help ensure that all necessary documents are approved and in order prior to initiating the study and to help investigators maintain compliance.
8. **Recruitment:** All approved recruitment materials will be stamped electronically by the HSPP staff and available for download from iRIS. These IRB-stamped approved documents from iRIS must be used for recruitment. For materials that are distributed to potential participants electronically and for which you can only feasibly use the approved text rather than the stamped document, the study's IRB Protocol number, approval date, and expiration dates must be included in the following format: TAMU IRB#20XX-XXXX Approved: XX/XX/XXXX Expiration Date: XX/XX/XXXX.
9. **FERPA and PPRA:** Investigators conducting research with students must have appropriate approvals from the FERPA administrator at the institution where the research will be conducted in accordance with the Family Education Rights and Privacy Act (FERPA). The Protection of Pupil Rights Amendment (PPRA) protects the rights of parents in students ensuring that written parental consent is required for participation in surveys, analysis, or evaluation that ask questions falling into categories of protected information.
10. **Food:** Any use of food in the conduct of human subjects research must follow Texas A&M University Standard Administrative Procedure 24.01.01.M4.02.
11. **Payments:** Any use of payments to human subjects must follow Texas A&M University Standard Administrative Procedure 21.01.99.M0.03.

This electronic document provides notification of the review results by the Institutional Review Board.

APPENDIX B  
SURVEY QUESTIONNAIRE

**Demographic Information**

Please choose the appropriate answer that best describes or applies to you.

- What is your gender?  
1. Male      2. Female
  
- What is your age?
  
- What is your ethnic background?  
1. White    2. African American    3. Hispanic    4. Asian    5. Native American  
6. Other
  
- What is the highest level of education you completed?  
1. High school/GED diploma  
2. Bachelor's degree  
3. Master's degree  
4. Doctoral degree  
5. Other
  
- How long have you been employed with your current organization?  
1. Less than 1 year    2. 1-5 years    3. 6-10 years    4. 11-15 years    5. 16-20 years  
6. More than 21 years
  
- What job position do you hold?  
1. Administrator/Executive  
2. Manager/Director  
3. Staff/Technical services
  
- What is your marital status?  
1. Single      2. Married/Cohabiting      3. Divorced/Widowed
  
- If you are "married" or "cohabiting," is your spouse/partner currently working?  
1. Yes      2. No
  
- Do you have a child or children? If so, how many do you have?  
1. Yes \_\_\_\_\_

2. No

- Are you paid for overtime?  
1. Yes      2. No

### **Perceived Working Hours**

Please answer the question or indicate the extent to which you agree or disagree with the following statements based on your experience in the most recent month.

Your working hours include not only working hours at the workplace, but also business trips, customer meetings, waiting time, on-call duty, training time, working at home, and even short breaks. However, lunch, dinner, and non-paid activity (e.g., non-work related leave and long rest times) are excluded.

Regular work hours are the standard length of productive working time recognized in your organization.

- How many hours do you typically work in a week?
- I find myself continuing to work after the regular work hours end.  
1. Strongly disagree – 7. Strongly agree  
(1. Strongly disagree 2. Disagree 3. Somewhat disagree 4. Neither agree nor disagree  
5. Somewhat agree 6. Agree 7. Strongly agree)
- Overall, I work longer than the regular work hours.  
1. Strongly disagree – 7. Strongly agree
- I feel uncomfortable when I leave my office right after the regular work hours end.  
1. Strongly disagree – 7. Strongly agree
- I take working beyond the regular work hours for granted.  
1. Strongly disagree – 7. Strongly agree
- It is hard for me to avoid overtime in the circumstances surrounding my job.  
1. Strongly disagree – 7. Strongly agree
- Working longer than regular work hours is necessary to get my job done.  
1. Strongly disagree – 7. Strongly agree
- It is important for me to work longer than the regular work hours.

1. Strongly disagree – 7. Strongly agree

- I am required to work more than I expected.  
1. Strongly disagree – 7. Strongly agree

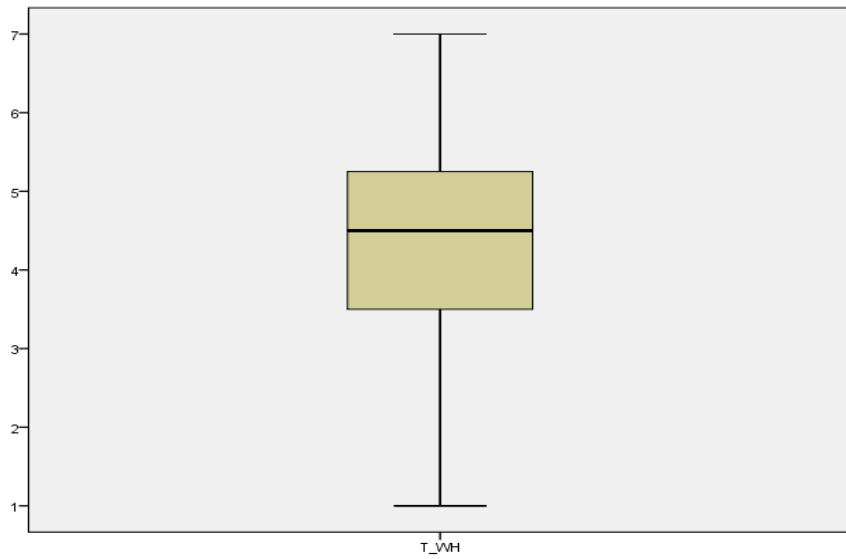
### **Work Condition Constraints**

- I find it difficult/impossible to do my job because of poor equipment or supplies.  
1. Strongly disagree – 7. Strongly agree
- I find it difficult/impossible to do my job because of organizational rules and procedures.  
1. Strongly disagree – 7. Strongly agree
- I find it difficult/impossible to do my job because of my supervisor.  
1. Strongly disagree – 7. Strongly agree
- I find it difficult/impossible to do my job because of interruptions by other employees.  
1. Strongly disagree – 7. Strongly agree
- I find it difficult/impossible to do my job because I do not have needed knowledge/information about what to do or how to do it.  
1. Strongly disagree – 7. Strongly agree

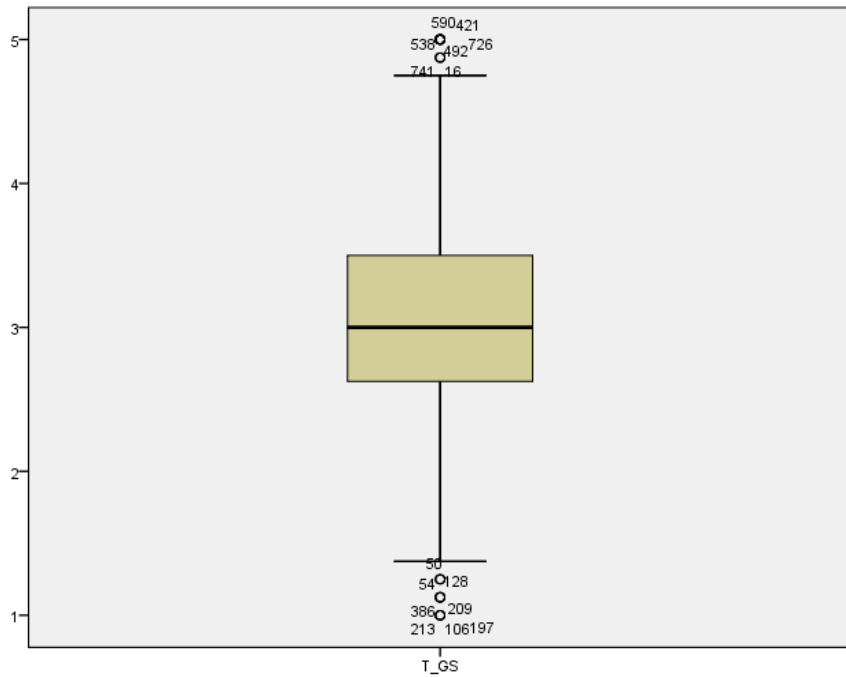
APPENDIX C

BOX PLOTS FOR THE VARIABLES

Perceived working hours

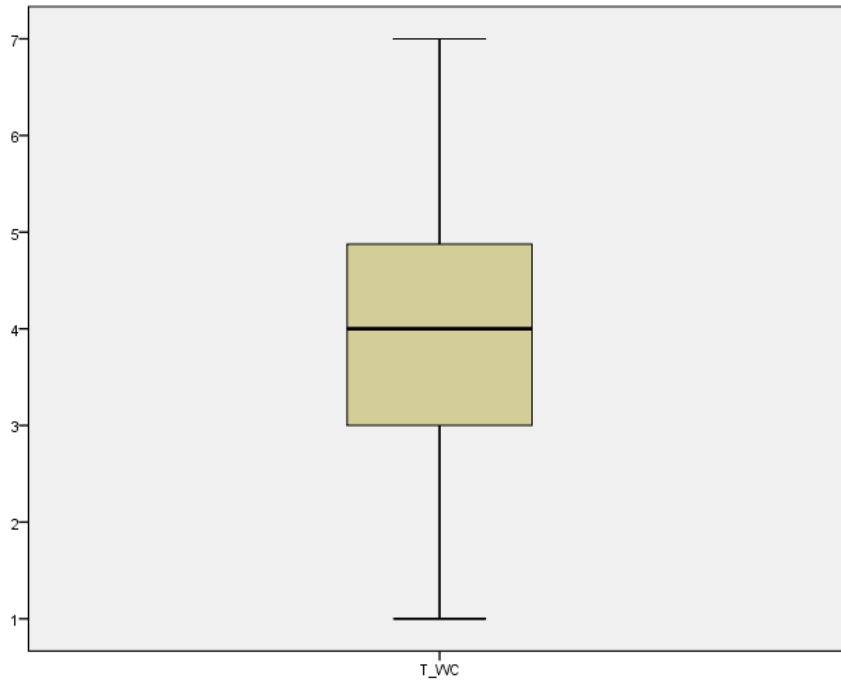


General stress

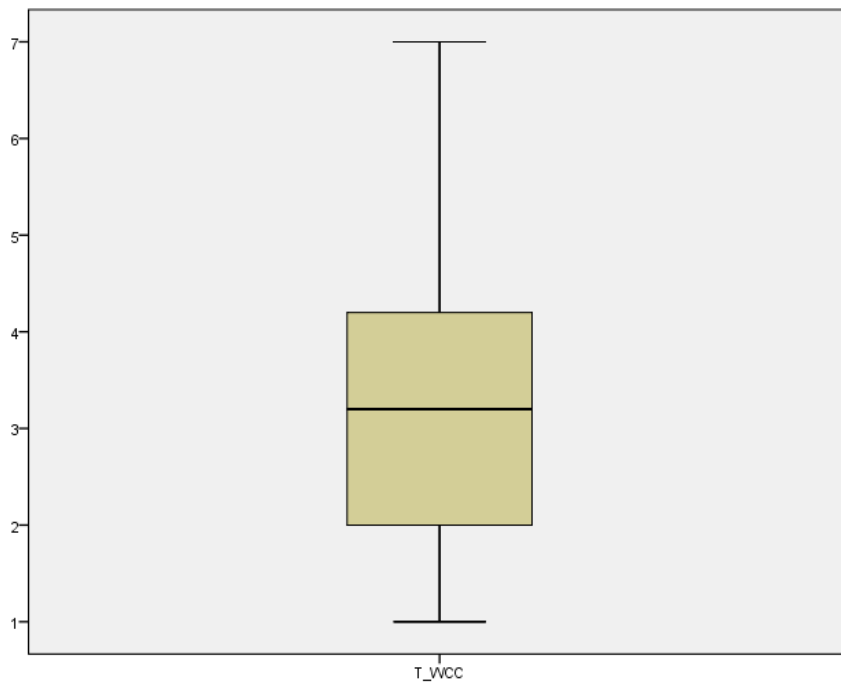




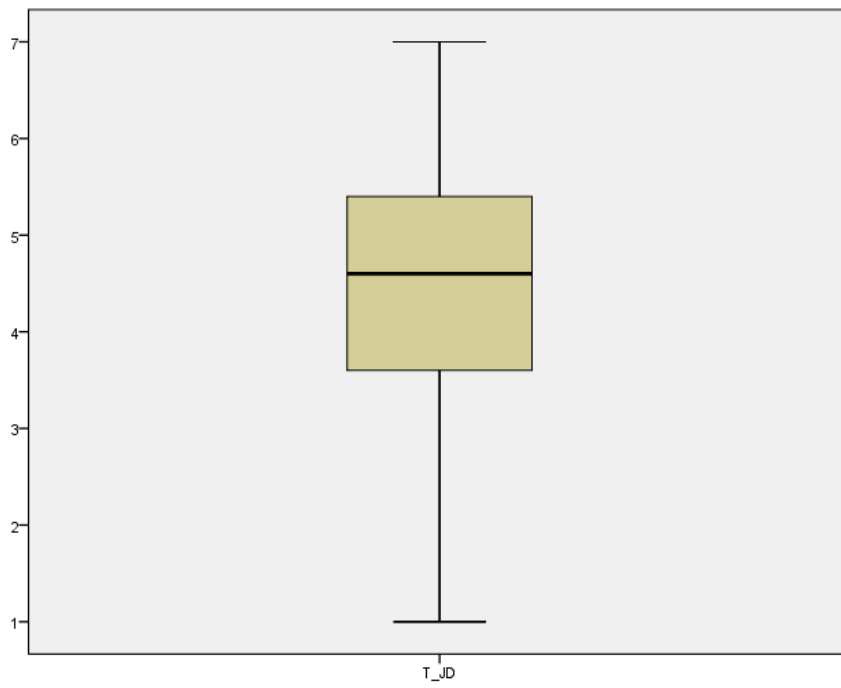
### Work centrality



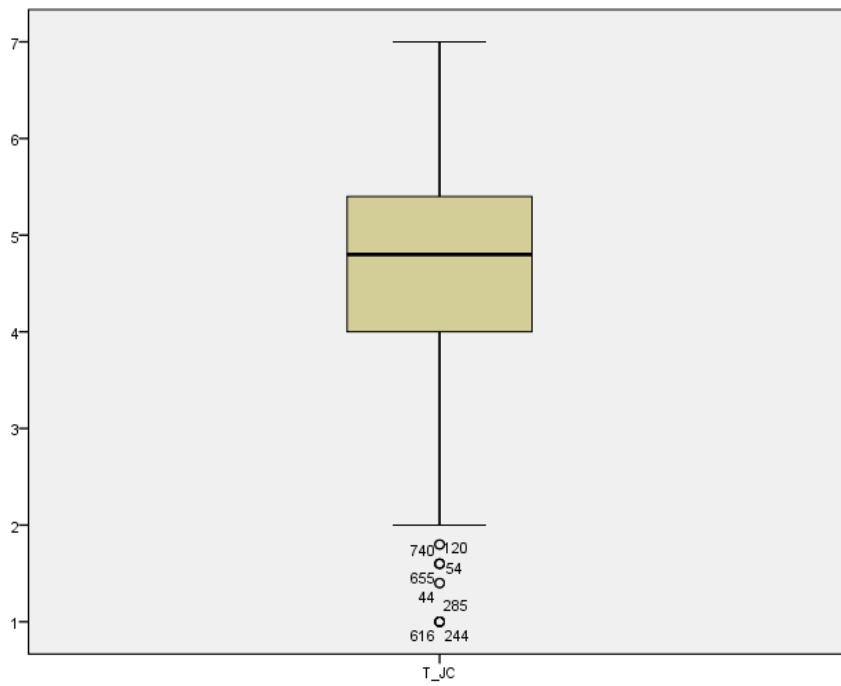
### Work constraint conditions



### Job demands



### Job control



APPENDIX D

DESCRIPTIVE STATISTICS FOR THE VARIABLES

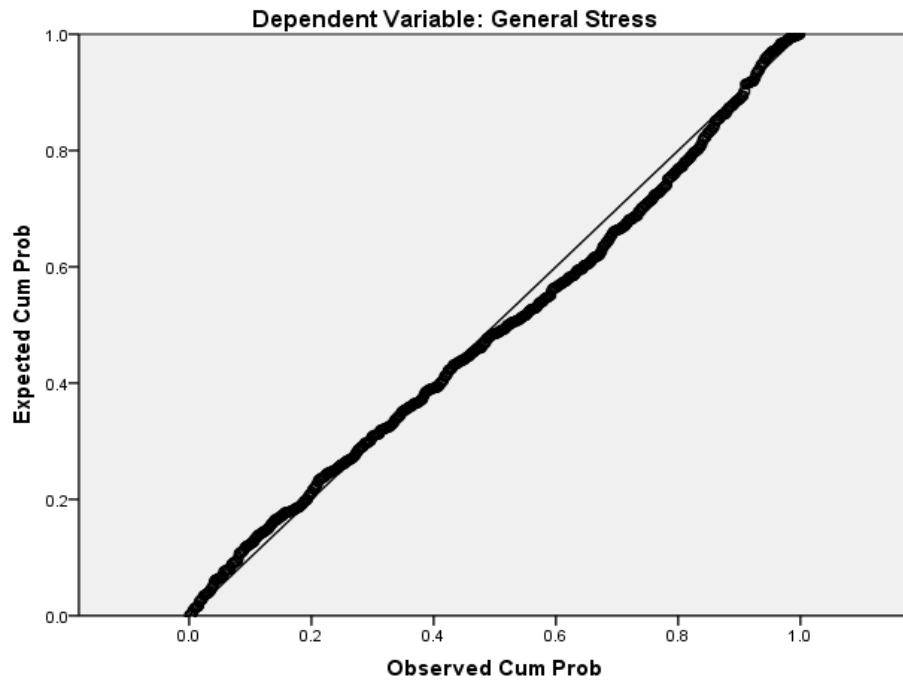
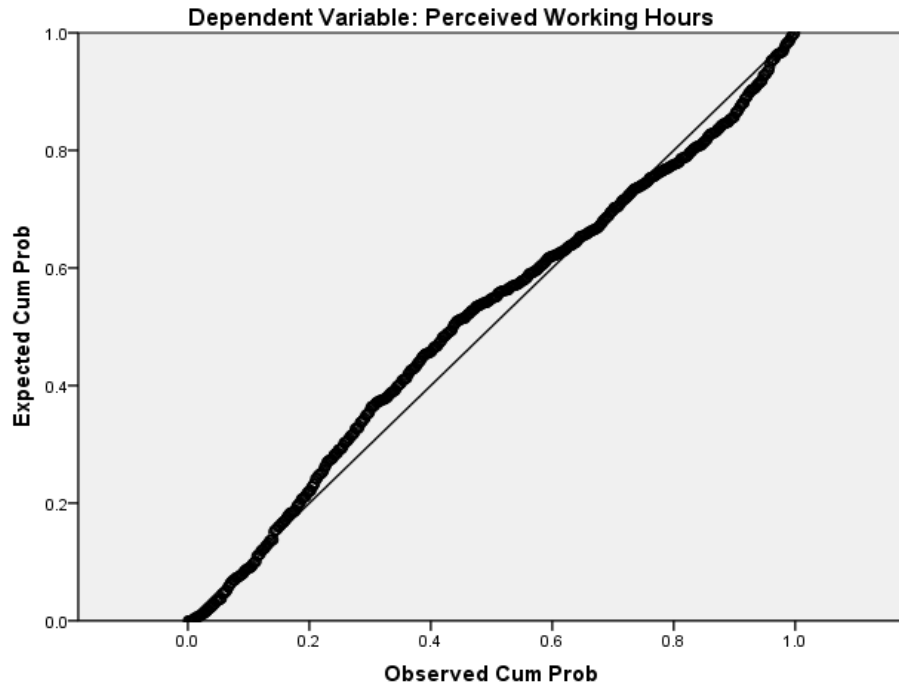
		Statistic	Std. Error	
PWH	Mean	4.3020	.04962	
	95% Confidence Interval for Mean	Lower Bound	4.2046	
		Upper Bound	4.3994	
	5% Trimmed Mean	4.3407		
	Median	4.5000		
	Variance	1.972		
	Std. Deviation	1.40425		
	Minimum	1.00		
	Maximum	7.00		
	Range	6.00		
	Interquartile Range	1.89		
	Skewness	-.467	.086	
	Kurtosis	-.389	.173	
GS	Mean	3.0994	.02591	
	95% Confidence Interval for Mean	Lower Bound	3.0485	
		Upper Bound	3.1503	
	5% Trimmed Mean	3.0869		
	Median	3.0000		
	Variance	.538		
	Std. Deviation	.73343		
	Minimum	1.00		
	Maximum	5.75		
	Range	4.75		
	Interquartile Range	.88		
	Skewness	.310	.086	
	Kurtosis	.683	.173	
WC	Mean	3.9493	.04563	
	95% Confidence Interval for Mean	Lower Bound	3.8597	

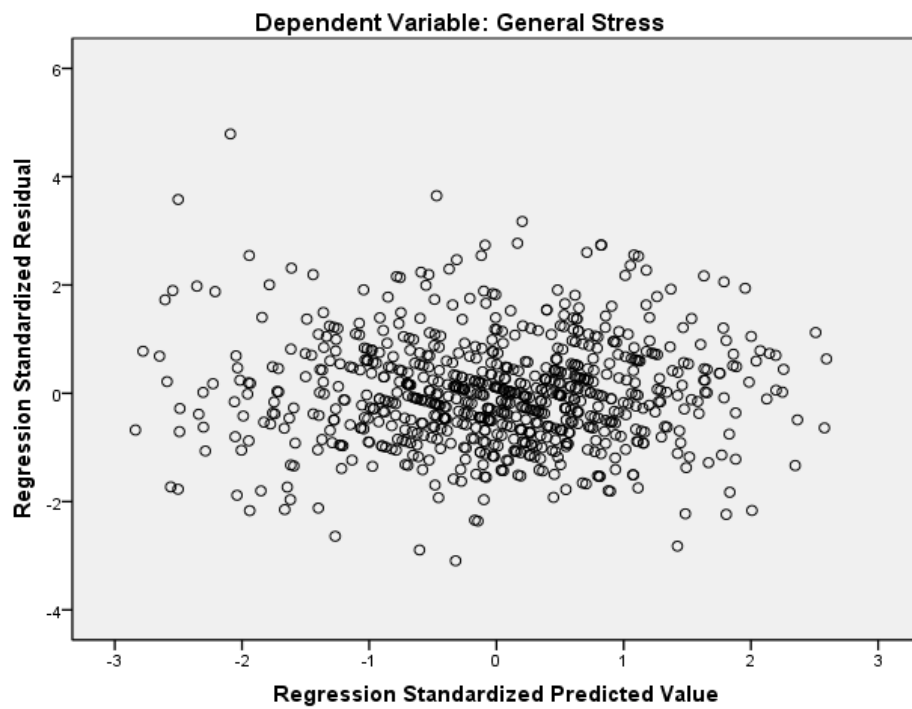
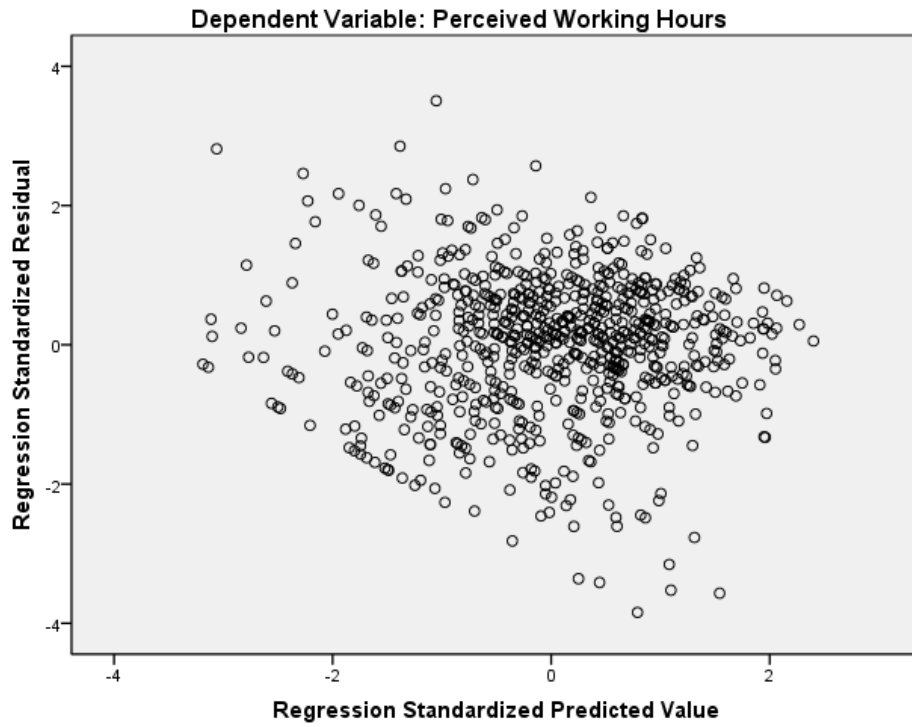
	Interval for Mean	Upper Bound	4.0389	
	5% Trimmed Mean		3.9524	
	Median		4.0000	
	Variance		1.667	
	Std. Deviation		1.29128	
	Minimum		1.00	
	Maximum		7.00	
	Range		6.00	
	Interquartile Range		1.75	
	Skewness		-.094	.086
	Kurtosis		-.472	.173
JC	Mean		4.6593	.04273
	95% Confidence Interval for Mean	Lower Bound	4.5754	
		Upper Bound	4.7432	
	5% Trimmed Mean		4.6786	
	Median		4.6000	
	Variance		1.462	
	Std. Deviation		1.20927	
	Minimum		1.00	
	Maximum		7.00	
	Range		6.00	
	Interquartile Range		1.40	
	Skewness		-.250	.086
	Kurtosis		-.079	.173
JD	Mean		4.4610	.04359
	95% Confidence Interval for Mean	Lower Bound	4.3755	
		Upper Bound	4.5466	
	5% Trimmed Mean		4.4867	
	Median		4.6000	
	Variance		1.522	
	Std. Deviation		1.23370	
	Minimum		1.00	

	Maximum		7.00	
	Range		6.00	
	Interquartile Range		1.80	
	Skewness		-.317	.086
	Kurtosis		-.079	.173
WCC	Mean		3.2196	.04684
	95% Confidence Interval for Mean	Lower Bound	3.1276	
		Upper Bound	3.3116	
	5% Trimmed Mean		3.1961	
	Median		3.2000	
	Variance		1.758	
	Std. Deviation		1.32578	
	Minimum		1.00	
	Maximum		7.00	
	Range		6.00	
	Interquartile Range		2.10	
	Skewness		.163	.086
	Kurtosis		-.720	.173

APPENDIX E

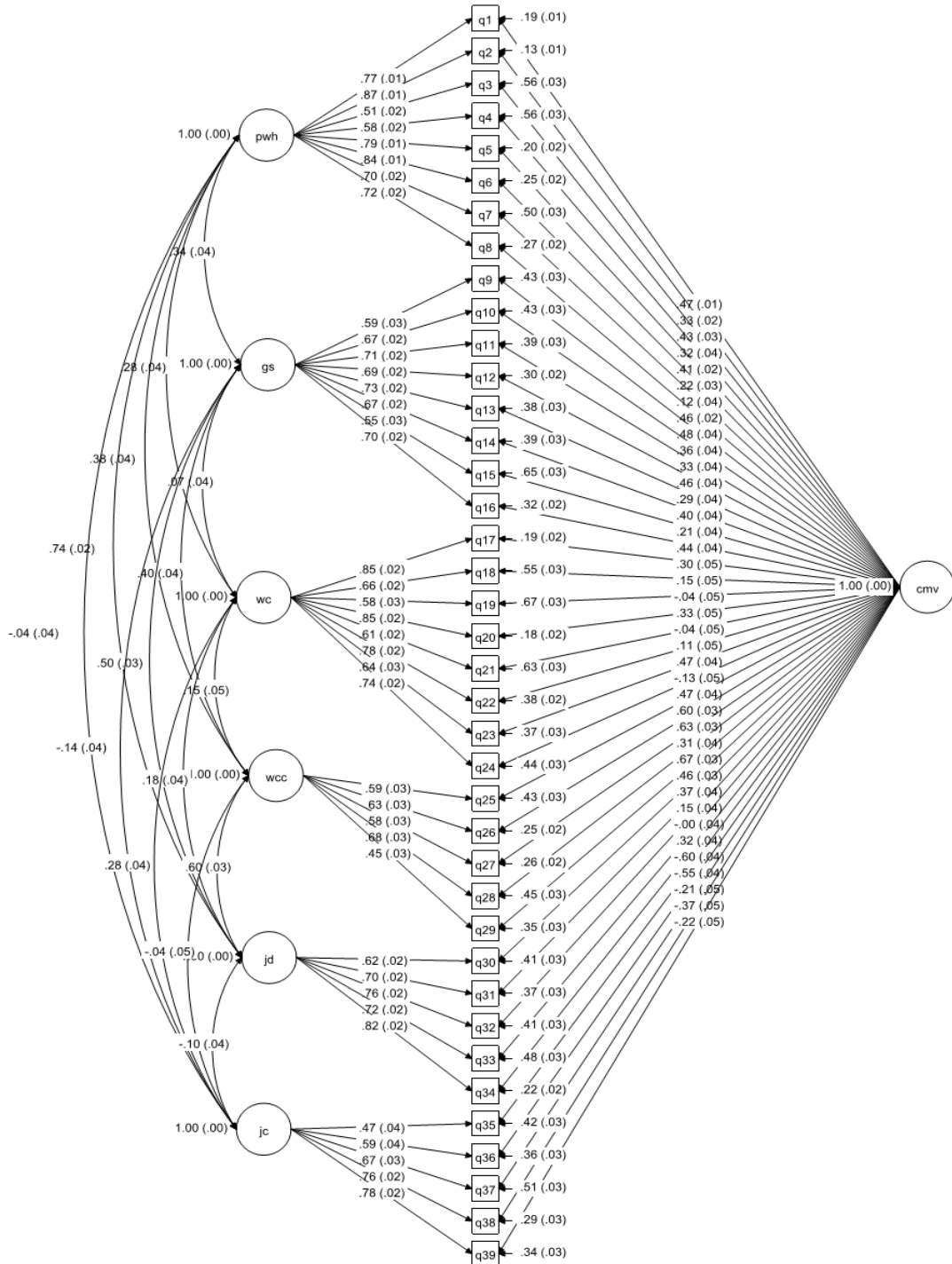
NORMAL PROBABILITY PLOTS AND SCATTERPLOTS FOR THE RESIDUALS





# APPENDIX F

## A COMMON FACTOR MODEL FOR CMV





APPENDIX G

STANDARDIZED FACTOR LOADING COEFFICIENTS OF CFA

Factor	Item	U.S.		Korea	
		Estimates	S.E.	Estimates	S.E.
Perceived Working Hours	PWH 1	0.89	0.01	0.81	0.02
	PWH 2	0.93	0.01	0.88	0.01
	PWH 3	0.59	0.03	0.51	0.04
	PWH 4	0.64	0.03	0.55	0.04
	PWH 5	0.88	0.01	0.82	0.02
	PWH 6	0.89	0.01	0.78	0.02
	PWH 7	0.83	0.02	0.45	0.04
	PWH 8	0.77	0.02	0.81	0.02
General Stress	GS 1	0.70	0.03	0.70	0.03
	GS 2	0.80	0.02	0.62	0.03
	GS 3	0.78	0.02	0.76	0.03
	GS 4	0.82	0.02	0.78	0.02
	GS 5	0.78	0.02	0.73	0.03
	GS 6	0.83	0.02	0.64	0.03
	GS 7	0.54	0.04	0.62	0.03
	GS 8	0.82	0.02	0.75	0.03
Work Centrality	WC 1	0.90	0.01	0.85	0.02
	WC 2	0.77	0.02	0.57	0.04
	WC 3	0.51	0.04	0.56	0.04
	WC 4	0.89	0.01	0.88	0.02
	WC 5	0.58	0.04	0.62	0.03
	WC 6	0.74	0.03	0.82	0.02
	WC 7	0.74	0.04	0.63	0.04

	WC 8	0.71	0.03	0.74	0.04
Work Condition Constraints	WCC 1	0.75	0.02	0.83	0.02
	WCC 2	0.74	0.02	0.64	0.03
	WCC 3	0.70	0.03	0.74	0.03
	WCC 4	0.73	0.03	0.68	0.03
	WCC 5	0.86	0.02	0.79	0.02
Job Demands	JD 1	0.83	0.02	0.79	0.02
	JD 2	0.71	0.03	0.72	0.03
	JD 3	0.66	0.03	0.77	0.03
	JD 4	0.74	0.03	0.62	0.03
	JD 5	0.68	0.03	0.87	0.02
Job Control	JC 1	0.73	0.03	0.78	0.02
	JC 2	0.70	0.03	0.58	0.04
	JC 3	0.87	0.02	0.87	0.02
	JC 4	0.89	0.01	0.62	0.04
	JC 5	0.93	0.01	0.68	0.03

Note: all factor loadings are significant ( $p < .01$ )