Relationships between Job Stressors and Individual Outcomes: A Study of Individual Differences

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ABSTRACT

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The existing two-dimensional work stressor framework predicts that challenge and hindrance stressors have differing effects on job performance and job satisfaction, but the two stressors have a similar (positive) effect on job strain and burnout. I propose that perceived strain and burnout should be treated as two distinct concepts. Perceived strain partially mediates the relationships between challenge and hindrance stressors and burnout. After considering perceived strain as a mediator, the two stressors have differing direct relationships with burnout. I also propose that individual differences moderate the effects of challenge and hindrance stressors. This study of full time employees (N = 518) examined the mediating effect of perceived strain, and the moderating effects of gender, Type-A behaviour, and work locus of control on the relationship between the two stressors and burnout, in-role performance and job satisfaction.

Data were collected through an online survey with an approximately 80% response rate. The established measures were used. Multiple regressions and moderated multiple regressions were used to analyze the data. In supporting the hypotheses, both challenge and hindrance stressors had positive indirect effects on burnout through

perceived strain, but challenge stressors had a negative direct effect on burnout and hindrance stressors had a positive direct effect on burnout. Type-A behavior enhanced the positive effect of challenge stressors on in-role performance. It weakened the negative effect of hindrance stressors on job satisfaction. The positive relationship between challenge stressors and in-role performance was stronger for males than for females.

At the most general level, results of this study increase our confidence about the validity of the challenge and hindrance stressors framework. After distinguishing perceived strain and burnout as two separate concepts, we can be confident that challenge stressors may indeed have potentials to reduce rather than increase burnout. Results of this study send several fresh messages to practicing managers. Challenge stressors may not be health impairing. Organizations should keep hindrance stressors to a minimum and consider increasing levels of challenge stressors strategically as long as they have practices in place that can buffer energy-depleting effects associated with challenges. Meanwhile, managers may consider taking advantage of Type A behavior;. It may interact with challenge stressors and lead to high in-role performance, and interact with hindrance stressors and remain high job satisfaction. Type A behavior is not related to burnout either, after controlling the two stressors and perceived strain.

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CHAPTER ONE

1. INTRODUCTION AND LITERATURE REVIEW

The relationship between job stressors and individual outcomes is important for both theoretical and practical reasons. Theoretically, this relationship involves many important questions such as how individuals perceive and react to job stressors and what are the potential consequences of job stressors. Practically, research in this regard has the potential to provide guidance for stress management to improve individual health and well-being. It comes as no surprise that the past several decades have witnessed a significant volume of theory development in this area.

Historically, two schools of thought mainly drive this area. On the one hand, there are many general frameworks. They include the person-environment (P-E) fit framework (French & Kahn, 1962), the facet model of stress (Beehr & Newman, 1978; Beehr, 1998), the transactional process model (Schuler, 1982; Spector, 1992) and the organizational model of stress (Parker & DeCotiis, 1983). On the other hand, there are specialized theories such as the model of role stress (Kahn, Wolfe, Quinn, Snoek & Rosenthal, 1964), the P-E fit theory of stress (French, Caplan & Harrison, 1982; Harrison, 1978) and the demand-control model (Karasek, 1979).

An emerging perspective, namely, the two-dimensional job stressor framework (Boswell, Olson-Buchanan & LePine, 2004; Cavanaugh, Boswell, Roehling & Boudreau, 2000; LePine, Podsakaff & LePine, 2005), is somewhere in the middle of the two traditional approaches.

This chapter reviews the existing literature to provide a theoretical background for my thesis. It consists of six sections. Section 1 reviews general frameworks; Section 2

reviews specialized models; Section 3 discusses the relationships between stressors and major individual outcome variables, including job performance, job satisfaction and burnout. The fourth section discusses the two-dimensional perspective. Finally, the fifth section will summarize contributions and limitations of previous research and suggest research opportunities for the present study.

1.1. General Theoretical Frameworks

General theoretical frameworks focus on broad and fundamental issues such as the nature of stress, the strategy to integrate personal aspects and environmental aspects, and the scopes and major facets involved in job stress research. These theoretical frameworks sketch out some foundation for job stress research.

1.1.1. The Person-Environment (P-E) Fit Framework

French and Kahn (1962) have provided one of the most classical conceptual frameworks of job stress. This framework identified four aspects, namely, objective social environment, psychological environment, the person and behaviour. Particularly, objective social environment includes the industrial organization and other organizations. The person includes elements such as needs, values, affective states, physiological states, health, illness and other personality characteristics. Psychological environment includes subjective factors such as role conflict and levels in the hierarchy. Behaviour involves coping, defense mechanisms and locomotion.

This framework laid down several fundamental principles for the study of individual health. First, job stress is better understood through the interaction between the

person and the environment. The discrepancy between the person and the psychological environment predicts behaviour, rather than either the individual or the environment alone. Second, the psychological environment rather than the objective social environment is the proximal predictor of individual outcomes (Edwards, 2008). Third, the working experience can be both positive and negative, in the sense that the environment can be both a source of conflicts and pressures as well as a source of support to individual health (French et al., 1962).

1.1.2. The Facet Model of Stress

Beehr and Newman (1978) and Beehr (1998) have outlined a facet model of occupational stress. This model includes seven facets: personal facet, environmental facet, process facet, human consequences facet, organizational consequences facet, adaptive responses facet, and time facet.

The personal facet consists of relatively stable characteristics of the person including personality traits and behavioral characteristics such as motive, need, ability, and Type-A behaviour and demographics such as age, education, gender, and race.

The environment facet includes four categories such as job demands and task characteristics, role demands or expectations, organizational characteristics and conditions, and organization's external demands and conditions.

The process facet consists of intervening psychological or physical reactions of the person. The former includes perceptions, evaluation of situation, response selection, and response execution. The latter includes physiological, biological and neurological processes.

The human consequences facet includes psychological health consequences such as anxiety, tension, depression, dissatisfaction, boredom, somatic complaints, and psychological fatigue; physical health consequences such as cardiovascular disease, respiratory problems, cancer, and headaches. Furthermore, behavior consequences such as dispensary visits, drug use and abuse, over- or under-eating, nervous gesturing, pacing, risky behavior, aggression, vandalism, stealing, and poor interpersonal relations will be addressed.

The adaptive responses facet includes adaptive responses by the individual and adaptive responses by the organization. The individual adaptive responses include meditation, managing desires, ambitions and drives, attempting at increased self-understanding and vicarious stress reduction.

The organization adaptive responses include redesigning jobs, altering an organizational structure, changes in evaluation, reward systems, changes in work schedules, providing feedback to employees aimed at role clarification, and provision of human relations training.

The facet model provides a useful reference and guidance to job stress research. For example, it suggests that the stressor-strain relationship is the core concern of job stress research. It specifies that a systematic understanding of job stress should include the seven facets. Last, but not least, it emphasizes that the combination of the personal facet and the environmental facet produces individual strain (Beehr, 1998).

1.1.3. The Transactional Models

Schuler (1982) has incorporated organizational stressors, individual perception, perceived stress, and individual response in an integrative transaction process model. Organizational stressors consist of the roles in an organization such as job qualities, relationships, organizational structure, physical qualities, career development, and change. Individual perception includes individual characteristics such as needs/values, Type A/B behavior, experience, ability, life states, and focus of control. Stress refers to individual's responses over time including short-term and long-term psychological response.

This model re-emphasizes several principles recognized by previous frameworks. Especially, stress can be both an opportunity and a constraint. It may lead to desirable as well as undesirable outcomes. Both physical environment and sociopsychological environment are relevant to stress. This model also introduces several new ideas. Schuler (1982) proposed that stress results from the transaction of the person and the environment. It can be considered as a perceived, dynamic state of uncertainty about something important to the individual.

The integrative transaction process model (Schuler, 1982) has suggested several hypotheses. First, the intensity of a stress condition is determined by the perceived importance of the situation. Second, stress symptoms will take place in short term, intermediate term, and long term. Third, individuals who engage in the process of gathering information, generating alternatives, selecting and implementing an alternative, and finally evaluating the implemented strategy will be more effective and efficient at coping with stress than those who do not take this methodical approach to coping. Fourth,

behavioral symptoms and the efficacy of coping strategies is dependent upon the situation. These hypotheses are important and interesting.

There are other transactional models available. Spector (1992) has proposed a causal model of individual response. This model suggests that individuals' responses to organizational conditions follow two stages: Environment links to perception and perception links to individual outcomes. Frese and Zapf (1988) have suggested a stress perception model that indicates a two-stage link; that is, objective stressors link to perceived stressors and perceived stressors link to dysfunctioning.

1.1.4. The Organizational Model of Stress

Parker and DeCotiis (1983) have proposed an organizational model of stress. This model integrated stressors, first-level outcome, and second-level outcome.

Stressors include the work itself, the organizational characteristics, roles in organization, relationship, career development, external commitments and responsibilities. First-level outcome refers to perceived strain. Strain is defined as "a particular individual's awareness of personal dysfunction as a result of perceived conditions or happenings in the work setting" (Parker & DeCotiis, 1983; p.160). Second-level outcome includes organizational commitment, job satisfaction, avoidance behavior and job performance. The measure of perceived strain developed by these authors has been widely used in empirical research on job stress (Baba, Jamal & Tourigny, 1998).

1.1.5. Evaluation

These general frameworks have significantly enhanced our understanding of job stress. They have established a theoretical foundation for job stress research and highlighted the richness of the field. Each of these frameworks provides a different paradigm concerning the appropriate way to conceptualize stress and the scope about the question we are asking.

Nonetheless, these frameworks normally do not provide specific predictions about the relationship between stressors and specific individual outcomes. For example, the P-E fit framework (French et al., 1962) suggests that the discrepancy between the person and the psychological environment produces strain. However, this framework itself does not specify how to operationalize the psychological environment or the life space organization, let alone proposing testable hypotheses (Edwards, 2008).

The facet model comprehensively summarizes the existing research in the field. As observed by Beehr (1998), almost all research on occupational stress conducted from an organizational psychological approach confirms one or more parts of the facet model. However, the model itself does not make specific predictions about whether the relationship between stressors and strain is positive, negative, or nonlinear.

The integrative transaction process model (Schuler, 1982) integrated many important concepts such as role conflict and role ambiguity, and introduced many interesting ideas such as the stress from the situations of opportunity and the stress from the situation of constraint. Few studies attempted to test the whole transaction process model, although the proposed hypotheses related to the coping strategies have inspired several studies. For Scheck, Kinicki and Davy (1995) reported that both positive and

negative stressors (stressful life events) had impacts on adaption (job satisfaction, life satisfaction, and organizational commitment) and immediate stress response and coping strategy (emotional-focused vs. problem-focused) mediated this process.

The organizational model of stress (Parker & DeCotiis, 1983) has stated that perceived strain as the first-level outcome mediates the relationship between job stressors and the second-level outcome. This model differentiates feelings of time stress and feelings of anxiety as two components of perceived strain. Few studies tested the full organizational model of stress, but some relationships proposed by this model were supported. Parker and DeCotiis (1983) reported that all six categories of stressors predicted perceived strain. Some researchers (e.g., Jamal, 1999) reported that perceived strain was positively related to burnout.

1.2. Specialized Models

Unlike general theoretical frameworks that tend to address broad and fundamental issues, specialized models deal with specific variables and relationships. They involve a couple of constructs and present hypotheses about how these constructs are related. The model of role stress, the P-E fit theory of stress, and the demand-control model are popular in the literature.

1.2.1. The Model of Role Stress

Kahn and his colleagues (1964) at the University of Michigan have developed one of the most influential models in the area of job stress. This model theorizes that (1) various organizational factors create stable role expectations and pressures, and (2) the

total set of role pressures affects the immediate experience of the focal person. Role conflict, role ambiguity, and role overload are major indicators of maladjustive response. Role conflict refers to incompatible demands on the person. Role overload refers to the number of different roles the person has to accomplish. Role ambiguity refers to unpredictability of one's role performance (Jackson & Schuler, 1985). In a classical study, Rizzo, House and Lirtzman (1970) reported that the two concepts of role conflict and role ambiguity did emerge as separate dimensions. The role ambiguity and conflict scales they developed have been extensively applied in the literature.

The meta-analysis of role ambiguity and conflict conducted by Jackson and Schuler (1985) reported that both role ambiguity and role conflict negatively related to job satisfaction and positively related to tension and anxiety, but they only had a weak relationship with job performance. Jackson and Schuler also concluded that the causes and consequences of role ambiguity and role conflict were likely to be influenced by moderating variables both at organizational and individual levels. The meta-analysis (Tubre & Collins, 2000) reported that role ambiguity, but not role conflict, could have a meaningful impact on job performance and that this relationship was moderate by job complexity.

A more recent meta-analysis (Ortqvist & Wincent, 2006) found that all role ambiguity, role conflict, and role overload negatively related to job satisfaction and job performance, but their relationships with the three elements of burnout (emotional exhaustion, depersonalization, a lack of personal accomplishment) were complex. In general, role stressors led to higher burnout, but role conflict was not related to depersonalization and a lack of personal accomplishment, and role overload was not

related to job performance and a lack of personal accomplishment. These authors suggested the need to study the three role aspects individually to gain detailed understanding about their effects.

1.2.2. The P-E Fit Theory of Stress

Building upon the work of French and Kahn (1962), French and his colleagues (Harrison, 1978; French et al., 1982) have developed the P-E fit theory of stress.

According to this theory, the environment has two properties, job demand and job supply, and the person has two properties, namely, individual ability and individual need. The environment is conceptualized as either job demand or job supply; the person, as either individual ability or individual need. Consequently, the P-E fit is referred to as either demand-ability fit or supply-need fit. Demand refers to "environmental demands which initiate action by the person (such as performance of work tasks)" and supply as "environmental supplies for the person's motives (such as income)" (French et al., 1982, p.3). Individual ability refers to a corresponding supply of the individual to meet job demand, and individual need refers to demands that must be met by job supply.

The P-E fit theory assumes that a poor fit between the person and the environment leads to strain. The emphasis is on the fit between the person and the environment, instead of the independent effects of the person and the environment. As highlighted by French, Rodger and Cobb (1974, p. 317), "The basic concepts of demands and supplies (or demands and abilities) have no independent effects; each is important only in relation to the other." This assumption reflects Lewin's (1955) idea that behavior is a function of the person and the environment.

This theory suggests six potential patterns of the P-E fit relationship. The relationship between supply-need fit and strain can be monotonic, asymptotic, and U-shaped. If supply is smaller than need, strain declines as supply-need fit approaches zero. If supply is larger than need, there are three possibilities. Strain may increase, remain constant, or decrease (Harrison, 1978). The relationship between demand-ability fit and strain also follows similar patterns. If demand is larger than ability, strain increases as demand-ability fit increases. If demand is smaller than ability, there are three possibilities. Strain may decrease, remain constant or increase. Strain refers to "any deviations from the normal state or responses of the person", including psychological strain, physiological strain, and behavioral strain (French et al., 1982; p.5).

The P-E fit theory dominated job stress research in the 1970s and 1980s. Meta-analyses (Edwards, 1991; Kristof-Brown, Zimmerman & Johnson, 2005) normally supported this model. Both supply-need fit were positively related to job satisfaction and job performance, but the relationship between demand-ability fit and performance seems inconclusive.

1.2.3. The Demand-Control Model

The demand-control model of stress (Karasek, 1979) has drawn theoretical attention to the interaction between job demand and job control. Job demand refers to the psychological demands of a work situation placed on the worker. Its two central elements are workload and required time (Karasek & Theorell, 1990). Job control refers to decision latitude such as the worker's authority to make decision on the job (decision authority) and the variety of skills used by the worker on the job (skill discretion).

This model defines the combination of high demand and high control as an active job; high demand and low control as a high strain job; low demand and high control as a low strain job, and low demand and low control as a passive job. Then, it proposes that high strain jobs present the highest risk to individual health and well-being, whereas active jobs enhance well-being, learning, and personal growth. Specifically, Karasek and Theorell (1990) proposed the strain hypothesis and the buffer hypothesis. The former predicted that employees working in a high-strain job (high demands and low control) would experience the lowest well-being. The latter predicted that control moderates the negative effects of high demands on well-being.

The demand-control model has provided important guidance for empirical research during the past several decades (Ganster et al., 1991; Karasek, 1979; Xie, Schaubroeck & Lam, 2008). A literature review (Van Der Doef & Maes, 1999) reported that 63 studies published in the period 1979 to 1997 provided considerable support to the strain hypothesis, but the support for the buffer hypothesis was less consistent. Another review of 45 longitudinal studies (De Lange, Taris, Kompier, Houtman & Bongers, 2003) reported that 19 high-quality longitudinal studies provided only modest support for the hypothesis that the combination of high demands and low control results in high job strain.

1.2.4. Evaluation

These specialized models enhanced our understanding of the relationship between job stressors and individual outcomes on several fronts. First, they have introduced many concepts such as role conflict, role ambiguity, role overload, job demand, job supply, job

control, individual ability, and individual need. These concepts have generated tremendous research output in North America and internationally (e.g., Glazer & Beehr, 2005; Jamal, 2005, 2007a).

Second, they have highlighted the complexity associated with the impact of these constructs, such as the interactions between these constructs such as the demand-ability fit, supply-need fit and the demand-control interaction.

Third, these models have gained many empirical supports. Some findings have been established. For example, role ambiguity positively relates to perceived strain; when supply is smaller than need, strain declines as supply-need fit approaches zero; when demand is larger than ability, strain increases as demand-ability fit increases; and the combination of high demand and low control presents high risk to individual health.

Meanwhile, specialized models have some limitations. On the one hand, each specialized model focuses on different outcome variables. The P-E fit theory (French et al., 1982) focused on three types of strain, namely, psychological strain, physiological strain and behavioural strain. The demand-control model (Karasek et al., 1990) emphasized individual health such as heart disease. On the other hand, empirical supports for these models have not been as robust as it was expected. They also have some unresolved issues. Some relationships between job stressors and individual outcomes remain somewhat elusive.

As far as the model of role stress is concerned, role conflict only had a weak relationship with job performance (Jackson & Schuler, 1985; Tubre & Collins, 2000). It had no relationship with depersonalization and personal accomplishment (Ortqvist &

Wincent, 2006). Role overload was not related to job performance and a lack of personal accomplishment (Ortqvist & Wincent, 2006).

The P-E fit theory also had its limitations (Ganster et al., 1991). First, it tends to imply that the P-E fit relationship is undetermined (Edwards, 2008; Harrison, 1978). The relationship between the person-environment fit and strain can be positive, null, or negative, especially when supply becomes larger than need or when demand is smaller than ability. As summarized by Edwards (2008), this theory has proposed many possibilities for the P-E fit relationship without saying which relationship will occur in a given instance.

Second, this theory does not specify which form of fit is most relevant, demand-ability fit or supply-need fit (Ganster, 2008). Whereas Harrison (1978) and Edwards (2008) have proposed that supply-need fit mediates the relationship between demand-ability fit and strain. Yet, this proposition only received limited empirical support (Edwards, 1996).

Third, this theory suffers from methodological problems such as discarding information and unreliability (Caplan, Cobb, French, Harrison & Pinneau, 1975). Discarding information refers to the fact that this theory only considers the fit (differences) between the P and the E without taking the absolute levels of the P and the E into consideration. The problems of unreliability refer to a situation where a P-E fit score is generally less reliable than the P and E components (Edwards et al., 1998).

As our knowledge of this model accumulates, the demand-control model appeared to have some limitations (Beehr, Glaser, Canali & Wallwey, 2001; Ganster et al., 1991; Van Der Doef et al., 1999). First, this theory does not clarify the nature of job control

clearly enough to permit a decisive distinction between job control and other constructs such as individual ability. As a result, job control may be confused with other concepts such as individual ability. Thus, the theoretical contribution of the demand-control model may be confused with the P-E fit theory, because the latter also emphasized the relevance of the interaction between job demand and individual ability.

Second, according to the demand-control model, decision authority refers to worker's influence over decisions and skill discretion refers the influence or use of individual skill (Van Der Doef et al., 1999), but it remains unclear whether job control should be considered as having one factor or two separate factors. This is an important issue, because decision authority and skill discretion may have different impacts on individual health.

Third, the meaning of 'the interaction' between job demand and control is open to diverse interpretations. On the surface, this model suggests that researchers should investigate the joint effects of job demand and job control. However, scrutiny shows that this model does not specify how to operationalize the interaction between job demand and job control. There is an on-going debate about whether the joint effect of demand and control mean additive or interactive (Beehr et al., 2001; Van Der Doef et al., 1999).

Fourth, this model is constrained by methodological limitations such as ambiguity associated with measures of job demand and control. Researchers tended to measure things other than job demand in their testing of the demand-control model (Beehr et al., 2001). After the above overview, the following section will review the consequences of job stressors on job performance, job satisfaction and burnout.

1.3. The Relationship between Job Stressors and Major Individual Outcomes

Job stressors may relate to diverse outcomes ranging from physical health problems, including accidental injury and cardiovascular disease, mental health problems such as anxiety and burnout, and work related behaviors. This section will highlight the relationship between job stressors and job performance, job satisfaction, and burnout. I focused on the three outcome variables because they are among the most widely studies variables in organizational behavior and management research (Crawford, LePine, & Rich, 2010; Harrison, Newman, & Roth, 2006; Jamal, 1984, 1990, 1999, 2007; LePine et al., 2005; Podsakoff, LePine, & LePine, 2007).

1.3.1. Job Performance

Concerning the stressor - performance relationship, there are four competing perspectives. They are the negative linear relationship perspective, a positive linear relationship perspective, no relationship perspective, and an inverted-U shaped relationship perspective (Jamal, 1984; 2007a; Jex, 1998; Muse, Harris & Field, 2003; Sullivan & Bhagat, 1992).

The negative linear relationship perspective assumes that job stressors are dysfunctional for both individuals and organizations (Jamal, 1984; Kahn et al., 1964). Job stressors create a noxious working environment for employees to deal with; this consequently affects their performance negatively. This perspective has been widely supported by previous empirical research (Jamal, 1984, 2007a). A recent review (Muse et al., 2003) has found that 24 of the 52 empirical studies lend support to the negative linear relationship.

The positive linear relationship considers job stressors equivalent to challenges (Jamal, 2007a). If stress is low, the individual is under-challenged. When stress is moderate, the individual is aroused at a medium level and will exhibit medium level performance. If stress is high, the individual will experience a high level of challenge and improve his/her performance accordingly. Empirical support for this perspective is limited. For instance, in the above mentioned review, 7 of the 52 studies supported this perspective (Muse et al., 2003).

The no-relationship perspective is based on the premise that job stress is neither functional nor dysfunctional (Jamal, 2007a). In other words, individuals attempt to maintain a relatively stable level of performance regardless of the level of challenges and hindrances in their jobs (Sullivan et al., 1992). This view has also gained limited empirical support. Muse et al. (2003) reported that 6 out of the 52 empirical studies found no relationship between job stressors and performance.

The U-shaped relationship perspective is based on the premise that a moderate amount of stress is optimal for performance (Jamal, 1984, 2007a; Scott, 1966). If stress is lower than the optimal level, individuals will not be activated and will not exhibit high performance. If stress is too high, individuals will spend more energy to cope with stress and will have less effort to improve job performance. This intuitively appealing perspective can be traced to the early work of Yerkes and Dodson (1908). However, empirical support in real work settings is rare. The recent review (Muse et al., 2003) indicated that only 2 out of the 52 studies supported the existence of the U-shipped relationship between stress and performance.

1.3.2. Job Satisfaction

Job satisfaction was widely examined as one of the most important outcomes of job stressors. In general, job stressors such as role conflict, role ambiguity, work overload, and under payment are inversely related to job satisfaction (Harrison et al., 2006; Jackson & Schuler, 1985; Ortqvist & Wincent, 2006; Sullivan et al., 1992).

One meta-analysis (Jackson & Schuler, 1985) reported that role ambiguity and role conflict were correlated (-.45, p <.01) and (-.46, p <.01) with job satisfaction. Another meta-analysis (Ortqvist & Wincent, 2006) reported that role overload was correlated (-.07, p <.01) with job satisfaction.

1.3.3. Burnout

Bradley (1969), Freudenberger (1974) and Maslach and Jackson (1981) introduced the construct of burnout into the literature. They observed that workers in the human service professions such as teachers, social workers, and nurses, often experienced a kind of extreme psychological strain. Gradually, this phenomenon was found not only in human service professions but also in other areas of employment (Maslach, Schaufeli & Leiter, 2001).

Burnout was conceptualized as a prolonged response to chronic stressful work environments that are featured as high levels of interpersonal contact (Cordes & Dougherty, 1993; Freudenberger, 1974; Maslach et al., 2001; Maslach & Leiter, 2008). It has three core components, including emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach et al., 2001). Emotional exhaustion refers to a depletion of emotional energy and a feeling that one's emotional resources are inadequate to deal with the situation. Depersonalization refers to a tendency toward

depersonalization of other individuals in the work setting, including coworkers. That is, treatment of them as objects rather than people. Lack of personal accomplishment refers to a tendency to evaluate one's behavior or performance negatively, or a decline in feelings of competence and productivity at work.

Burnout and its correlates have attracted numerous research interests (De Hoogh & Den Hartog, 2009; Lee & Ashforth, 1996; Maslach et al., 2001; Maslach & Leiter, 2008; Schulz, Greenley & Brown, 1995). In general, job stressors such as role conflict, role ambiguity, and role overload, and organizational factors such as poor communications and inflexible rules, were considered as predictors of burnout. Empirical research normally supported these relations (Cooper et al., 2001; Jamal, 2008a; Lee & Ashforth, 1996). The meta-analysis (Ortqvist & Wincent, 2006) reported that role ambiguity, role conflict and role overload was correlated .27, .12 and .46 with emotional exhaustion. But, the relationship between the three role stressors and other elements of burnout was less consistent. Role conflict was not related to depersonalization and a lack of personal accomplishment and role overload was not related to a lack of personal accomplishment.

Recently, burnout has been theorized as the incongruence between the person and the job (Maslach, 1998; Maslach & Leiter, 2008). The greater the gap, or mismatch, between the person and the job, the greater the likelihood of burnout. The incongruence could take place in not one, but six areas. They included workload, control, reward, community, fairness, and values. Maslach and Leiter (2008) reported that incongruence in all six areas predicted burnout.

1.4. The Two-dimensional Work Stressor Framework

The above literature review reveals an interesting gap. At the conceptualization level, several general frameworks such as the P-E fit framework (French & Kahn, 1962) and the transaction process model (Schuler, 1982) normally theorized that job stressors (the sources of stress) could lead to both desirable and undesirable outcomes. However, at the hypothesis level, specialized models such as the model of role stress (Kahn et al., 1964) tended to predict job stressors as unidimensional, in the sense that they were normally perceived as undesirable and dysfunctional. Although empirical studies lent considerable support to this unidimensional perspective (Jamal, 2007a; Muse et al., 2003), there are some anomalies. For instance, job stressors might be positively related to job performance (Muse et al., 2003); role overload was only weakly, although negatively, related to job satisfaction (Ortqvist & Wincent, 2006); and role conflict was not related to some elements of burnout, such as depersonalization and a lack of personal accomplishment (Ortqvist & Wincent, 2006).

With this gap in mind, some researchers (Boswell et al., 2004; Cavanaugh et al., 2000; LePine et al., 2005) argued that there was a lack of consensus about the exact relationship between stressors and job performance, and proposed the two-dimensional job stressors framework. According to the two-dimensional perspective, job stressors can be classified into two categories, challenge stressors and hindrance stressors. Hindrance stressors refer to "work-related demands or circumstances that tend to constrain or interfere with an individual's work achievement, and which do not tend to be associated with potential gains for the individual" (Boswell et al., 2004; p.166). Challenge stressors refer to "work-related demands or circumstances, although potentially stressful, that have

associated potential gains for individuals" (p. 166). The two stressors need to be examined as two separate constructs, because they may have differing consequences.

This framework assumes that certain job characteristics may be evaluated by employees in a relatively consistent way. People tend to evaluate stress encounters as challenges or threats. This appraisal will consequently influence people's emotions and coping baheviors (Lazarus & Folkman 1984). Challenge stressors may activate positive emotions and problem-solving style of coping, because people consider it as having the potential to promote personal gain; while hindrance stressors may generate negative emotions and a passive or emotional style of coping, because people consider them as being potentially harmful (LePine et al., 2005).

According to the two-dimensional framework, challenge and hindrance stressors affect outcome variables through several mechanisms such as the motivation mechanism (LePine et al., 2005) and the energy-depleting process (Crawford et al., 2010; Podsakaff et al., 2007).

In general, the two-dimensional framework has several predictions. First, challenge and hindrance stressors have differing impacts on individual outcomes. Challenge stressors positively relate to desirable outcomes such as job performance and job satisfaction and negatively relate to undesirable outcomes such as withdrawal behaviour; hindrance stressors negatively relate to desirable outcomes and positively relate to undesirable outcomes (Cavanaugh et al., 2000). Second, the two stressors have similar (positive) effects on strain and/or burnout. Third, both stressors have negative impacts on performance and satisfaction through strain and/or burnout.

Initial research based on the two-dimensional framework approves to be promising. Several studies have found that challenge and hindrance stressors have differing effects on job performance (LePine et al., 2005; Rodell & Judge, 2009; Wallace, Edwards, Arnold, Frazier, & Finch, 2009). The meta-analysis of 169 studies during 1975-2002 indicated a significant negative mean correlation between job performance and hindrance stressors including role ambiguity and role overload (Gilboa, Shirom, Fried & Cooper, 2008). Some studies have found that they have differing effects on job satisfaction and organizational commitment (Cavanaugh et al., 2000; Podsakaff et al., 2007; Webster, Beehr, & Christiansen, 2010). Others have found that they have differing effects on withdrawal behavior and turnover intentions (Podsakaff et al., 2007).

However, challenge and hindrance stressors seem to have mixed effects on burnout. Boswell et al. (2004) theorized and found that both challenge and hindrance stressors positively relate to psychological strain such as anxiety and exhaustion. LePine et al. (2005) theorized and found that both stressors are positively related to strain and burnout. Broeck, Cuyper, Witte, and Vansteenkiste (2010) reported that challenge stressors were not positively related to exhaustion. Interestingly, these studies either measured some dimensions of burnout or measured burnout as the mixture of burnout and diverse strains. One recent meta-analysis (Crawford, LePine, & Rich, 2010) reported that both challenge and hindrance stressors have significant positive relations with burnout, although hindrance stressors have a much stronger effect than challenge stressors. Jamal and Ahmed (2012) measured 22-items of burnout and reported that both challenge and hindrance stressors positively related to burnout. It is noted that Jamal and Ahmed's study did not enter challenge and hindrance stressors into testing equations

simultaneously, which was suggested by other researchers (e.g., Boswell et al., 2004). Moreover, Webster et al. (2010) reported that the relationship between the two stressors and strain was contingent upon the operationalization of strain. Webster et al. (2010) discussed that if strain is used as a comprehensive concept including a variety of things into one category, this may conceal some interesting findings. Webster et al. examined two types of strains, namely, psychological strains and physical strains. The former was measured by frustration and the latter was measured by eye strain and backache. These authors found that both challenge and hindrance stressors positively related to psychological strains, hindrance stressors positively related to physical strains, but challenge stressors were not related to physical strains.

The mediating effects of strain were also supported. LePine et al. (2005) theorized and found that both stressors are positively related to strain which partially mediated the relationships between the two stressors and job performance. Podsakoff et al. (2007) theorized and found that both stressors are positively related to strain which partially mediated the relationships between the two stressors and job satisfaction, organizational commitment and turnover intentions.

The two-dimensional perspective sheds new light on the stressors and job performance controversy (LePine et al., 2005). However, several issues remain unaddressed. First, the relationship between challenge and hindrance stressors and burnout appears to be uncertain (Broeck et al., 2010). Second, the existing two-dimensional framework seems to minimize individual differences in evaluation of and reaction to the two stressors (Podsakaff et al., 2007; Rodell & Judge, 2009).

First of all, the existing two-dimensional job stress framework predicts that the two stressors have similar (positive) effects on burnout. This prediction can be challenged in several fronts. Theoretically, this prediction appears to be inconsistent with the essence of the two-dimensional work stressor framework, that is, "people appraise stressful situations as either potentially threatening or potentially promoting mastery, personal growth, or future gains" (LePine et al., 2005, p. 765). If we really believe that people are capable of making this distinction and appraisal, it may become unreasonable to argue that people will perceive and evaluate stressful situations as challenges rather than hindrances, if one chief result of these stressors is to burnout those who have made such an evaluation.

Practically, this prediction may imply that the two-dimensional framework has a narrowed boundary. The two stressors may only have differing effects on outcomes of interest to organizations such as job performance, job satisfaction, and organizational commitment, but they both impose threats on individual health. If this is the case, the practical implication of the two-dimensional framework seems uncertain (Podsakaff et al., 2007; Webster et al., 2010). Perhaps researchers and managers may be less enthusiastic about taking advantage of the benefit of challenge stressors in light of its definite side effects like burnout.

Moreover, this prediction may be due to a weakness associated with the existing two-dimensional perspective. The existing studies based on the two-dimensional perspective normally showed that both stressors positively relate to strain and burnout. Perhaps this is because they failed to draw a clear distinction between perceived strain and burnout. For instance, LePine et al. (2005) suggested that "strains accrue more slowly

as a function of repeated or prolonged exposure to stressors (Maslach & Schaufeli, 1993)" (p. 766). Most likely, LePine et al. saw strain as equivalence to burnout in their study. Take the study made by Podsakoff et al. (2007) as another example. In their study, Podsakoff et al. (2007) treated strain as a broad concept. In their study, measures of strain included many things such as anxiety, tension, burnout, emotional exhaustion and mental, psychological and physical symptoms. Nevertheless, the conceptual distinction between strain and burnout has been recognized in the literature (Glazer & Beehr, 2005; Janssen, 2004; Maslach & Schaufeli, 1993; Parker & DeCotiis, 1983; Schuler, 1982; Xie & Johns, 1995). The relationship between strain and burnout has attracted several empirical studies (Jamal, 1999, 2008; Janssen, 2004; Xie & Johns, 1995).

Secondly, it remains unresolved for whom and under what conditions challenge stressors promote desirable individual outcomes and hindrance stressors lead to undesirable consequences. Traditionally, little attention has been paid to the possible moderating effects of individual differences on the relationships between challenge and hindrance stressors and crucial outcome variables. There has been an implicit assumption in previous research that people may evaluate and react to the two stressors in relatively consistent ways (LePine et al., 2005). Meanwhile, all the existing meta-analysis studies (LePine et al., 2005; Podsakaff et al., 2007) have indicated the need to consider moderators of the effects of the two stressors due to the substantial amount of unexplained variance reported in these studies.

Gradually, it has been recognized that this assumption seems to minimize individual differences (Rodell & Judge, 2009) and that incorporating potential moderators represents new opportunities to enhance the usefulness of the two

dimensional perspective of job stressors (Podsakaff et al., 2007). Gilboa et al. (2008) examined the moderating effect of job level (managers vs. non-managers) and found that the negative relationship between hindrance stressor and performance was stronger for managers than for non-managers. Wallace et al (2009) found that organizational support moderated the positive relationship between challenge stressors and performance, but not the negative relationship between hindrance stressor and performance. Rodell and Judge (2009) reported that personality, such as neuroticism, moderated the process that links the two stressors to counterproductive behaviours.

1.5. Summary and Research Opportunity

In the review sections above, I have reviewed four major general frameworks, including the P-E fit framework, the facet model of stress, the transactional process models and the organizational model of stress. I have discussed several specialized models such as the model of role stress, the P-E fit theory of stress, and the demand-control model. I have also introduced the two-dimensional work stressor framework.

The general frameworks have provided useful paradigms for stress research. The P-E fit framework (French et al., 1962) highlights that stress should be considered as the joint effect of the person and the environment, rather than either the person or the environment separately. The facet model (Beehr, 1998) emphasizes that systematic stress research should take all these seven facets into consideration. The transactional model (Schuler, 1982) underscores the transactional process underlying the relationship between job stressors and individual outcomes. The organizational model of stress (Parker & DeCotiis, 1983) draws theoretical attention to the possibility that perceived strain may mediate the relationship between job stressors and individual outcomes. These general

frameworks also suggest that stressors can be a source of opportunity and a source of constraint for employees (French et al., 1962; Schuler, 1982).

The specialized models specify the relationship among specific constructs. The model of role stress (Kahn et al., 1964) proposes that role conflict, role ambiguity and role overload positively lead to undesirable outcomes. The P-E fit theory of stress (French et al., 1982) proposes that demand-ability fit and supply-need fit relate to psychological strain, physiological strain, and behavioral strain. The demand-control model (Karasek, 1979) proposes that the interaction between job demand and job control predicts to employee well-being.

By emphasizing the distinction between challenge stressors and hindrance stressors as two distinct constructs, the two-dimensional perspective has successfully shifted theoretical attention from the levels of job stressors to the distinct types of stressors (LePine et al., 2005). This perspective has several advantages. First, its main ideas are actually consistent with the existing general frameworks. The notion that stressors can be either challenges or hindrances was implied by previous frameworks (French et al., 1962; Schuler, 1982). The notion that strain may mediate the relationship between job stressors and individual outcomes, was also implied by previous frameworks (Parker & DeCotiis, 1983; Schuler, 1982). Second, like the specialized models, the new perspective offers specific hypotheses which could be refuted empirically.

Meanwhile, the two-dimensional job stressor framework has several issues remain unaddressed: (1) Do the two stressors have similar effects on burnout, and (2) do individual differences moderate the effects of the two stressors? More research is needed to improve and test this new perspective. This will be the focus of my thesis.

CHAPTER TWO

2. THEORETICAL FRAMEWORK OF THE PRESENT STUDY

Chapter one critically reviewed the theoretical and empirical research on the relationship between job stressors and individual outcomes. As an area of research, this relationship has attracted growing interest in both academic research and management practice (Jamal, 1985, 2008; Muse et al., 2003; LePine et al., 2005). After several decades of research, many theoretical frameworks have been proposed and considerable empirical evidence has been accumulated. Recently, the two-dimensional perspective has shifted theoretical attention to the differing effects of the two distinct types of stressors (Gilboa et al., 2008; Rodell & Judge, 2009).

The present study proposes an integrative model to link the two stressors to individual outcomes. Hindrance and challenge stressors, perceived strain, three individual characteristics (gender, Type-A behaviour and work locus of control) and three individual outcomes (in-role performance, job satisfaction and burnout) are incorporated into a coherent model (Figure 1). Specifically, (a) hindrance and challenge stressors have differing direct relationships with individual outcomes, (b) they have similar indirect effects on outcomes through perceived strain, and (c) the relationship between the two stressors and outcomes are moderated by individual differences.

Insert Figure 1 about here

This chapter consists of two sections. The first section introduces the major variables included in this research. The second section presents hypotheses to be tested.

2.1. Constructs

In the present study, hindrance and challenge stressors are predictors, in-role performance, job satisfaction and burnout are three dependent variables, and perceived strain is the mediator. Gender, Type-A behaviour and work locus of control are considered as the three individual factors that moderate the relationships between stressors and individual outcomes.

Challenge stressors refer to work-related demands or circumstances, although potentially stressful, that have associated potential gains for individuals. Hindrance stressors refer to work-related demands or circumstances that tend to constrain or interfere with an individual's work achievement, and which do not tend to be associated with potential gains for the individual (Boswell et al., 2004). The former include elements such as workload, job demands and job complexity, while the latter include elements such as role ambiguity, role conflict, and red tape (LePine et al., 2005).

Job performance can be classified into in-role performance and extra-role performance (Bergeron, 2007; Organ, 1988). This study focuses on in-role performance. In-role performance, also known as task performance, refers to required behaviors which are specified in job descriptions. It is the basis of regular and ongoing job performance. The absence of in-role performance will lead to warnings, negative financial consequences and job loss (Van Dyne & LePine, 1998). Extra-role performance refers to those behaviors that support the organization. Extra-role performance tends to be similar across jobs.

I focused on in-role performance (Van Dyne & LePine, 1998) for several reasons. First, it is of distinct practical relevance to employees. The absence of in-role

performance may lead to negative financial consequences and reprimands (Van Dyne & LePine, 1998). Second, in-role performance is conceptually differentiated from other performance constructs such as extra-role performance. The distinction between in-role and extra-role performance is crucial, because there is potential conflict between these two. Individuals who overly emphasize extra-role performance may unintentionally hurt their career development (Bergeron, 2007). Third, it will be an important falsification of the two-dimensional perspective of job stressors, if the two stressors do not have differing effects on in-role performance. Although the meta-analysis related to the two-dimensional perspective (LePine et al., 2005) included diverse measures of job performance, the existing primary studies have only tested extra-role performance (Rodell & Judge, 2009; Webster et al., 2010) and role-based performance (Wallace et al., 2009).

Job satisfaction refers to ‘‘an affective (that is, emotional) reaction to one’s job, resulting from the incumbent’s comparison of actual outcomes with those that are desired, expected, deserved, and so on’’ (Cranny, Smith & Stone, 1992, p. 1). It results from the differences between what an individual demands from a job and what the job supplies (Smith, Kendall & Hulin, 1969). It is one of the most heavily examined individual outcome variables (Harrison et al., 2006; Sullivan et al., 1992). Job satisfaction can be measured as either facet satisfaction or overall satisfaction. They have different usages and advantages, but overall satisfaction normally represents something more than a combination of facet satisfactions (Edwards & Rothbard, 1999; Webster et al., 2010; Weiss, 2002).

Burnout is a prolonged response to chronic interpersonal stressors on the job. Recently, its three dimensions were defined as emotional exhaustion, cynicism and inefficacy. The three components together reflect an individual stress experience embedded in a context of complex social relationships and the person's conception of both self an others (Maslach, 1998; Maslach & Leiter, 2008). Burnout has been found in diverse areas of employment beyond human service professions (Cooper et al., 2001; Maslach et al., 2001).

Strain and burnout should be recognized as two conceptually distinct concepts (Glazer & Beehr, 2005; Janssen, 2004; Maslach & Schaufeli, 1993; Parker & DeCotiis, 1983; Schuler, 1982; Xie & Johns, 1995). To highlight the distinction, in this paper strain is referred to as perceived strain which is defined as "a particular individual's awareness or feeling of personal dysfunction as a result of perceived conditions or happenings in the work setting" (Parker & DeCotiis, 1983, p. 161). This definition emphasizes several features. First, perceived strain represents short-term psychological states such as anxiety and tension that need to be differentiated from burnout as a long-term consequence. Perceived strain occurs immediately after job stressors are perceived (Baba & Jamal, 1991; Elangovan & Xie, 1999; Glazer & Beehr, 2005; Parker & DeCotiis, 1983; Schuler, 1982) and burnout builds up more slowly as a function of repeated or prolonged exposure to stressors (Janssen, 2004; Maslach & Schaufeli, 1993; Xie & Johns, 1995). Second, perceived strain is "a transient feeling" (Parker & DeCotiis, 1983, p. 164) relative to more lasting consequences. It may be found in the presence or absence of more long-term consequences, depending on whether perceived strain is removed without delay. In other words, perceived strain may dissipate quickly without resulting in long-term

consequences, if individuals can cope with job stressors successfully (Maslach, 1998; Parker & DeCotiis, 1983; Schuler, 1982).

Meanwhile, the relationship between perceived strain and burnout has attracted several empirical studies (Jamal, 1999, 2008; Janssen, 2004; Xie & Johns, 1995). Xie and Johns (1995) reported that job scope has different relationships with perceived strain and burnout. Based on employees working in a large multinational company in Malaysia and Pakistan, Jamal (1999) reported that perceived strain was significantly related to burnout. Based on the samples of professors in Canada and Pakistan, Jamal (2008) found a positive relationship between perceived strain and burnout.

Gender is certainly one of most important individual differences as far as organizational stress is concerned (Bellman, Forster, Still & Cooper, 2003; Powell, 1999). There is more than one way to conceptualize gender or sex (Deaux, 1985). Here gender is defined as male or female that has been considered as relevant to job stress research (Shirom, Gilboa, Fried & Cooper, 2008).

Type-A behaviour has been described as an action-emotion complex that is observable in those who are aggressively involved in an incessant and chronic struggle to achieve more and more in less and less time and normally against the opposing efforts of other things and other people (Haynes, Feinleib & Kannel, 1980; Jamal & Baba, 2001; Jamal, 1990, 2007b). Type-A and Type-B behaviours refer to the opposite attributes and qualities that can be observed in two distinct types of individuals. Major attributes of Type-A behaviour include “explosiveness, high achievement ambitions, heightened pace of living…a tendency to challenge and compete with others, impatience with slowness, free floating hostility and the general appearance of tension” (Jamal, 2007b, p. 102).

Type-B behavior is an opposite of Type-A behavior. A variety of empirical studies have confirmed these attributes of Type-A behaviour (Ganster, Mayes & Sime, 1989; Jamal & Baba, 2001; Jamal, 1990, 2007b).

This study focused on Type-A behavior mainly for the theoretical reason. Schuler (1982) included Type A as one of the key individual factors in the integrative transactional process model of stress. Cooper et al. (2001) considered it as one of the most basic individual characteristics relevant to job stress research. Beehr and Glazer (2005) suggested that studies related to Type A behavior are old, but they are still promising for future research. Not surprisingly, it has been examined across different cultures (Jamal, 1990, 1999; 2007b).

Work locus of control refers to an individual's beliefs about his/her control over jobs and the work domain (Ng, Sorensen & Eby, 2006; Spector, 1988; Wang, Bowling, & Eschleman, 2010). It is distinct from perceived control and general locus of control. Compared with perceived control, work locus of control is more general, because perceived control (Spector, 1998) may reflect more about the specific work situation than individual characteristics. Compared with general locus of control (Rotter, 1966), work locus of control is more specific, because general locus of control reflects a generalized tendency to have control over life events. Work locus of control correlates about 0.50 to .55 with general locus of control (Spector, 1988).

2.2. **Theoretical Model and Hypotheses**

The present study is built upon the two-dimensional job stressor framework (LePine et al., 2005). As indicated in Figure 1, this study is aimed at examining two research questions. First, do challenge and hindrance stressors have differing direct

effects on individual outcomes, especially burnout, although they have similar indirect influences on burnout through perceived strain? Second, do individual factors moderate the effects of the two stressors on outcomes (after taking perceived strain into consideration)? Since job performance and job satisfaction have been examined by previous studies, burnout is considered as a major target to be examined.

2.2.1. **Hypotheses about Main Effects**

According to the proposed integrative model, challenge stressors positively relate to in-role performance and job satisfaction and negatively to burnout, and hindrance stressors have an opposite effect on these outcomes. These hypotheses can be derived from the two-dimensional perspective which has recently guided a number of studies (Boswell et al., 2004; LePine et al., 2005; Podsakaff et al., 2007). Specifically, challenge and hindrance stressors influence outcomes through several mechanisms such as the motivation mechanism (LePine et al., 2005) and the energy-depleting process (Crawford et al., 2010; Podsakaff et al., 2007).

The motivation mechanism is effective in explaining the differing effects of the two stressors on in-role performance and job satisfaction (LePine et al., 2005; Podsakaff et al., 2007). Challenge stressors should be associated with high motivation, because they may trigger high expectancy (the probability of success in meeting the demand) and high instrumentality (the possibility of obtaining valued rewards after meeting the demand). In contrast, hindrance stressors should be correlated with low motivation. Mainly, they may trigger a mixture of low expectancy and perhaps low instrumentality. People will perceive that no reasonable level of effort will be adequate to overcome hindrance

stressors and consequently the potential rewards associated with meeting the demand may appear less relevant. Since motivation is a proximal antecedent of job performance and job satisfaction (LePine et al., 2005), it is predictable that challenge stressors positively relate to job performance and job satisfaction and hindrance stressors negatively relate to these outcomes. This can be especially relevant to in-role performance, which refers to required behaviors which are specified in job descriptions (Van Dyne & LePine, 1998). The absence of in-role performance leads to warnings, negative financial consequences and job loss (Van Dyne & LePine, 1998).

The motivation mechanism is also effective in explaining the differing effects of the two stressors on burnout. Challenge stressors should be associated with high motivation, because they may trigger high expectancy (the probability of success in meeting the demand) and high instrumentality (the possibility of obtaining valued rewards after meeting the demand). In contrast, hindrance stressors should be correlated with low motivation (LePine et al., 2005). If burnout is likely caused by the mismatch between the person and the job concerning several aspects such as work overload, lack of control, insufficient reward, breakdown of community, and absence of fairness (Maslach, 1998; Maslach & Leiter, 2008), it is predictable that challenge stressors negatively relate to burnout and hindrance stressors positively relate to burnout. The reason is that people with high motivation are more likely to close the gap between the person and the job, while the opposite may be true for people with low motivation.

The prediction that challenge stressors may negatively relate to burnout may not be in conflict with several existing findings regarding the positive relationship between challenge stressors and burnout (Crawford et al., 2010; Jamal & Ahmed, 2012). The

current prediction is built upon the motivation mechanism. As will be discussed later, challenge stressors may also relate to burnout through the energy depleting mechanism (the indirect path of perceived strain). Most likely, without considering the indirect path of perceived strain, challenge stressors as well as hindrance stressors have a similar positive effect on burnout. After considering the indirect path of perceived strain, the two stressors have different effects on burnout.

Thus, the differing effects of challenge and hindrance stressors on in-role performance, job satisfaction and burnout are proposed as follows:

H 1a: Challenge stressors will have a positive relationship with in-role performance.

H 1b: Hindrance stressors will have a negative relationship with in-role performance.

H 2a: Challenge stressors will have a positive relationship with job satisfaction.

H 2b: Hindrance stressors will have a negative relationship with job satisfaction.

H 3a: Challenge stressors will have a negative relationship with burnout.

H 3b: Hindrance stressors will have a positive relationship with burnout.

2.2.2. **The Mediating Role of Perceived Strain**

The existing two-dimensional framework treats strain as an important mediator of the relationship between the two stressors and outcomes (Crawford et al., 2010; LePine et al., 2005; Podsakoff et al., 2007). Both challenge and hindrance stressors have direct and positive effects on strain, although they may have differing indirect effects on outcome

variables such as job performance and job satisfaction through strain. Nevertheless, this framework uses strain and burnout interchangeably.

In contrast, I argue that employees manifest stress in various ways, including perceived strain as short-term reactions and burnout as chronic responses. After differentiating perceived strain from burnout, the integrative model makes some new predictions about the mediating effects of perceived strain. Specifically, perceived strain partially mediates the effects of challenge and hindrance stressors on in-role performance, job satisfaction, and burnout.

It is known that challenge and hindrance stressors influence outcome variables through both the energy-depleting process (Crawford et al., 2010; Podsakaff et al., 2007) and the motivation mechanism (LePine et al., 2005). The energy-depleting mechanism is important in explaining the similar effect of the two stressors on burnout, in-role performance and job satisfaction through perceived strain, as both challenge and hindrance stressors are subject to the same psychological process (i.e., appraisal and coping) (Lazarus & Folkman, 1984) even though they have differing effects on motivation (Crawford et al., 2010; LePine et al., 2005; Podsakoff et al., 2007). Both challenge and hindrance stressors may activate the energy-depletion process which must be dynamic and very complex. Selye (1976) proposed that human body reacts to stressors and fights to restore psychological and physiological homeostasis resulting in disease of adaption through three stages such as alarm stage, resistance stage and exhaustion stage. Schuler (1982) suggested that the energy depletion process includes individual short term response, intermediate response and long term response. In order to meet perceived demands, an employee has to maintain certain level of effort, resulting in the feeling of

discomfort for the employee immediately after job stressors are perceived (Parker & DeCotiis, 1983). This may potentially result in compensatory psychological and physiological costs that gradually drain the employee's energy (Crawford et al., 2010; Parker & DeCotiis, 1983; Podsakoff et al., 2007; Schuler, 1982). Thus, the depletion of energy and increased perceived strain in order to meet demands gradually drives employees to feel drained and used up, a sense overwhelming exhaustion, isolation and failure rather than idealism, connection, and accomplishment (Jamal, 1999, 2008; Maslach, Schaufeli, & Leiter, 2001). This will usually affect in-role performance and job satisfaction negatively (Parker & DeCotiis, 1983; Schuler, 1982; Wallace et al., 2009).

Meanwhile, according to the transactional model of stress (Schuler, 1982) and the organizational model of stress (Parker & DeCotiis, 1983), perceived strain represents short-term psychological states (e.g., anxiety, tension). It happens immediately when the individual encounters job stressors. In-role performance, job satisfaction, and burnout reflect the longer-term consequences in dealing with job stressors (Schuler, 1982). They occur later in time. The former is referred to as the first-level outcome and the latter is referred to as the second-level outcomes (Parker & DeCotiis, 1983). As the first-level outcome, perceived strain mediates the relationships between the two stressors and second-level outcomes such as in-role performance, job satisfaction, and burnout. Nevertheless, it is also possible that perceived strain can be found in the absence of long-term consequences such as complete exhaustion and burnout, if individuals may recover quickly (Maslach, 1998; Parker & DeCotiis, 1983; Schuler, 1982).

Thus, the mediating roles of perceived strain are proposed as follows:

H 4: Challenge and hindrance stressors will indirectly relate to in-role performance through perceived strain. Specifically, challenge and hindrance stressors will positively relate to perceived strain, which in turn negatively relate to in-role performance.

H 5: Challenge and hindrance stressors will indirectly relate to job satisfaction through perceived strain. Specifically, challenge and hindrance stressors positively relate to perceived strain, which in turn negatively relate to job satisfaction.

H 6: Challenge and hindrance stressors will indirectly relate to job burnout through perceived strain. Specifically, challenge and hindrance stressors positively relate to perceived strain, which in turn positively relate to burnout.

2.2.3. **Moderating Effects of Gender, Type-A Behaviour and Work Locus of Control**

Employees in general may share a common understanding of work-related demands or circumstances and appraise certain stressors in a relative consistent manner (Cavanaugh et al., 2000; LePine et al., 2005). Meanwhile, individual characteristics may moderate employees' perception and reaction to challenge and hindrance stressors (Gilboa et al., 2008; Podsakoff et al., 2007; Rodell & Judge, 2009). Many possible moderators are relevant (see Cooper et al., 2001; Beehr & Glazer, 2005). For instance, Rodell and Judge (2009) found that neuroticism moderated the relationship between hindrance stressors and anger. This study focused on gender, Type-A behavior and work

locus of control, because they represent some of the most salient individual difference factors and previous studies have showed that they are critically relevant to job stress research (Beehr & Glazer, 2005). Type-A behaviour and locus of control are among the few individual factors that have been examined as moderators of the relation between stressors and job performance (Jex, 1998). Meanwhile, these factors often play a significant role in both human resource management and stress intervention management (Cooper et al., 2001).

Overall, the conceptualization and operationalization of these individual difference factors can be based on the guidelines of Harrison and Klein (2007). Harrison and Klein suggested that difference constructs, including demographic dissimilarity, can take three different forms: separation, variety, and disparity. In this study, I conceptualized the three individual difference factors as separation. According to these authors, the diversity on individual difference factors reflects "opposing beliefs" (p. 1209). Therefore, employees who are similar in terms of gender, Type A behavior and work locus of control may exhibit the likelihood of similarity in values, beliefs, and perceptions. In other words, employees who are low in terms of gender, Type A behavior and work locus of control are expected to perceive and react to stressors differently, compared to those who are high in terms of these individual factors, respectively.

Gender (male vs. female) is one of the most salient individual difference factors (Jick et al., 1985; Powell, 1999). It has been examined both as a direct predictor of individual outcomes and as a moderator of the chain of stressors and individual outcomes (Beehr & Schuler, 1980; Spielberger & Reheiser, 1995). Nevertheless, empirical findings regarding the direct influence of gender are mixed (Spielberger et al., 1995). Some

researchers found that women report more psychological symptoms (Jick et al., 1985) and males report significantly lower organizational commitment (Bellman et al., 2003), while others (Beehr et al., 1980) concluded that there was little evidence that gender has direct influences on stress-related symptoms.

Empirical evidence about the moderating effects of gender on the relationship between stressors and outcome has been accumulated (Bellman et al., 2003; Jamal, 2005; Shirom et al., 2008). Bellman et al (2003) found that need-for-recognition pressure has a significant and negative effect on job satisfaction and organizational commitment for men, but not for women, and social support reduces the effect of need-for-recognition pressure on organizational satisfaction for women but not for men. Jamal (2005) found that the relationship between high work overload and health problems is stronger for women than for men. But, a recent meta-analysis (Shirom et al., 2008) concluded that gender does not moderate the relationship between stressors (role ambiguity and role conflict) and performance.

The proposed integrative model hypothesizes that gender moderates the effects of challenge and hindrance stressors. The rationale of this hypothesis is twofold. First, females and males may have different perceptions of stressors and outcomes (Quick, Quick, Nelson & Hurrell, 1997). Compared with males, females may perceive lower need-for-recognition pressure, they may be more committed to their organizations and they perceive higher levels of social support (Bellman et al., 2003). Second, women and men differ consistently in the ways they deal with job stressors (Jick et al., 1985). There is some indication that women are more likely to use social support to buffer the harmful effect of stressors (Williams & Cooper, 1998).

These differences have both disadvantages and advantages. Most likely, challenge stressors may appear less exciting and motivating for females than males. Females may have less pressure in dealing with challenge stressors and tend to invest less effort. As a result, they are less likely to take advantage of challenge stressors in achieving high performance. They may also gain less satisfaction from their jobs compared to males. Meanwhile, hindrance stressors may appear less severe for females than for males. Females are more committed to the organization and they feel fewer pressures when they encounter hindrance stressors. Whereas males may feel constrained by hindrance stressors, females will experience less constrained, because females are more willing and more effective in using social support to buffer the negative effects of hindrance stressors. Thus, when facing hindrance stressors, females are more likely to experience less exhaustion and frustration than males, and hindrance stressors may have less effect on females as far as in-role performance and job satisfaction are concerned. The moderating effects of gender are hypothesized:

H 7a: Gender moderates the positive effect of challenge stressors on in-role performance. Their positive effect on in-role performance is stronger for males than for females.

H 7b: Gender moderates the negative effect of hindrance stressors and in-role performance. Their negative effect on in-role performance is stronger for males than for females.

H 8a: Gender moderates the positive effect of challenge stressors on job satisfaction. Their positive effect on job satisfaction is stronger for males than for females.

H 8b: Gender moderates the negative effect of hindrance stressors on job satisfaction. Their negative effect on job satisfaction is stronger for males than for females.

H 9a: Gender moderates the negative effect of challenge stressors on burnout. Their negative effect on burnout is stronger for males than for females.

H 9b: Gender moderates the positive effect of hindrance stressors on burnout. Their positive effect on burnout is stronger for males than for females.

This study focused on Type-A behavior mainly for the theoretical reason. Schuler (1982) included Type A as one of the key individual factors in the integrative transactional process model of stress. Cooper et al. (2001) considered it as one of the most basic individual characteristics relevant to job stress research. Beehr and Glazer (2005) suggested that studies related to Type A behavior are old, but they are still promising for future research. Not surprisingly, it has been examined across different cultures (Jamal, 1990, 1999; 2007b).

Unfortunately, research to date has been inconsistent in demonstrating that Type-A functions as a moderator of stressor-strain relationship (Beehr & Glazer, 2005; Cooper et al., 2001). Some studies (Ganster, Sime & Mayes, 1989; Jamal & Badawi, 1995; Moyle & Parkes, 1999) found significant interactions between Type A behavior and stressors. Jamal and Badawi (1995) found Type-A behavior as an important moderator of the relationship between job stressors and job satisfaction and health problems (e.g., headaches, upset stomach and trouble getting to sleep). In contrast, other studies (Gavin & Axelrod, 1977; Jamal, 1999; Keenan & McBain, 1979) reported no interaction effect.

Jamal (1999) found that Type A behavior did not moderate the relationship between job stressors and job satisfaction.

As to the directions of the moderating effect, some studies (Jamal, 1990, 1999) found that Type As are more seriously affected by job stressors than Type Bs, but other studies supported that Type As are better off in dealing with stressors than Type Bs. Jamal (1990) reported that Type As suffered more from high role ambiguity, role conflict and role overload than Type Bs. In contrast, Newton and Keenan (1990) reported that Type As seemed to experience less psychological strain than Type Bs in dealing with role stressors. Recently, Jamal and Ahmed (2012) reported that Type A behavior moderated the effects of the two stressors on burnout. Type A individuals with high challenge stressors reported less burnout than Type B individuals in similar situations; while Type A individuals with high hindrance stressors also reported more burnout than Type B individuals.

These mixed results can be attributed to several reasons. On the one hand, this can be due to the complexity associated with the qualities of Type As. Type A behavior as a global construct has many characteristics or dimensions; each of its dimensions may predict some outcomes in different directions (Barling & Charbonneau, 1992; Begley, Lee & Czajka, 2000). Taylor, Locke and Gist (1984) considered job involvement, competitiveness, and impatience as the three sub-components of Type A behavior. Spence, Pred and Helmreich (1989) suggested that Type A behavior has two dimensions, namely, achievement strivings and impatience-irritability. Edwards and Baglioni (1991) identified that Type A behavior has two dimensions, namely, time pressure and hard driving/competitive. Nevertheless, it has been argued that switching focus to the

psychological dimensions of Type A behavior might actually serve to fragment the concept, contributing to a recent decline in the academic research of this concept since the early 1990s (Risak, 2000; Wainwright & Calnan, 2002). Some empirical studies showed that the components of Type A behavior only had different degrees of influences on health problems but in a similar direction. Jamal (2007b) reported that the two components (time pressure and hard-driving/competitiveness) were both positively related to health problems, although the effect of time pressure on health problems was greater than the effect of hard-driving/competitiveness.

On the other hand, these mixed results about Type A behavior as a moderator can be due to a lack of a coherent conceptual model regarding its moderating effects. This indicates a need for a clear conceptualization of the moderating role of Type A behavior in the stress process (Beehr & Glazer, 2005; Cooper et al. 2001; Jamal, 2007b). Fortunately, the two-dimensional perspective provided a useful theoretical base in predicting the moderating effect of Type A behavior. Specifically, Type A behavior may moderate the effects of challenge and hindrance stressors through its influences on the motivation mechanism.

The motivation mechanism involves the combination of expectancy and instrumentality (LePine et al., 2005). Challenge stressors are associated with high expectancy and high instrumentality. This can be especially true for Type As. They may view challenge stressors as opportunities and as something consistent with their life styles (Jamal, 1990, 1999). They tend to have high levels of concentration, achievement striving and time urgency (Barling & Charbonneau, 1992). When facing challenge stressors, Type As are more aggressive than Type Bs. They may set a higher goal for themselves (Taylor

et al., 1984) and exert more effort on the job (Jamal, 1985; Lee, Earley & Hanson, 1988). They work in fast pace and are impatient with tardiness. By overcoming challenge stressors, they may derive more gains from high achievement (Taylor et al., 1984). Thus, compared with Type Bs, Type As may benefit more from the positive effects of challenge stressors resulting in high in-role performance and job satisfaction.

Hindrance stressors are associated with low expectancy and perhaps low instrumentality. This can be especially true for Type Bs. Unlike Type As, Type Bs are much relaxed (Jamal, 1990, 1999). When facing hindrance stressors, they may not bother to take actions. In contrast, Type As have a strong desire for personal control over the environment. They may tend to be aggressive and may take action and put some high level effort (Jamal, 1985). Consequently under a similar situation, Type Bs may generate much lower expectancy than Type As may. In the eyes of Type Bs, potential rewards associated with meeting the demand may disappear (Taylor et al., 1984). Thus, compared with Type Bs, Type As may be less affected by hindrance stressors, resulting in moderate rather than low in-role performance and satisfaction.

The prediction that Type As may be less affected by hindrance stressors seems different from the few existing empirical studies (Jamal & Ahmed, 2012). For example, Jamal and Ahmed (2012) found that Type A individuals reported more burnout than Type B individuals when facing high hindrance. There are several reasons for this difference. First, this study focused on how Type A moderates the link between the two stressors and outcomes through the motivation mechanism. In other words, in this study the moderating effects of Type A were examined after controlling for perceived strain. Second, this study added the two stressors into the regression simultaneously. The

interactions between Type A behavior and the two stressors were also added together. This approach is recommended by previous researchers (Boswell et al., 2004; LePine et al., 2005).

Thus, the moderating effects of Type-A behavior are proposed as the follow:

H 10a: The positive effect of challenge stressors on in-role performance will be stronger for Type As than for Type Bs.

H 10b: The negative effect of hindrance stressors on in-role performance will be weaker for Type As than Type Bs.

H 11a: The positive effect of challenge stressors on job satisfaction will be stronger for Type As than for Type Bs.

H 11b: The negative effect of hindrance stressors on job satisfaction will be weaker for Type As than for Type Bs.

H 12a: The negative effect of challenge stressors on burnout will be stronger for Type As than for Type Bs.

H 12b: The positive effect of hindrance stressors on burnout will be weaker for Type As than for Type Bs.

This study also examines the moderating effect of work locus of control. Work locus of control (internal vs. external) refers to an individual's beliefs about his/her control over jobs and the work domain (Spector, 1988). It has been considered as a proximal predictor of job-related individual outcomes (Cooper et al., 2001). The meta-analysis (Wang et al., 2010) showed that work locus of control positively related to desirable individual outcomes such as mental well-being, physical health, job satisfaction,

job involvement and job performance and negatively related to employee well-being such as burnout.

The integrative model (Figure 1) proposes that work locus of control moderates the differential relationships between challenge and hindrance stressors and outcome variables. Internals may take advantage of challenge stressors and buffer the undesirable effects of hindrance stressors. There are several rationales. First, the two stressors may appear differently to internals and externals. Internals, defined as individuals with high work locus of control, have a different worldview compared with externals, defined as individuals with low locus of control (Wang et al., 2010). The former believe that job accomplishments depend on individual efforts, while the latter believe that job performances are due to external factors such as supervisors, luck and chance (Spector, 1988). Internals may perceive challenge stressors as more attractive and hindrance stressors as less threatening, compared to externals.

Second, internals and externals may handle job stressors differently. Internals are more confident in themselves. They believe that individuals have control over their working environment and can accomplish whatever ones determine to accomplish (Moyle et al., 1999; Wang et al., 2010). Consequently, they may invest more effort in dealing with stressors. Internals believe that good performance is rewarded (Cooper et al., 2001; Spector, 1988). Most likely, they are motivated in dealing with diverse stressors. As a result, internals have the potential to maximize the positive effects of challenge stressors and minimize the negative effects of hindrance stressors.

The moderating effects of work locus of control are proposed as follow:

H 13a: The positive effect of challenge stressor on in-role performance will be stronger for internals than for externals.

H 13b: The negative effect of hindrance stressor on in-role performance will be weaker for internals than for externals.

H 14a: The positive effect of challenge stressor on job satisfaction will be stronger for internals than for externals.

H 14b: The negative effect of hindrance stressor on job satisfaction will be weaker for internals than for externals.

H 15a: The negative effect of challenge stressors on burnout will be stronger for internals than for externals.

H 15b: The positive effect of hindrance stressors on burnout will be weaker for internals than for externals.

CHAPTER THREE

3. METHOD

3.1. Data Collection and Sample

Research on the two-dimensional perspective of stressors has applied different samples. Cavanaugh et al. (2000) used a sample of executives in different organizations. Boswell et al. (2004) used a sample of non-executives in one organization. Wallace et al. (2009) had a sample within a large organization. Rodell et al. (2009) collected online data with participants from a broad range of occupations. To broaden coverage and representativeness, I conducted my survey across a broad spectrum of occupations.

I collected data using a panel from Qualtrics Labs (see www.Qualtrics.com). The panel provided by Qualtrics Labs is based on individuals in the United Stated who have registered with Clearvoice, a partner company, to take part in surveys administered over the Internet. Participants who work in different occupations and organizations are invited to take part in a designed survey when they meet the requirements of the study. Cash incentives were provided to motivate participations (about 3 dollars each). Several published studies have used data collected from different online sources (e.g., Piccolo & Colquitt, 2006; Rodell & Judge, 2009).

I first designed my survey questionnaire. It was tested through student samples; those who were holding part time and full time jobs in one of largest universities in Canada. I then submitted the survey questionnaire to Qualtrics Labs. They distributed my survey and I monitored the data collection process. I restricted my survey (in English) to full time employees. Approximately 649 full time employees were sent the survey and 524 complete responses were received. Based on standardized scores and kurtosis

(Tabachnick & Fidell, 2001), six cases were identified as potential outliers and dropped. The resulting sample included 518 respondents (56% female and 44% male), which indicates an 80% response rate. 26% participants were between 25 to 34 years' old, 23% participants were between 35 to 44 years' old, 25% participants were between 45 to 54 years' old, and 21% participants were between 55 to 64 years' old. The mean tenure was 8 years.

Participants in this study were full time employees throughout the United States, such as California, Oregon, Michigan, New York, and Pennsylvania. These participants have diverse occupations, ranging from management, professional and related occupations (36%), service occupations (11%), sales and office occupations (11%), government occupations (7%), production and transportation (4%), construction, extraction, and maintenance (4%), and others (26%). Annual salary ranged from under $10k to over $100k. In terms of job title, the sample consisted of employees (62%), supervisors (12%), managers (19%), and executives (6%). Approximately 82% were white/Caucasian, 7% African American, 4% Hispanic and 4% Asian. Approximately 25% respondents were single, 56% married, and 19% separated or divorced. In terms of education, the sample consisted of High School (27%), 2-year College Degree (25%), 4-year College Degree (30%), Masters Degree (14%), and Doctoral Degree and Professional Degree (4%).

According to the Current Population Survey 2010 conducted by both the Bureau of Labor Statistics and the U. S. Census Bureau (www.census.gov/cps), this sample matched fairly well with the general characteristics of full time employees in United States in term of age (about 42 years old), education level (some colleague or associate

degree), salary range (from under $10k to over $100k), the percentage of white/Caucasian (82%) and the percentage of people with management, professional and related occupations (40%). However, this sample has a relatively longer tenure.

3.2. **Measures**

Type-A behavior pattern was measured by the Framingham scale (Haynes et al., 1980). This scale includes 10 items with varied response options (Appendix 1). A higher score on this scale designates Type-A behavior and lower score designates Type-B behavior. This scale has been successfully applied in previous studies and has shown reasonable reliability (Jamal et al., 2001; Jamal, 2007b). In this study, its reliability (Cronbach's alpha) was .76.

Work locus of control was measured by the short version of Spector's (1988) measure. As reported in Appendix 2, this scale has eight items such as "People who perform their jobs well generally get rewarded" and "If you know what you want out of a job, you can find a job that gives it to you." These measures have Cronbach's alpha of .77.

Challenge and hindrance stressors were measured by the instrument developed by Cavanaugh et al. (2000). As reported in Appendix 3, this instrument consists of 11 items. There are six challenge-related items such as "The number of projects and assignments I have" and five hindrance-related items such as "The amount of red tape I need to go through to get my job done." Participants use a 1-5 Likert scale to signify the extent to which each work-related item causes stress for them with 1 as "no stress" and 5 as "a great deal of stress." The reliability (Cronbach's alpha) for challenge and hindrance stressors were .94 and .81, respectively.

Perceived strain was assessed with the 13-item scale developed by Parker and DeCotiis (1983). As reported in Appendix 4, this is a Likert-type scale with 1 to 5 response options, with 1 as “strong agreement” and 5 as “strong disagreement.” This scale has good psychometric properties (e.g., Baba et al., 1998). Its reliability (Cronbach's alpha) was .93.

In-role performance was measured by the four-item scale (Van Dyne et al., 1998). As reported in Appendix 5, these items are “I fulfill the responsibilities specified in my job description,” “I perform the tasks that are expected as part of the job,” “I meet performance expectations” and “I adequately complete responsibilities.” Its Cronbach's alphas was 0.89.

Job satisfaction can be measured as either facet satisfaction or overall satisfaction (Weiss, 2002). Like other studies using the two-dimensional perspective of job stressors (e.g., Webster et al., 2010), the purpose of this study is to explore the possibility that relationships with stressors should vary based on the nature of the stressors. I measured overall job satisfaction by the three-item scale (Edwards & Rothbard, 1999; Webster et al., 2010) which has been considered as a construct-valid measure of job satisfaction (Bowling & Hammond, 2008). As indicated in Appendix 6, these items are “In general, I am satisfied with my job,” “All in all, the job I have is great” and “My job is very enjoyable.” They were scored on a 7-point scale. Its reliability (Cronbach's alpha) was .95.

Burnout was measured by the Maslach Burnout Inventory-General Survey (MBI-GS, Maslach & Jackson, 1981; Schaufeli, Leiter, Maslach, & Jackson, 1996). As indicated in Appendix 7, it consists of 16 items that measure the three core components,

including emotional exhaustion, cynicism and inefficacy. The reliability (Cronbach's alpha) for burnout was .89.

Control variables. Individual factors such as age, marital status, education and tenure have traditionally found as relevant to burnout and perceived strain (Gilboa, Shirom, Fried, & Cooper, 2008; Jamal, 1999, 2008). They are used as control variables in this study to rule out alternative explanations. Marital status is coded as 1=Single, 2=Married, 3=Separated, and 4=Divorced. Education is coded as 1=High school, 2=2-year college degree, 3=4-year college degree, 5=Master degree, 6=Doctoral degree, and 7=Professional degree). In this study, gender was examined as a moderator. It was not used as a control variable. Meanwhile, additional analysis indicates that when gender was included as another control variable, there was no change in major findings reported in this study.

CHAPTER FOUR

4. RESULTS

4.1. Hypothesis Summary

In summary, the following fifteen hypotheses are tested in the present study:

H 1a: Challenge stressors will have a positive relationship with in-role performance.

H 1b: Hindrance stressors will have a negative relationship with in-role performance.

H 2a: Challenge stressors will have a positive relationship with job satisfaction.

H 2b: Hindrance stressors will have a negative relationship with job satisfaction.

H 3a: Challenge stressors will have a negative relationship with burnout.

H 3b: Hindrance stressors will have a positive relationship with burnout.

H 4: Challenge and hindrance stressors will indirectly relate to in-role performance through perceived strain. Specifically, challenge and hindrance stressors will positively relate to perceived strain, which in turn negatively relate to in-role performance.

H 5: Challenge and hindrance stressors will indirectly relate to job satisfaction through perceived strain. Specifically, challenge and hindrance stressors positively relate to perceived strain, which in turn negatively relate to job satisfaction.

H 6: Challenge and hindrance stressors will indirectly relate to job burnout through perceived strain. Specifically, challenge and hindrance stressors positively relate to perceived strain, which in turn positively relate to burnout.

H 7a: Gender moderates the positive effect of challenge stressors on in-role performance. Their positive effect on in-role performance is stronger for males than for females.

H 7b: Gender moderates the negative effect of hindrance stressors and in-role performance. Their negative effect on in-role performance is stronger for males than for females.

H 8a: Gender moderates the positive effect of challenge stressors on job satisfaction. Their positive effect on job satisfaction is stronger for males than for females.

H 8b: Gender moderates the negative effect of hindrance stressors on job satisfaction. Their negative effect on job satisfaction is stronger for males than for females.

H 9a: Gender moderates the negative effect of challenge stressors on burnout. Their negative effect on burnout is stronger for males than for females.

H 9b: Gender moderates the positive effect of hindrance stressors on burnout. Their positive effect on burnout is stronger for males than for females.

H 10a: The positive effect of challenge stressors on in-role performance will be stronger for Type As than for Type Bs.

H 10b: The negative effect of hindrance stressors on in-role performance will be weaker for Type As than Type Bs.

H 11a: The positive effect of challenge stressors on job satisfaction will be stronger for Type As than for Type Bs.

H 11b: The negative effect of hindrance stressors on job satisfaction will be weaker for Type As than for Type Bs.

H 12a: The negative effect of challenge stressors on burnout will be stronger for Type As than for Type Bs.

H 12b: The positive effect of hindrance stressors on burnout will be weaker for Type As than for Type Bs.

H 13a: The positive effect of challenge stressors on in-role performance will be stronger for internals than for externals.

H 13b: The negative effect of hindrance stressors on in-role performance will be weaker for internals than for externals.

H 14a: The positive effect of challenge stressors on job satisfaction will be stronger for internals than for externals.

H 14b: The negative effect of hindrance stressors on job satisfaction will be weaker for internals than for externals.

H 15a: The negative effect of challenge stressors on burnout will be stronger for internals than for externals.

H 15b: The positive effect of hindrance stressors on burnout is weaker for internals than for externals.

4.2. Descriptive Statistics, Bivariate Correlations and Factor Structure

The means, standard deviations, and zero-order correlations among the variables are presented in Table 1. Reliabilities (Cronbach's alpha) varied from .76 (Type-A behavior) to .95 (job satisfaction). Overall, reliabilities were considered to be good for survey-type research.

Insert Table 1 about here

The two stressors were correlated at .53. Hindrance stressors were negatively correlated with in-role performance (-.20) and job satisfaction (-.33). Interestingly, challenge stressors were negatively correlated with in-role performance (-.02, *ns*) and job satisfaction (-.07, *ns*). These correlations are consistent with previous studies (Boswell et al., 2004; Cavanaugh et al., 2000; Webster et al., 2010). Perceived strain is highly correlated with burnout (.71). This is similar to previous studies (Jamal, 1999; Janssen, 2004; Xie & Johns, 1995). Challenge and hindrance stressors were correlated .62 and .61 with perceived strain, respectively. Challenge and hindrance stressors were correlated .42 and .66 with burnout, respectively, while previous studies have reported different correlations such as .40 and .58 by LePine et al. (2005), .40 and .56 by Podsakoff et al. (2007) and .16 and .30 by Crawford et al. (2010). However, those meta-analyses included studies that did not actually measure challenge and hindrance stressors. In those meta-analyses, burnout was treated as the combination of perceived strain, burnout and other stress.

Type-A behavior was positively correlated with perceived strain (.70) and burnout (.46) and negatively with job satisfaction (-.11). It was negatively correlated with in-role

performance (-.07, *ns*). These correlations are similar to previous studies (Jamal, 1999, 2007). Work locus of control was negatively correlated with perceived strain (-.35) and burnout (-.43) and positively correlated with in-role performance (.21) and job satisfaction (.25). These are consistent with the existing literature (Wang et al., 2010).

AMOS confirmatory factor analysis (*CFA*) was conducted to confirm the factor structure of related constructs including perceived strain, burnout, and challenge and hindrance stressors. According to Williams, Vandenberg and Edwards (2009), the comparative fit index (*CFI*), the standardized root mean residual (*SRMR*), and the root mean square error approximation (*RMSEA*) are better at assessing model fit. A model can be considered favorably if the *CFI* value exceeds 0.95, the *SRMR* is less than .10, and/or the *RMSEA* is below 0.08.

Perceived strain. The *CFA* data on perceived strain show that the two factor structure ($\chi^2 = 497$, $df = 64$, $CFI = .90$, $SRMR = .06$, $RMSEA = .11$) fit data significantly better ($\Delta\chi^2\,[1] = 180$, $p < .01$) than the one factor structure ($\chi^2 = 677$, $df = 65$, $CFI = .85$, $SRMR = .06$, $RMSEA = .14$). The fit index could be improved, when the error covariance between two of the two items (i.e., "Working here leaves little time for other activities" and "Working here makes it hard to spend enough time with my family," .46) was allowed to be estimated, since the two items are similar. This new two-factor structure fit the data well ($\chi^2 = 408$, $df = 63$, $CFI = .92$, $SRMR = .06$, $RMSEA = .10$). The two factors are highly correlated (.85). The factor loadings on feelings of time stress ranged from .68 to .83. The factor loadings on feelings of anxiety ranged from .62 to .87; except that the item "I feel guilty when I take time off from job." has low factor loading as .42. These results are similar to the results reported by Parker and DeCotiis (1983).

Burnout. The *CFA* data on burnout show that the three factor structure (χ^2 = 574, *df* = 101, *CFI* = .90, *SRMR* = .074, *RMSEA* = .095) fit data significantly better ($\Delta\chi^2$ [2] = 961, $p < .01$) than the one factor structure (χ^2 = 1535, *df* = 103, *CFI* = .68, *SRMR* = .14, *RMSEA* = .16). The estimated factor loadings ranged from .81 to .86 for exhaustion. The estimated factor loadings for cynicism were .38, .61, .66, .92, and .93. The estimated factor loadings ranged from .46 to .69 for lack of professional efficacy. Emotional exhaustion was correlated .68 with cynicism, and .21 with lack of professional efficacy. Cynicism was correlated .37 with lack of professional efficacy. These findings are similar to some previous studies (Schutte, Toppinen, Kalimo, & Schaufeli, 2000). According to Schutte et al. (2000), fit index for the three-factor structure can be improved by allowing the error covariance between two of the cynicism items (i.e., "become more cynical" and "doubt the significance of my work") to be estimated. Following this advice, it is found that two of the cynicism items are related at .53. This new three-factor structure fit the data better (χ^2 = 419, *df* = 100, *CFI* = .93, *SRMR* = .072, *RMSEA* = .079).

The two stressors. Several steps were taken to evaluate the construct validity of challenge and hindrance stressors: (a) The two-factor structure of the stressor items was tested using AMOS confirmatory factor analysis; (b) internal consistency was evaluated by Cronbach' alpha; (c) the average variance extracted (*AVE*) indices (Fornell & Lacker, 1981) for challenge and hindrance stressors were calculated; (d) different nested models were tested using χ^2 difference tests (Bentler & Bonett, 1980) to show that both stressors are distinct from other constructs such as perceived strain and burnout, although they were related; and (e) the pattern of relationships between the two stressors and perceived strain and burnout were explored.

The confirmatory factor analysis (*CFA*) did not support a one-factor model (χ^2 = 800, *df* = 44, *CFI* = .80, *SRMR* = .11, *RMSEA* = .18). Williams et al. (2009) suggested that a model can be considered favorably if *CFI* exceeds 0.95, *SRMR* is less than .10, and/or *RMSEA* is below .08. Cavanaugh et al.'s (2000) two-factor structure was not supported either (χ^2 = 382, *df* = 43, *CFI* = .91, *SRMR* = .05, *RMSEA* = .12). However, I followed the suggestion of Boswell et al (2004) and allowed the error covariance between two of the challenge stressors items (i.e., "scope of responsibility" and "amount of responsibility," .60) to be estimated, since the two items are similar. This new two-factor structure fit the data well (χ^2 = 209, *df* = 42, *CFI* = .96, *SRMR* = .05, *RMSEA* = .09). A one-factor model with this error covariance estimated was tested too (χ^2 = 638, *df* = 43, *CFI* = .85, *SRMR* = .11, *RMSEA* = .16). A χ^2 difference test show that the two-factor model fits the data significantly better ($\Delta\chi^2$ [1] = 429, $p < .01$) than the one-factor structure. The reliability (Cronbach's alpha) for challenge and hindrance stressors were .94 and .81, respectively. This is similar to previous findings (Cavanaugh et al., 2000; Boswell et al., 2004).

The factor loadings on challenge stressors ranged from .76 to .90. The factor loadings on hindrance stressors ranged from .56 to .81. These results are similar to Cavanaugh et al. (2000) which found that the factor loadings on challenge stressors ranged from .70 to .87 and that the factor loadings on hindrance stressors ranged from .60 to .69. Accordingly, the average variance extracted (*AVE*) indices for challenge and hindrance stressors were calculated as .72 and .47, respectively. Fornell and Lacker (1981) suggested that ideally *AVE*s should be greater than 0.5. Thus, the *AVE* for challenge stressors is much greater than 0.5, while the *AVE* for hindrance stressors is close to .05.

The distinctiveness of the four concerps. I conducted *CFA*s to examine the distinctiveness of the four constructs: Challenge stressors, hindrance stressors, perceived strain and burnout. Using χ^2 difference tests, I compared the fit of four nested models, ranging from the hypothesized four-factor model to a single-factor model. The hypothesized four-factor model treated the four factors as distinct. In order to test the distinctiveness of the two stressors from perceived strain and burnout, I compared the four-factor model with a three-factor model that combined challenge and hindrance stressors. Because both stressors were highly correlated with perceived strain and burnout, I next created a two-factor model which comprised the combination of challenge and hindrance stressors and the combination of perceived strain and burnout. Finally, I created a one-factor model that incorporated all four constructs.

The χ^2 difference was used to test demonstrated better fit with each more differentiated model (Williams et al., 2009). As reported in Table 2, the four-factor model fit data significantly better than the three-factor model, ($\Delta\chi^2$ [3] = 552, $p < .01$); the three-factor model fit data significantly better than the two-factor model, ($\Delta\chi^2$ [2] = 476, $p < .01$); and the two-factor model fit data significantly better than the one-factor model, ($\Delta\chi^2$ [1] = 873, $p < .01$). This supports that the two stressors are distinct from perceived strain and burnout. Nevertheless, even the four-factor model did not have acceptable fit indices such as comparative fit index (*CFI*). Perhaps this is because the four-factor model does not make it explicit that burnout itself has three sub dimensions (Maslach & Leiter, 2008).

Insert Table 2 about here

Overall, the two sets of *CFA*s (one for the challenge and hindrance stressors as two-factor, and the other for the combination of challenge and hindrance stressors as one factor), the reliability (Cronbach's alpha) for challenge and hindrance stressors, the *AVE*s for challenge and hindrance stressors, and the χ^2 difference tests for the four-factor model (challenge stressors, hindrance stressors, perceived strain and burnout as four separate factors), along with previous evidence (Cavanaugh et al., 2000; Boswell et al., 2004), together provide evidence of the discriminant validity of the two stressors.

4.3. Analysis Approach

Main effect. Multiple linear regression analyses were used to test all hypotheses regarding the main effects of the two dimensional stressors. A total of three regression models were tested with burnout, in-role performance, and job satisfaction as dependent variables, respectively. On the first step (Step 1), control variables were entered, including age, marriage, education, and tenure (in years). Then, on the second step (Step 2), challenge stressors and hindrance stressors were entered together as two independent variables. This is consistent with the suggestion that challenge and hindrance stressors should be added simultaneously (Boswell et al., 2004; Wallace et al., 2009).

Mediating effect. To test mediating effect, I followed the procedures recommended by Boswell et al. (2004) and LePine et al. (2005). This is consistent with four steps in establishing mediation discussed by Baron and Kenny (1986).

Model 1 (the main effects) shows that the two stressors are correlated with the outcome, by estimating and testing path c_1 and c_2 in the Figure 2. This step establishes that there is an effect to be mediated.

Insert Figure 2 about here

Model 2 shows that the two stressors are correlated with the mediator (perceived strain in this study), by estimating path a_1 and a_2 (Figure 3). In this model, perceived strain is the outcome variable in the regression equation, and challenge and hindrance stressors as the two predictors. This step essentially involves treating the mediator as if it is an outcome variable.

Insert Figure 3 about here

Model 3 involves two steps. Step 1 is to test whether perceived strain affects the outcome variable. Perceived strain is used as the sole predictor of the outcome variable (without adding the two stressors). Step 2 (the full model) adds challenge and hindrance stressors and perceived strain as predictors (estimate and test path *b*, as indicated in Figure 3).

To establish that perceived strain completely mediates the two stressors and outcome relationship, the remaining direct effects of the two stressors on the outcome controlling for perceived (path c_1' and c_2') should be zero.

Significance testing of the mediating effects involves Sobel test (1982). It requires the standard error of *a* or s_a (which equals a/t_a where t_a is the *t* test of coefficient a) and the standard error of *b* or s_b. *a* and *b* are unstandardized regression coefficients. The Sobel test is conducted for each stressor. For challenge stressors, the Sobel test equation is indicated as the follow:

$$z\text{-value} = a_1 * b / \text{SQRT}(b^2 * s_{a1}^2 + a_1^2 * s_b^2) \quad \ldots\ldots(1)$$

For hindrance stressor, the Sobel test equation is indicated as the follow:

z-value = $a_2 * b / \text{SQRT}(b^2 * s_{a2}^2 + a_2^2 * s_b^2)$ ……(2)

Moderating effect. Moderated regression analyses were conducted to test the hypotheses related to the moderating effects of gender, Type-A behaviour and work locus of control. Following Boswell et al. (2004) and Wallace et al. (2009), I added challenge and hindrance stressors simultaneously and took the mediating effect of perceived strain into consideration.

Step 1: Control variables, challenge and hindrance stressors, and perceived strain were entered into the equation.

Step 2: The proposed moderators of this study, namely, gender, Type-A behaviour and work locus of control, were entered, respectively.

Step 3: The cross products of each of the two stressors and the moderator were added to the equation (e.g. challenge stressor x gender + hindrance stressor x gender). A significant interaction term indicates the presence of an interaction effect.

The following standardized regression equation contains first order terms of challenge and hindrance stressors and perceived strain, the moderator *Z*, and the linear interaction. For all significant interactions, results will be plotted over the range of observed variables to show the directions of the interaction. Simple slope test will be conducted for significant interactions.

$Y = b_1$ C-stressor + b_2 H-stressor + b_3 P-strain + b_4 Z + b_5 Z*C-stressor + b_6 Z*H-stressor ……..(3)

4.3.1 Main Effects

4.3.2.1 In-role performance. Hypotheses 1a and 1b indicated that challenge stressors positively relate to in-role performance and hindrance stressors negatively relate to in-role performance, respectively. To test these hypotheses, hierarchical regression analysis was conducted with in-role performance as the dependent variable and the two stressors as the two independent variables.

In Step 1, demographic variables were entered as control variables. They included age, marital status, education, and tenure. Then, in Step 2, challenge and hindrance stressors were entered together (Wallace et al., 2009).

As reported in Table 3, demographical variables (Step 1) explained 4% of the variance in in-role performance. In Step 2, the two stressors had significant but differing effects. The relationship between challenge stressor and in-role performance was positive (β =.11, p <.05) and the relationship between hindrance stressor and in-role performance was negative (β = -.24, p <.001). Thus, Hypotheses 1a and 1b were supported by the data in the present study.

Insert Table 3 about here

4.3.2.2 Job satisfaction. Hypotheses 2a and 2b indicated that challenge stressors positively relate to job satisfaction and hindrance stressors negatively relate to job satisfaction. To test these hypotheses, hierarchical regression analysis was conducted with job satisfaction as the dependent variable and the two stressors as the two independent variables.

As reported in Table 4, in Step 1, demographical variables explained 2% of the variance in job satisfaction. In Step 2, the two stressors had significant and differing effects. The relationship between challenge stressor and job satisfaction was positive (β =.13, p <.05) and the relationship between hindrance stressor and job satisfaction was negative (β = -.41, p <.001). Thus, hypotheses 2a and 2b were supported.

Insert Table 4 about here

4.3.2.3. Burnout. Hypotheses 3a and 3b suggested that challenge stressors negatively relate to burnout and hindrance stressors positively relate to burnout. To test these hypotheses, hierarchical regression analysis was conducted with burnout as the dependent variable and the two stressors as the two independent variables.

As reported in Table 5, in Step 1 demographical variables explained 5% of the variance in job burnout. In Step 2, the two stressors both significantly and positively related to job burnout. The relationship between challenge stressors and burnout was positive (β = .11, p <.05), and the relationship between hindrance stressors and burnout was positive (β = .60, p <.001). The relationship between challenge stressor and burnout is the opposite of the prediction. This supports hypothesis 3b but not Hypothesis 3a.

Insert Table 5 about here

4.3.2 Mediating Effects

4.3.3.1. Perceived Strain on in-role performance. Hypothesis 4 predicted that challenge and hindrance stressors have negative influences on in-role performance

through perceived strain. To test the mediating effects, the procedure recommended by Boswell et al. (2004) and LePine et al. (2005) were applied. Analyses were summarized in Table 6.

Insert Table 6 about here

Results of regression model 1 show that challenge stressors were positively related to in-role performance and hindrance stressors were negatively related to in-role performance. Together they explained 8% of the variance in in-role performance.

Results of model 2 indicated that challenge and hindrance stressors both were positively related to perceived strain (βs = .42 and .37, respectively).

Results of model 3 (step 1) indicated that perceived stain was negatively related to in-role performance (β = -.18, p <.01). It alone explained 7% of the variance. Step 2 (the full model) illustrated that the addition of the two stressors explained significantly additional variance, ΔR^2 = .03, $F(2, 510) = 8.660$, $p < .001$. However, the two stressors explained 62% less variance in, in-role performance than they did when perceived strain is not included in the same model (variance explained goes from 8% in Model 1 to 3% in Model 3, the full model). This indicated preliminary support for the prediction that perceived strain at least partially explained the relationship between the two stressors and in-role performance.

The indirect effects were calculated using the product of the related beta weights (from models 2 and 3, the full model). The statistical significance of these indirect effects was evaluated by Sobel's (1982) test. The unstandardized regression coefficient between challenge stressors and perceived strain was .42, its standard error was .037 and $\beta_{\text{challenge}}$

$_{\text{stressors to strain}}$ was .42. The regression coefficient between perceived strain and in-role performance was (-.16), its standard error was .044, and $\beta_{\textit{strain to in-role performance}}$ was (-.22). In supporting Hypothesis 4, Sobel's (1982) test statistic (-3.46) for the indirect effect (-.09) of challenge stressors on in-role performance through perceived strain is significant (p <.001) and negative.

$$\beta_{\text{challenge stressors to strain}} \text{ x } \beta_{\textit{strain to in-role performance}} = .42 \text{ x } (-.22) = -.09$$

The unstandardized regression coefficient between hindrance stressors and perceived strain was .37, its standard error was .037 and $\beta_{\text{hindrance stressors to strain}}$ was .37. Sobel's (1982) test statistic (-3.42) for the indirect effect (-.08) of hindrance on in-role performance through perceived strain is significant (p <.001) and negative.

$$\beta_{\text{hindrance stressors to strain}} \text{ x } \beta_{\textit{strain to in-role performance}} = .37 \text{ x } (-.22) = -.08$$

Since the indirect effects were significant, this supported Hypothesis 4. But, the direct relationships between the two stressors and in-role performance remained significant after taking perceived strain into consideration (βs = .20 and -.16, respectively). Thus, perceived strain did not completely mediate the relationship between the two stressors and in-role performance.

Interestingly, a comparison between Model 1 and Model 3 (the full model) indicated that regression weights for the two stressors changed in different directions after adding perceived strain. The relationship between challenge stressors and in-role

performance increased in magnitude from .11 to .20, and the relationship between hindrance stressors and in-role performance decreased in magnitude from (-.24) to (-.16).

4.3.3.2. Perceived Strain on job satisfaction. A similar procedure was followed in order to test Hypothesis 5 which predicted that challenge and hindrance stressors have negative and indirect effects on job satisfaction through perceived strain. Results are summarized in Table 7.

Insert Table 7 about here

Results of regression model 1 show that challenge stressors positively related to job satisfaction and hindrance stressors negatively related to job satisfaction. Together they explained 15% of the variance in job satisfaction.

Results of model 2 indicated that challenge and hindrance stressors both positively related to perceived strain (βs = .42 and .37, respectively).

Results of model 3 (step 1) indicated that perceived stain negatively related to job satisfaction (β = -.29, p <.05). It alone explained 10% of the variance in job satisfaction. Step 2 (the full model) illustrated that the addition of the two stressors explained significantly additional variance, ΔR^2 = .08, $F(2, 510) = 23.488$, $p < .01$. It appears that the two stressors explained 49% less variance in job satisfaction than they did when perceived strain was not included in the same model (variance explained goes from 15% in Model 1 to 8% in Model 3, the full model). This indicated preliminary support for the prediction that perceived strain at least partially explains the relationship between the two stressors and job satisfaction.

The indirect effects were calculated using the product of the related beta weights (from models 2 and 3, the full model). The statistical significance of the indirect effects was evaluated using Sobel's (1982) test. The regression coefficient between perceived strain and job satisfaction was (-.42), its standard error was .096, and $\beta_{\textit{strain to satisfaction}}$ was (-.25). In supporting Hypothesis 5, Sobel's (1982) test statistic (-4.08) for the indirect effect (-.11) of challenge stressors on job satisfaction through perceived strain is significant ($p <$. 01) and negative.

$$\beta_{\text{challenge stressors to strain}} \text{ x } \beta_{\textit{strain to satisfaction}} = .42 \text{ x } (-.25) = -.11$$

In supporting Hypothesis 5, Sobel's (1982) test statistic (-4.01) for the indirect effect (-.09) of hindrance stressors on job satisfaction through perceived strain is also significant ($p <$. 01) and negative.

$$\beta_{\text{hindrance stressors to strain}} \text{ x } \beta_{\textit{strain to satisfaction}} = .37 \text{ x } (-.25) = -.09$$

The indirect effects were significant; this supported Hypothesis 5. However, the direct relationships between the two stressors and job satisfaction remained significant after adding perceived strain (βs = .24 and -.32, respectively). Thus, perceived strain did not completely mediate the relationship between the two stressors and job satisfaction.

A comparison between Model 1 and Model 3 (the full model) indicated that regression weights for the two stressors changed in different directions after adding perceived strain. The relationship between challenge stressor and job satisfaction

increased in magnitude from .13 to .24, and the relationship between hindrance stressor and job satisfaction decreased in magnitude from (-.41) to (-.32).

4.3.3.3. Perceived Strain on burnout. I also conducted related analyses to test Hypothesis 6 which predicted that challenge and hindrance stressors have positive and indirect influences on burnout through perceived strain. Analyses were summarized in Table 8.

Insert Table 8 about here

Results of regression model 1 show that challenge stressors positively related to burnout and hindrance stressors negatively related to burnout. Together they explained 47% of the variance in burnout.

Results of model 2 indicated that challenge and hindrance stressors both positively related to perceived strain (βs = .42 and .37, respectively).

Results of model 3 (step 1) indicated that perceived stain positively related to burnout (β = .69, p <.001). It alone explained 52% of the variance in burnout. Step 2 (the full model) illustrated that the addition of the two stressors explained significantly additional variance, ΔR^2 = .10, $F(1, 510)$ = 61.389, p < .01. It appears that the two stressors explained 80% less variance in burnout than they did when perceived strain is not included in the same model (variance explained goes from 47% in Model 1 to 10% in Model 3, the full model). This indicated preliminary support for the prediction that perceived strain at least partially explains the relationship between the two stressors and burnout.

The indirect effects were calculated using the product of the related beta weights (from models 2 and 3, the full model). The statistical significance of these indirect effects were evaluated using Sobel's (1982) test. The unstandardized regression coefficient between perceived strain and burnout was .41, its standard error was .031, and $\beta_{\textit{strain to in-role performance}}$ was .52. In supporting Hypothesis 6, Sobel's (1982) test statistic (8.61) for the indirect effects of challenge stressors on burnout through perceived strain is significant (p <.01) and positive.

$$\beta_{\text{challenge stressors to strain}} \text{ x } \beta_{\textit{strain to burnout}} = .42 \text{ X } .52 = .22$$

In supporting Hypothesis 6, Sobel's (1982) test statistic (7.78) for the indirect effect of hindrance stressors on burnout through perceived strain is significant (p <.01) and positive.

$$\beta_{\text{hindrance stressors to strain}} \text{ x } \beta_{\textit{strain to burnout}} = .37 \text{ x } .52 = .20$$

The indirect effects were significant; Hypothesis 6 was supported. However, the direct relationships between the two types of stressors and burnout remained significant after adding perceived strain (βs = -.11 and .40, respectively). Thus, perceived strain did not completely mediate the relationship between the two stressors and burnout.

Noticeably, a comparison between step 2 and step 3 (the full model) indicated that regression weights for the two stressors changed in different directions after adding perceived strain. The relationship between challenge stressors and burnout had a different

direction from .11 to (-.11), and the relationship between hindrance stressors and burnout decreased in magnitude from (.60) to (.40).

The above analyses provided some evidence about the mediating effects of perceived strain. Meanwhile, there were some noteworthy observations. In this study, after adding perceived strain as the mediator, the effects of challenge stressors on in-role performance increased from .11 to .20 while the effects of hindrance stressors decreased from (-.24) to (-.16). When job satisfaction was used as outcome variables, after adding perceived strain as the mediator, the effects of challenge stressors on job satisfaction increased from .13 to .24 while the effects of hindrance stressors decreased from (-.41) to (-.32). When burnout was used as the outcome variable, after adding perceived strain as the mediator, the effects of challenge stressors decreased from .11 to (-.11), while the effect of hindrance stressor decreased from .60 to .40.

According to Baron and Kenny (1986), one of the criteria for a partial mediation is that when the predictor and the mediator are used simultaneously to predict the outcome variable in the regression, the effects of the predictor on the outcome should reduce. Interestingly, in this study the direct relationship between challenge stressors and the outcome variables changes in direction, while the effects of hindrance stressors were reduced. This phenomenon may appear to be inconsistent mediation observed by MacKinnon, Fairchild, and Fritz (2007). In order to clarify this issue, I conducted additional analysis (path analysis and structure equation modeling) to confirm the mediating effects of perceived strain (to be discussed).

4.3.3 Moderating Effects after Controlling Perceived Strain

4.3.3.1. Gender

Gender and in-role performance. Hypotheses 7a and 7b asserted that gender moderates the relationships between challenge and hindrance stressors and in-role performance. The positive relationship between challenge stressors and in-role performance is stronger for males than for females (Hypothesis 7a). The negative relationship between hindrance stressors and in-role performance is stronger for males than for females (Hypotheses 7b).

I used moderated regression procedures to test the proposed moderating effect of gender. In-role performance was used as the dependent variable. In Step 1, the two stressors and perceived strain were added. In Step 2, gender was added. Male was coded as 0 and female as 1. In Step 3, the interactions between gender and challenge and hindrance stressors were entered simultaneously. These interactions were examined by their significance and the change in R^2 attributable to the interaction terms added in the final step. The results were reported in Table 9.

Insert Table 9 about here

As reported in Table 9, gender explained significant additional variance in in-role performance, $\Delta R^2 = .03$, $F(1, 509) = 15.620$, $p < .01$, after controlling the two stressors and perceived strain. The coefficient of gender was positive. This means that females tended to report higher in-role performance than males. Although the two interaction terms explained an additional 1% variance in in-role performance, $F(2, 507) = 2.508$, $p < .10$, ($p = .082$), only the interaction between gender and challenge stressors was

significant (β= -.55, $p < .05$) and the interaction between gender and hindrance stressors was not (β= .38, *ns*). Thus, Hypothesis 7a was supported, but Hypothesis 7b was not.

The interaction graph produced to examine the direction of the interaction is presented in Figure 2. Specifically, the positive relationship between challenge stressors and in-role performance is much stronger for males than that for females. Simple slope tests shows that both slopes for males and females are significant at $p < .01$ level, where variance of coefficient of challenge stressors is .015, variance of coefficient of interaction is .006, and covariance of coefficients of challenge stressors and the interaction term is (-.009).

Insert Figure 4 about here

Gender and job satisfaction. Hypotheses 8a and 8b predicted that gender moderates the relationships between challenge and hindrance stressors and job satisfaction. The positive relationship between challenge stressors and job satisfaction is stronger for males than for females (Hypothesis 8a). The negative relationship between hindrance stressors and job satisfaction is stronger for males than for females (Hypothesis 8b).

I used moderated regression procedures to test the proposed moderating effect. Job satisfaction was used as dependent variable. In Step 1, the two stressors and perceived strain were added. In Step 2, gender was added. In Step 3, the interactions between gender and challenge and hindrance stressors were entered simultaneously. I tested these interactions by examining their significance and the change in R^2 attributable to the interaction terms added in the final step. The results were reported in Table 9.

As reported in Table 9, gender was not significantly related to job satisfaction after controlling the two stressors and perceived strain. Neither the interaction between gender and challenge stressors nor the interaction between gender and hindrance stressors was significant. The two interaction terms together only explained an additional 0% variance in job satisfaction, $F(2, 507) = .866$, *ns*. Hypotheses 8a and 8b were not supported.

Gender and burnout. Hypotheses 9a and 9b predicted that gender moderates the relationships between challenge and hindrance stressors and job burnout. The negative relationship between challenge stressors and burnout is stronger for males than for females (Hypothesis 9a). The positive relationship between hindrance stressors and burnout is stronger for males than for females (Hypothesis 9a).

I used moderated regression procedures to test the proposed moderating effect. Burnout was used as dependent variable. In Step 1, the two stressors and perceived strain were added. In Step 2, gender was added. In Step 3, the interactions between gender and challenge stressors and the interaction between gender and hindrance stressors were entered simultaneously. I tested these interactions by examining their significance and the change in R^2 attributable to the interaction terms added in the final step. The results were reported in Table 9.

As reported in Table 9, gender was not significantly related to burnout after controlling the two stressors and perceived strain. Neither the interaction between gender and challenge stressors nor the interaction between gender and hindrance stressors was significant. The two interaction terms together only explained an additional 0% variance in burnout, $F(2, 507) = .246$, *ns*. Hypotheses 9a and 9b were not supported.

4.3.3.2. Type-A Behavior

Type-A behavior and in-role performance. Hypotheses 10a and 1b proposed that Type A behaviour moderates the relationships between challenge and hindrance stressors and in-role performance. The positive relationship between challenge stressors and in-role performance is stronger for Type-A people than for Type-B people (Hypothesis 10a). The negative relationship between hindrance stressors and in-role performance is weaker for Type-A people than for Type-B people (Hypothesis 10b).

Moderated regression procedures were applied to test the proposed moderating effect. In-role performance was used as the dependent variable. In Step 1, the two stressors and perceived strain were added. In Step 2, Type-A behavior was added. A high score stands for Type-A behavior and a low score stands Type-B behavior. In Step 3, the interactions between Type-A behavior and challenge and hindrance stressors were entered simultaneously. I tested these interactions by examining their significance and the change in R^2 attributable to the interaction terms added in the final step. The results were reported in Table 10.

Insert Table 10 about here

As reported in Table 10, after Step 1 (control variables, the two stressors and perceived strain), Step 2 (adding Type-A behavior) did not explain significantly additional variance. But Step 3, the interactions between Type-A behavior and the two stressors together explained additional 2% variance, $F(2, 507) = 5.600$, $p < .01$. The interaction between Type-A behavior and challenge stressors was significant ($\beta = 1.00$, $p < .01$). The interaction between Type-A behavior and hindrance stressors was not

significant (β = .00, *ns*). The positive relationship between challenge stressors and in-role performance was enhanced for Type-A people. This supported Hypothesis 10a, but not Hypothesis 10b**.**

The interaction graph produced to assess the direction of the interaction is presented in Figure 5. Specifically, there is a stronger positive relationship between challenge stressors and in-role performance for Type As than for Type Bs. Simple slope tests show that the slope for Type As is significant at $p < .01$ level and the slope for the slope for Type Bs is significant at $p < .05$, where variance of coefficient of challenge stressors is .021, variance of coefficient of interaction is .003, and covariance of coefficients of challenge stressors and the interaction term is (-.008).

Insert Figure 5 about here

Type-A behavior and job satisfaction. Hypotheses 11a and 11b suggested that Type-A behavior moderates the relationships between challenge and hindrance stressors and job satisfaction. The positive relationship between challenge stressors and job satisfaction is stronger for Type-A people than for Type-B people (Hypothesis 11a). The negative relationship between hindrance stressors and job satisfaction is stronger for Type-A people (Hypothesis 11b).

Moderated regression procedures were used to test the proposed moderating effects. Job satisfaction was used as the dependent variable. In Step 1, the two stressors and perceived strain were added. In Step 2, Type-A behavior was added. In Step 3, the interactions between Type-A behavior and challenge and hindrance stressors were entered simultaneously. I tested these interactions by examining their significance and the

change in R^2 attributable to the interaction terms added in the final step. The results were reported in Table 10.

As reported in Table 10, after Step 1 (control variables, the two stressors and perceived strain), Step 2 (adding Type-A behavior) explained significantly additional variance, $\Delta R^2 = .01$, $F(1, 509) = 7.024$, $p < .01$. The two interactions together explained additional 1% variance, $F(2, 507) = 3.358$, $p < .05$. The interaction between Type-A behavior and challenge stressors was not significant ($\beta = .01$, *ns*). The interaction between Type-A behavior and hindrance stressor was significant ($\beta = .64$, $p < .05$). This supported Hypothesis 11b, but not Hypothesis 11a**.**

The interaction graph produced to examine the direction of the interaction is presented in Figure 2. Specifically, the negative relationship between hindrance stressors is much weaker for Type As than that for Type Bs. Simple slope tests show that both slopes for Type As and Type Bs are significant at $p < .01$ level, where variance of coefficient of challenge stressors is .101, variance of coefficient of interaction is .014, and covariance of coefficients of challenge stressors and the interaction term is (-.036).

Insert Figure 6 about here

Type-A behavior and burnout. Hypotheses 12a and 12b predicted that the negative relationship between challenge stressor and burnout is stronger for Type-A people than for Type-B people (Hypothesis 12a). The positive relationship between hindrance stressor and burnout is stronger for Type-A people than for Type-B people (Hypothesis 12b).

Moderated regression procedures were used to test the proposed moderating effect. Burnout was used as the dependent variable. In Step 1, the two stressors and perceived strain were added. In Step 2, Type-A behavior was added. In Step 3, the interactions between Type-A behavior and challenge and hindrance stressors were entered simultaneously. I tested these interactions by examining their significance and the change in R^2 attributable to the interaction terms added in the final step. The results were reported in Table 10.

As reported in Table 10, after the two stressors and perceived strain (Step 1), adding Type-A behavior (Step 2) did not explain significant additional variance, ΔR^2 = .00, $F(1, 509) = 3.276$, *ns*. The two interactions together explained additional 0% variance, $F(2, 507) = 2.215$, *ns*. The interaction between Type-A behavior and challenge stressors was not significant (β = .05, *ns*). The interaction between Type-A behavior and hindrance stressors was only significant at $p < .10$ (β = -.38, p=.058). Thus, neither Hypothesis 12a nor Hypothesis 12b was supported.

4.3.3.3. Work Locus of Control

Work locus of control and in-role performance. Hypotheses 13a and 13b asserted that the positive relationship between challenge stressors and in-role performance is stronger for internals than for externals (Hypothesis 13a), and that the negative relationship between hindrance stressors and in-role performance is weaker for internals than for externals (Hypothesis 13b).

Moderated regression procedures were used to test the proposed moderating effect. In-role performance was used as dependent variable. In Step 1, the two stressors and

perceived strain were added. In Step 2, work locus of control was added. A high score stands for internal and a low score stands for external. In Step 3, the interactions between work locus of control and challenge and hindrance stressors were entered simultaneously. I tested these interactions by examining their significance and the change in R^2 attributable to the interaction terms added in the final step. The results were reported in Table 11.

Insert Table 11 about here

As reported in Table 11, after the two stressors and perceived strain (Step 1), adding work locus of control (Step 2) explained significant additional variance, $\Delta R^2 = .01$, $F(1, 509) = 3.944$, $p < .05$. But the two interactions together explained additional 0% variance, $F(2, 507) = .822$, *ns*. Neither the interaction between work locus of control and challenge stressors ($\beta = -.33$, *ns*), nor the interaction between work locus of control and hindrance stressors ($\beta = .04$, *ns*) was significant. Neither Hypothesis 13a nor Hypothesis 13b was supported.

Work locus of control and job satisfaction. Hypotheses 14a and 14b asserted that work locus of control moderates the relationships between challenge and hindrance stressors and job satisfaction. The positive relationship between challenge stressors and job satisfaction is stronger for internals than for externals (Hypothesis 14a). The negative relationship between hindrance stressors and job satisfaction is weaker for internals than for externals (Hypothesis 14b).

Moderated regression procedures were used to test the proposed moderating effect. Job satisfaction was used as the dependent variable. In Step 1, the two stressors and

perceived strain were added. In Step 2, work locus of control was added. In Step 3, the interactions between work locus of control and challenge and hindrance stressors were entered simultaneously. I tested these interactions by examining their significance and the change in R^2 attributable to the interaction terms added in the final step. The results were reported in Table 11.

As reported in Table 11, after the two stressors and perceived strain (Step 1), adding work locus of control (Step 2) explained additional 1% variance, $F(1, 509) = 3.022$, *ns*. The two interactions together explained additional 0.2% variance, $F(2, 507) = .605$, *ns*. Neither the interaction between work locus of control and challenge stressor ($\beta = -.30$, *ns*), nor the interaction between work locus of control and hindrance stressor ($\beta = .10$, *ns*) was significant. Neither Hypothesis 14a nor Hypothesis 14b was supported.

Work locus of control and burnout. Hypotheses 15a and 15b asserted that work locus of control moderates the relationships between challenge stressors and hindrance stressors and burnout. The negative relationship between challenge stressors and burnout is stronger for internals than for externals (Hypothesis 15a). The positive relationship between hindrance stressors and burnout is weaker for internals than for externals (Hypothesis 15b).

I used moderated regression procedures to test the proposed moderating effect. Burnout was used as the dependent variable. In Step 1, the two stressors and perceived strain were added. In Step 2, work locus of control was added. In Step 3, the interactions between work locus of control and challenge and hindrance stressors were entered simultaneously. I tested these interactions by examining their significance and the change

in R^2 attributable to the interaction terms added in the final step. The results were reported in Table 11.

As reported in Table 11, after the two stressors and perceived strain (Step 1) adding work locus of control (Step 2) explained significant additional variance, $\Delta R^2 = .01$, $F(1, 509) = 14.562$, $p < .001$. The two interactions together explained nonsignificant additional variance, $F(2, 507) = .260$, *ns*. Neither the interaction between work locus of control and challenge stressors ($\beta = -.11$, *ns*), nor the interaction between work locus of control and hindrance stressors ($\beta = .11$, *ns*) was significant. Neither Hypothesis 15a nor Hypothesis 15b was supported.

4.3.4 Three Additional Analyses

To explore further, several additional analyses were conducted. One additional analysis is to compare the results of regression analysis, path analysis and SEM (structural equation modeling). Another analysis is to compare different conceptualizations of burnout, using burnout as a composite vs. using its three dimensions. The other is to compare two conceptualizations of Type A behavior, using Type A as a global measure vs. using its two sub scales.

4.3.4.1 Path Analysis and Structural Equation Modeling

The analysis above depends on regression analysis. Nevertheless, regression analysis has several weaknesses. First, the three outcome variables are examined separately. This weakness can be overcome by using path analysis that it offers a simultaneous test of related variables in a proposed model and thus allows evaluation of

the extent to which the model is consistent with the data. Second, in regression analysis, it is usually assumed that variables are perfectly reliable and the residuals of various equations are uncorrelated. These assumptions can be relaxed by using structural equation modeling (SEM). SEM has several additional advantages. For instance, with SEM researchers can explicitly model both measurement error and correlated residual. In the following section, path analysis and SEM were applied to complement the above analysis.

Path Analysis. The results of the path analysis are summarized in Figure 7. Challenge and hindrance stressors are positively related to perceived strain (βs = .42 and .38) which positively relates to burnout (β = .55). The direct effects of challenge and hindrance stressors on burnout have differing directions (βs = -.13 and .40). The direct effects of challenge and hindrance stressors on in-role performance have differing directions (βs = .22 and -.17). The direct effects of challenge and hindrance stressors on job satisfaction also have differing directions (βs = .26 and -.30). These results support the major prediction of the integrative model, that is, the two stressors have differing effects on in-role performance, job satisfaction and burnout after considering the mediating effect of perceived strain.

Insert Figure 7 about here

However, even this path model (Figure 7) does not have proper fit index (χ^2 = 185, *df* = 3, *CFI* = .86, *SRMR* = .08, *RMSEA* = .34). One theoretical reason can be that this model does not specify the relationship between burnout and in-role performance and job satisfaction. According to Maslach and Leiter (2008), in-role performance and job

satisfaction can be considered as consequences of burnout. Thus, the modified path model is indicated in Figure 8. The modified model fit data very well ($\chi^2 = 2$, $df = 4$, $CFI = 1.00$, $SRMR = .01$, $RMSEA = .00$). Specifically, challenge and hindrance stressors are positively related to perceived strain ($\beta s = .42$ and $.38$), perceived strain positively relates to burnout ($\beta = .55$), and burnout negatively relates to in-role performance and job satisfaction ($\beta s = -.35$ and $-.75$). The direct effects of challenge stressors on burnout, in-role performance and job satisfaction are -.13, .22, and .16. The direct effects of hindrance stressors on burnout are positive ($\beta = .40$). Interestingly, however, several unexpected findings emerged. First, the direct path between hindrance stressors and in-role performance and job satisfaction became non-significant. Second, perceived strain was positively relate to job satisfaction ($\beta = .14$, $p < .05$) and negatively related to in-role performance ($\beta = -.09$, *ns*).

Insert Figure 8 about here

Two further analyses were conducted to show that perceived strain and burnout have different mediating effects. Perceived strain only partially mediated the relationship between hindrance stressors and in-role performance and job satisfaction Figure 8a. When perceived strain is used as the sole mediator, the direct paths between challenge and hindrance stressors and in-role performance and job satisfaction remain significant. In contrast, burnout completely mediates the relationship between hindrance stressors and in-role performance and job satisfaction (Figure 8b). When burnout is used as the sole mediator, the direct paths between hindrance stressors and in-role performance and job satisfaction become non-significant.

Insert Figure 8a and 8b about here

4.3.4.2 Different Operationalizations of Burnout

Since SEM does not require assumptions of perfect reliability and uncorrelated residuals of various equations, I also conducted SEM to estimate the proposed integrative model. Because SEM is unwieldy with a large number of items (there were 47 in this study), item parcels were formed to represent the latent factors (Williams et al., 2009). Parcels were created for perceived strain and burnout by aggregating items into composites based on the related subscale. Two parcels were created for perceived strain, namely, feelings of time pressure and feelings of anxiety (Parker & DeCotiis, 1983). Burnout was operationalized in three different ways. First, burnout was indicated by one parcel (indicator); second, burnout was indicated by three parcels; and third, burnout was indicated by full items, with some items were removed due to their relatively low factor loadings. The purpose of these additional analyses is to explore whether different operationalizations of burnout have different effects on the proposed relationships.

The data were then analyzed in two steps following Williams et al. (2009), with the measurement model considered first, followed by a structural model. The measurement model was fit to the data using confirmatory factor analysis (CFA), with each parcel constrained to load only on the intended factor and the latent factors being allowed to correlate. In the second step, the proposed structural equations model (SEM) were tested by imposing constraints on the latent factor correlations using maximum likelihood estimation to estimate the parameters.

Burnout with one indicator. The rationale for using one parcel is that several factors of burnout have relatively low factor loadings, such as .33. In this case, the use of one indicator is relevant especially when research interest is on the relationships at the construct level (Williams et al., 2009). To adjust for measurement error when using a single indicator for burnout, I fixed the factor loading of this indicator to burnout at one and fixed the measurement error term at (1 – reliability of burnout) x variance of burnout, (1 - .89) x .56 = .06.

A *CFA* was conducted to test whether the measurement model fit the observed data. The various fit indices provided evidence of a favorable fit (χ^2 = 642, *df* = 174, *CFI* = .95, *SRMR* = .06, *RMSEA* = .07). Loadings for the two parcels of perceived strain are .94 to .84 (see Figure 9). Factor correlations from the measurement model are provided in Table 12. Especially, the zero-order correlations between challenge stressors and in-role performance and job satisfaction are non-significant and challenge stressors are positively related to burnout.

Insert Table 12 and Figure 9 about here

The results of the structural model are summarized in Figure 10. This model fit data well (χ^2 = 745, *df* = 177, *CFI* = .93, *SRMR* = .06, *RMSEA* = .08). Challenge and hindrance stressors are positively related to perceived strain (βs = .38 and .51), perceived strain positively relates to burnout (β = .91) and negatively relates to in-role performance and job satisfaction (βs = -.44 and -.65). The direct effects of challenge stressors on burnout, in-role performance and job satisfaction are -.41, .46, and .57. The direct path between hindrance stressors and burnout is positive (β = .36). The coefficients of the

direct paths between hindrance stressors and in-role performance and job satisfaction are negative (βs = -.22 and -.25).

Insert Figure 10 about here

These results of the structural model support the major prediction of the integrative model: (1) Challenge and hindrance stressors have differing effects on in-role performance and job satisfaction when they are examined simultaneously, and (2) the two stressors have differing effects on burnout after considering the mediating effect of perceived strain.

The additional analyses above considered burnout, in-role performance and job satisfaction as three outcome variables. Nevertheless, researchers (e.g., LePine et al., 2005; Podsakoff et al., 2007) have suggested that burnout should be considered as a mediator of the effects of the two stressors. In order to explore this possibility, I also examined a modified the structural model which considers perceived strain and burnout as two mediators. The results of the modified structural model are summarized in Figure 11. This model (χ^2 = 643, *df* = 175, *CFI* = .95, *SRMR* = .06, *RMSEA* = .07) fits data significantly better ($p < .01$) than the model without considering the relationship between burnout and in-role performance and job satisfaction (Figure 9). However, this model reveals several unexpected findings. First, burnout negatively relates to in-role performance and job satisfaction (βs = -.49 and -1.12), although challenge and hindrance stressors are positively related to perceived strain (βs = .33 and .53) and perceived strain positively relates to burnout (β = .70). The standardized beta weight (-1.12) between burnout and job satisfaction is especially strange. This can be an indication of Heywood

case. Second, the direct effects of challenge stressors on job satisfaction become .07 (*ns*). Third, the direct paths between hindrance stressors and in-role performance and job satisfaction become (-.07, *ns*) and (.16, *ns*). Fourth, the direct path between perceived strain and in-role performance become nonsignificant (β = .06, *ns*).

Insert Figure 11 about here

These unexpected findings especially the standardized beta weight (-1.12) between burnout and job satisfaction can be explained in several ways. First, several constructs in this model are highly correlated such as perceived strain, hindrance stressors, burnout and job satisfaction (see Table 11). Second, burnout only has one indicator and perceived strain only has two indicators. Interestingly, this issue can be addressed by using burnout as an observed variable which yielded similar results as the path analysis (See Figure 12). The coefficients of the direct paths between burnout and in-role performance and job satisfaction were (βs = -.36 and -.78).

Insert Figure 12 about here

Burnout with three indicators. The results of the measurement model where burnout has three parcels are summarized in Figure 13. This measurement model fits data reasonably well (χ^2 = 921, *df* = 212, *CFI* = .92, *SRMR* = .09, *RMSEA* = .08). It remains that the zero-correlations between challenge stressors and in-role performance and job satisfaction are non-significant and challenge stressors are positively related to burnout.

Insert Figure 13 about here

The results of the structural model where burnout has three parcels are summarized in Figure 14. This model fits data reasonably well (χ^2 = 983, *df* = 215, *CFI* = .92, *SRMR* = .09, *RMSEA* = .08). These results of the structural model also support the major prediction of the integrative model, that is, challenge and hindrance stressors have differing effects on burnout, in-role performance and job satisfaction when they are examined simultaneously and when the mediating effect of perceived strain is taken into consideration.

Insert Figure 14 about here

I also examined a modified the structural model which links burnout to in-role performance and job satisfaction. The results of the modified structural model are summarized in Figure 15. This model also reveals several unexpected findings. First, burnout negatively relates to job satisfaction (β = -3.74). This is especially strange. Second, the direct path between challenge stressors and job satisfaction become (-.12, *ns*). Third, the direct paths between hindrance stressors and in-role performance and job satisfaction become non-significant (βs = -.10, *ns*, and .86, *ns*). Fourth, the direct paths between perceived strain and in-role performance and job satisfaction become non-significant (βs = .18, *ns*, and 2.67, *ns*).

Insert Figure 15 about here

Burnout with full indicators. The results of the measurement model where burnout has full indicators are summarized in Figure 16. This model (χ^2 = 1301, *df* = 412, *CFI* = .93, *SRMR* = .09, *RMSEA* = .065) fits data reasonably well. One item of in-role

performance, one item of hindrance stressor, two items of inefficacy and one item of cynicism were removed due to their low factor loadings. This model also supports that the zero-correlations between challenge stressors and in-role performance and job satisfaction are non-significant and that challenge stressors are positively related to burnout.

Insert Figure 16 about here

The results of the structural model are summarized in Figure 17. This model fits data reasonably well (χ^2 = 1663, *df* = 415, *CFI* = .93, *SRMR* = .10, *RMSEA* = .066). However, this model reveals several unexpected findings which do not support the integrative model. First, the direct path between challenge stressors and burnout is non-significant (β = -.06, *ns*). Second, the direct path between hindrance stressors and job satisfaction also become non-significant (β = -.10, *ns*).

Insert Figure 17 about here

Although this model fit data reasonably well, several concerns remain. First, many items in this model still have low factor loadings such as those for cynicism and inefficacy and those for hindrance stressors. Second, several constructs are highly related to the disturbances of other constructs. For instance, challenge stressors are highly related to the disturbance of cynicism, e40. Third, the disturbance terms of several constructs are highly related. For instance, the disturbance of in-role performance (e44) is highly related to the disturbance of in-efficacy (e38).

To summarize, the two additional analyses above, especially path analysis, lend supports to the proposed integrative model that the two stressors have differing effects on burnout, in-role performance and job satisfaction after considering the mediating effects of perceived strain. These additional analyses also show the complexity associated with the proposed integrative model. Most likely, the two stressors lead to perceived strain, perceived strain leads to burnout, and burnout then lead to in-role performance and job satisfaction. Specifically, after perceived strain and burnout are used as the two mediators, hindrance stressors appear to have no direct effects on in-role performance and job satisfaction,. This is different from the existing literature (e.g., LePine et al., 2005; Maslach & Leiter, 2008; Leiter & Maslach, 2005; Podsakoff et al., 2007). Nevertheless, several constrains make it difficult to capture the precise relationship between the two stressors, burnout, in-role performance and job satisfaction. First, the MBI, the measure of burnout used as in this study, has 16 items and several of them have relatively low factor loadings. Second, the correlations between the two stressors, perceived strain, burnout, in-role performance and job satisfaction are relatively high. This may lead to Heywood case, when SEM is used. Third, the relationship between the two stressors and these variables appear to be different, contingent upon different conceptualizations of burnout.

4.3.4.3 Type-A Behavior as Two-Dimensions

According to Edwards et al. (1990), the Framingham scale actually included two dimensions, namely, hard-driving/competitive and pressed for time. Edwards and Baglioni (1990) further reported that the two dimensions tend to have differing effects.

For instance, whereas the global scale was positively related to depression, hard-driving/competitive was not significantly related to depression and pressed for time was significantly related to depression. Whereas the global scale and hard-driving/competitive subscale were positively related to diastolic blood pressure, pressed for time subscale was negatively related to diastolic blood pressure. These authors argued that the two dimensions should be used as alternatives to the global scale.

Following these suggestions, I conducted additional analysis to see whether the two dimensions of Type A scale are useful in enhancing our understanding. Specifically, hard-driving/competitive subscale includes three items (Edwards et al., 1990), including "I am hard-driving and competitive," "I am bossy or dominating" and "I have a strong need to excel in most things." Pressed for time subscale also includes three items (Edwards et al., 1990), namely, "I am usually pressed for time," "I often feel very pressed for time" and "Work often stretched me to the very limits of my energy and capacity."

Equation 4 is used to test the moderating effects of the two subscales. C-stressor refers to challenge stressors, H-stressor refers to hindrance stressors, HC refers to hard-driving/competitive subscale, TP refers to pressed for time. In step 1, control variables, C-stressor and H-stressor, and perceived strain were entered. In step 2, HC and TP were entered. In step 3, the four interaction terms (HC*C-stressor, HC*H-stressor, TP*C-stressor and TP*H-stressor) were entered together. I tested these interactions by examining their significance and the change in R^2 attributable to the interaction terms added in the final step.

$$Y = b_1 \text{ C-stressor} + b_2 \text{ H-stressor} + b_3 \text{ P-strain} + b_4 \text{ HC} + b_5 \text{ TP} + b_6 \text{ HC*C-stressor} + b_7 \text{ HC*H-stressor} + b_8 \text{ TP*C-stressor} + b_9 \text{ TP*H-stressor} \quad \text{.....(4)}$$

whereas *HC* refers to hard-driving/competitive subscale and *TP* refers to pressed for time.

The results were reported in Table 13. For in-role performance, after Step 1 (control variables, the two stressors and perceived strain), Step 2 (adding the two dimensions of Type-A behavior) explained significantly additional 2% of variance. In step 3, the four interaction terms explained additional 3% of variance, $F(4, 508) = 4.675$, $p < .01$. The interaction between hard-driving/competitive and hindrance stressors was significant ($\beta = .11$, $p < .05$). The interaction between pressed for time and challenge stressors was significant ($\beta = .18$, $p < .01$). These findings indicate that the negative relationship between hindrance stressors and job performance was weaken by the hard-driving/competitive subscale and that the positive relationship between challenge stressors and in-role performance was enhanced by the pressed for time subscale**.**

Insert Table 13 about here

For job satisfaction, after Step 1 (control variables, the two stressors and perceived strain), Step 2 (adding the two dimensions of Type-A behavior) explained significantly additional 3% of variance. In step 3, the four interaction terms explained additional 3% of variance, $F(4, 508) = 4.589$, $p < .01$. The interaction between hard-driving/competitive and challenge stressors was significant ($\beta = .13$, $p < .01$). The interaction between pressed for time and challenge stressors was significant ($\beta = -.10$, $p < .05$). The interaction between pressed for time and hindrance stressors was significant ($\beta = .13$, $p < .01$). These findings indicate (1) that the positive relationship between challenge stressors and job satisfaction was enhanced by the hard-driving/competitive

subscale, (2) that the positive relationship between challenge stressors and job satisfaction was weaken by the pressed for time subscale and (3) that the negative relationship between hindrance stressors and job satisfaction was weaken by the pressed for time subscale**.**

For burnout, after Step 1 (control variables, the two stressors and perceived strain), Step 2 (adding the two dimensions of Type-A behavior) explained significantly additional 1% of variance. In step 3, the four interaction terms explained additional 1% of variance, $F(4, 508) = 2.378$, $p =<.05$. The interaction between pressed for time and hindrance stressors was significant ($\beta = -.07$, $p<.05$). This indicate that the positive relationship between hindrance stressors and burnout was weaken by the pressed for time subscale**.**

Additional analyses related to the two dimensions of Type A behavior generate several new insights. First, the hard-driving/competitive subscale and the pressed for time subscale were indeed different. Whereas the former is positively related to in-role performance and job satisfaction and negatively related to burnout, the latter is not related to either of these outcomes. Second, the use of these two subscales is useful to uncover more moderating effects. When the global Type-A behaviour was used, only two moderating effects were found (Table 10). In contrast, when the two subscales were used, six moderating effects were found (Table 13).

CHAPTER FIVE

5 DISCUSSION

5.1 Major Findings

Results about the hypothesis testing are summarized in Table 14. Overall, this study generated meaningful answers to the two research questions, namely, whether the two stressors have differing direct effects on burnout and whether individual differences moderate the effects of the two stressors.

Insert Table 14 about here

This study shows that the two stressors have differing effects on desirable outcomes like in-role performance and job satisfaction, although they have negative and indirect influences on in-role performance and job satisfaction through perceived strain. This is consistent with the existing studies (LePine et al., 2005; Podsakoff et al., 2007).

This study also shows a new finding. Without considering perceived strain as a mediator, the two stressors seem to have similar positive effects on burnout, although challenge stressors weakly related to burnout (β = .11, p<.01) and hindrance stressors were strongly related to burnout (β = .60, p<.01). After considering the mediating effect of perceived strain, challenge stressors became negatively related to burnout and hindrance stressors were still positively related to burnout.

This study showed that perceived strain mediated the two stressors in different directions. After considering perceived strain as a mediator, the relationship between hindrance stressors and in-role performance decreased in magnitude from (-.24) to (-.16), but the relationship between challenge stressors and in-role performance increased in

magnitude from .11 to .20. The relationship between hindrance stressors and job satisfaction decreased in magnitude from (-.41) to (-.32), but the relationship between challenge stressors and job satisfaction increased in magnitude from .13 to .24. The relationship between hindrance stressors and burnout decreased in magnitude from (.60) to (.40), and the relationship between challenge stressors and burnout had a different direction from .11 to (-.11).

There are several explanations of this finding. Statistically, this finding means that the positive effect of challenge stressors on in-role performance and job satisfaction and the negative effect of challenge stressors on burnout are suppressed by the effect of perceived strain (Podsakoff et al., 2007). Theoretically, this finding indicated challenge stressors may impact on outcomes through both the motivation and energy-depleting mechanisms. Both challenge and hindrance stressors have a positive effect on burnout through perceived strain and the energy-depleting process, but they also have differing effects on burnout through the motivation mechanism.

The present study showed that Type-A behavior enhanced the positive relationship between challenge stressors and in-role performance, even after considering perceived strain. This finding supported that Type-A people may take advantage of the benefit of challenge stressors.

It was predicted that Type-A behavior weakened the negative effect of hindrance on job satisfaction; this prediction was supported. Specifically, the relationship was negative for both Type-A people and Type-B people, but the negative effect of hindrance stressors on job satisfaction was much weaker for Type-A people. This finding indicated that Type-A people may have certain advantages in dealing with hindrance stressors.

The results of this study also show that it is relevant to consider subscales of Type A behaviour. When Type-A behaviour was used as a global scale, two moderating effects were identified (Table 10). When the two subscales of Type-A behaviour were used, six moderating effects were reported (Table 13).

This study found that gender explained additional variance in in-role performance beyond the two stressors and perceived strain. This means that females tended to report higher performance than males. The present study only found a significant interaction between gender and challenge stressors on in-role performance.

Noticeably, this finding is under the condition that perceived strain partially mediates the effects of challenge and hindrance stressors. I conducted additional analyses to examine the moderating effect of gender without controlling perceived strain. Results are summarized in Tables 15 and 16. As reported in Table 15 (in-role performance), in Step 4 the interaction between gender and challenge stressors was significant at $p < .01$ level and the interaction between gender and hindrance stressors was significant at $p < .05$ level. This supports the moderating effect of gender on the relationship between the two stressors and in-role performance. As reported in Table 16 (burnout), in Step 4, the interaction between gender and challenge stressors were significant at $p < .05$ level. This supports the moderating effect of gender on the relationship between challenge stressor and burnout.

Insert Tables 15 and 16 about here

This study found work locus of control significantly related to in-role performance ($\beta = .10$, $p < .05$) and burnout ($\beta = .12$, $p<.01$), even after controlling

challenge and hindrance stressors and perceived strain. But this study did not support the moderating effects of work locus of control. This means that internals are not necessarily more effective in dealing with either challenge or hindrance stressors than externals. Another explanation of the lack of moderating effect is the mismatch between work locus of control scale and challenge and hindrance stressors measures. On the one hand, Spector's work locus of control scales focused on people's beliefs about the job in general such as promotion and making more money. On the other hand, challenge stressor scale was most representative of workload, rather than a comprehensive measure of all the various work experiences that could be challenging, and the hindrance scale may not be a comprehensive measure of all the various work experiences that could be hindering either (Boswell et al., 2004).

5.2 Theoretical Contributions

Several contributions emerge from this study in an effort to improve the two-dimensional work stressor framework. At the most general level, the results of the present study increase our confidence about the validity of the challenge and hindrance stressors framework. We can be more confident that challenge and hindrance stressors have differing effects, even when it comes to burnout. Employees are rational enough to appraise stressful situations as challenges which will potentially promote mastery, personal growth and future gains (Lazarus & Folkman, 1984; LePine et al., 2005).

Specifically, this study provides several important modifications to the existing two-dimensional framework. On the one hand, the results of this study suggest that it can be a limitation to assume that challenge and hindrance stressors have similar rather than

differing, effects on burnout. This limitation is at least partially attributed to the lack of conceptual distinction between perceived strain and burnout as two separate concepts. After we make it explicit that individuals demonstrate stress in various manners, including short-term feelings and reactions as well as chronic responses and difficulties, it becomes clear that to treat perceived strain and burnout as interchangeable without regards to the time factor may contaminate these concepts, resulting in less precise predictions.

Second, the results of this study support that challenge stressors may indeed negatively relate to burnout through the motivation mechanism, while hindrance stressors positively relate to burnout. This is an important contribution, given that the existing studies have concluded that both challenge and hindrance stressors are positively related to burnout, although they have differing effects on outcomes of interest to organizations such as job performance, organizational commitment and withdraw behaviors (Cavanaugh et al., 2000; Crawford et al., 2010; LePine et al., 2005; Podsakaff et al., 2007; Rodell & Judge, 2009; Wallace et al., 2009).

Third, this study provides additional evidence that the effects of challenge and hindrance stressors on strain may vary greatly, depending on different conceptualizations and operationalizations of strain. Webster et al. (2010) is the first study to show that it can be a theoretical limitation for the two-dimensional work stressor framework to use strain as a comprehensive concept including a variety of things into one category. Webster et al. reported that challenge and hindrance stressors do not have similar effects on physical strains such as ‘‘eye strain” and ‘‘backache” and psychological strains such as frustration. The present study is the first to show that perceived strain and burnout are

theoretically and empirically distinct. When burnout was examined alone without considering perceived strain (Model 1, Table 2), challenge stressors had much weaker effects on burnout than hindrance stressors, βs = .12 and .59, respectively. When perceived strain was examined alone (Model 2, Table 2), challenge stressors appeared to have a slightly greater effect on perceived strain than hindrance stressors, βs = .41 and .38. After considering perceived strain as a mediator, challenge stressors actually had negative effects on burnout (Model 4, Table 2), while hindrance stressors had a reduced positive effect, βs = -.10 and .39.

Meanwhile, this study extends the two-dimensional job stressor framework by highlighting the need to incorporate individual differences as a critical contextual factor. This study showed that gender moderated the positive effect of challenge stressors on in-role performance. This study showed that Type-A behaviour moderated the positive effect of challenge stressors on job performance and Type-A behaviour also moderated the negative effect of hindrance stressor on job satisfaction. The results of this study show that Type A behavior did not moderate the negative effect of hindrance stressors on in-role performance and the positive effect of challenge stressors on job satisfaction. The lack of moderating effect of Type A behavior on the negative effect of hindrance stressors on in-role performance may indicate that, compared to Type B behavior, Type A behavior may have no advantages in dealing with hindrance stressors as far as in-role performance is concerned. The lack of moderating effect of Type A behavior on the positive effect of challenge stressors on job satisfaction may indicate that it may be hard to satisfy Type As. They may achieve higher goals, but this does not mean that they are more satisfied, because Type As may set higher standards as far as job satisfaction is

concerned. Together with other studies, for instance recent studies reported relevant moderators such as social support (Wallace et al., 2009) and neuroticism (Rodell & Judge, 2009), the results of this study suggest that different people might perceive and react to the two stressors differently.

This study contributed to burnout literature by introducing challenge and hindrance stressors as two antecedences of burnout. Traditionally, workload has been considered as an important predictor of burnout (Maslach et al., 2001). Nevertheless, the focus was on the dysfunctional side of workload. This study showed the need to explore the beneficial aspect of workload. Perhaps workload like other challenge stressors may actually reduce burnout, rather than increase burnout, once their undesirable effect through perceived strain is put under control.

The results of this study also contributed to our understanding of Type-A behavior by highlighting the effective side of Type-A behavior. At the zero order level, it appears that Type-A behavior negatively related to job satisfaction (Table 1). Nevertheless, after controlling the two stressors and perceived strain, it appeared that Type-A behavior not only explained significant variance in job satisfaction, but also positively relates to job satisfaction. Type-A behavior strengthens the positive effect of challenge stressors on in-role performance and weakens the undesirable effect of hindrance stressor on job satisfaction. Additionally, Type-A behavior exhibits no direct relationship to burnout after controlling the two stressors and perceived strain.

In other words, the results of this study suggest that Type A behavior is somehow desirable. These results seem to be the opposite of the existing research which tended to show that Type A behavior tends to have undesirable effects. For example, Jamal and

Ahmed (2012) reported that Type A positively related to burnout and health problems and Type A also strengthens the positive effects of hindrance stressors on burnout. One explanation is that previous studies did not consider perceived strain as a mediator. In other words, this study controlled for perceived strain (the energy depleting process), this allows us to see the desirable effects of Type A behavior through the motivation mechanism.

5. 3. Implications for Future Research

The present study has several implications for future research. First and perhaps most basic, studies based on the two-dimensional job stress framework need to be more precise and specific when it comes to concepts under examined. The two-dimensional perspective is important in pointing out that stressors are not created equal. Challenge and hindrance stressors have been shown to have differing relationships with many important and widely studied outcome variables in organizational behavior such as job performance and job satisfaction. Meanwhile, the results of this study show that it is equally important to highlight perceived strain and burnout as two different concepts. This complexity needs to be considered carefully, if researchers want to use the two-dimensional framework effectively.

Second, the distinction between perceived strain and burnout is important not only when researchers want to understand the differing effects of the two stressors on burnout, but also when researchers want to understand the effects of the two stressors on perceived strain. The effects of challenge and hindrance stressors on perceived strain and burnout may vary greatly depending on different conceptualizations of perceived strain and

burnout. In Model 1, when burnout was examined alone without considering perceived strain, the effects of challenge stressors on burnout was much weaker than the effects of hindrance stressors, (.11) vs. (.60). In model 2, when perceived strain was examined alone, challenge stressors appeared to have a slightly larger effect on perceived strain than hindrance stressors, (.42) vs. (.37). In Model 4, after considering perceived strain as a mediator, challenge stressors actually had negative effects on burnout, while hindrance stressors had a reduced positive effect, (-.11) vs. (.40). This complexity may disappear when the distinction between perceived strain and burnout is not emphasized. For example, previous studies (Crawford et al., 2010; LePine et al., 2005; Podsakaff et al., 2007) normally reported that challenge stressors have much weaker effects on strain or burnout than hindrance stressors. Podsakaff et al. (2007) reported that the relationships for challenge and hindrance stressors with strain were .21 and .48, respectively. Crawford et al. (2010) reported that the relationships for challenge and hindrance stressors with burnout were .10 and .25.

Third, the results of this study suggest that future research should examine the three dimensions of burnout. Several studies (Crawford et al., 2010) have examined burnout as a dependent variable, while several studies (Boswell et al., 2004; Broeck et al., 2010) have examined the relationships between the two stressors and exhaustion. These studies have reported conflicting findings. Boswell et al. (2004) reported that both stressors were positively related to exhaustion, while Broeck et al. (2010) reported that challenge stressors were not related to exhaustion. There is little doubt that exhaustion is an interesting variable to examine. The conflicting results can be explained in light of the results of the present study. Specifically, the relationship between challenge stressors and

burnout is partially mediated by perceived strain. Meanwhile, more research is needed in order to further understand the relationships between the two stressors and burnout as three dimensional phenomena. As pointed out by Maslach and Leiter (2008), "Although exhaustion reflects the individual stress dimension of burnout, it fails to capture a critical aspect of the relationship people have with their work" (p. 499).

Fourth, the two-dimensional job stress framework is relevant in studying other moderators. Although the moderating effect of gender on the relationship between stressors and job performance has rarely been reported (Shirom et al., 2008), the present study provided some evidence that gender moderates the effect of challenge stressors on in-role performance, but not the effects of hindrance stressors. Therefore, it is recommended that future research should draw a clear distinction between the two stressors, in order to have a better understanding of the moderating effects of gender.

5.4 . Practical Implications

Although more research is needed in order to confirm the patterns reported in this study, this study generates fresh messages to managers. Most existing studies based on the two-dimensional work stressor framework reported that both stressors are health impairing. Those findings have concluded that exposure to and coping with job demands, regardless challenge stressors or hindrance stressors, will not only generate a feeling of discomfort, but also wear out an individual's energy, resulting in complete exhaustion and burnout. In contrast, results of the present study confront the previous conclusion. Individuals may feel discomfort with a feeling of anxiety and tension when they are exposed to challenges, just like when a normal person plays tennis for two or three

consecutive hours. Nevertheless, challenge stressors may not be health impairing; they may have potential to reduce burnout. Thus, managers should be aware of the distinction between perceived strain as short-term reactions and burnout as long-term response and difficulties.

The results of this study not only encourage managers to make a clear distinction between the two types of stressors when developing stress management strategies, but also draw their attention to help and support employees in their efforts to cope with job demands. Organizations should keep hindrance stressors such as red tape and role ambiguities to a minimum if this is possible, because research evidence suggests that these stressors are health impairing; they also have negative relationships with desirable outcomes such as job performance and organizational commitment and positive relationships with undesirable outcomes such as withdraw behaviors. On the other hand, instead of reducing or eliminating challenge stressors due to previous concerns of certain costs for individuals such as long-term health issues, managers may consider increasing levels of challenge stressors strategically as along as they have practices in place that can buffer energy-depleting effects associated with challenges. This may potentially attract and satisfy those who seek out, persist and thrive in highly challenging jobs (Podsakoff et al., 2007). For instance, organizations could provide sufficient resources, initiate social support and implement training program (Cooper, Dewe, & O'Driscoll, 2001).

Third, this study emphasizes the relevance of personnel selection in stress management practices. If they recognize the distinction between challenge and hindrance stressors, managers should be further aware that different people have different perceptions and reactions to these stressors. According to this study, managers should be

more careful in matching people with their job demands. In dealing with challenge stressors, Type-A behavior may be effective. Type-A people may prefer the positive impacts of challenge stressors such as job demand and time pressure and achieve high in-role performance. In dealing with hindrance stressors, Type-A people may reduce the negative impacts of hindrance stressors and remain satisfied. When facing hindrance stressors such as role ambiguity, role conflict, and red tape, Type-B people may become more dissatisfied. Internals may be more effective than externals in dealing with job stressors, too. After challenge and hindrance stressors and perceived strain are controlled, internals with high work locus of control may achieve higher performance and less burnout.

5.5. Limitations and Future Research Opportunities

The results of this study suggest several opportunities for future research. First, we strongly agree with one suggestion of previous researchers; that is, more research is needed to further investigate the dimensionality of job stressors (Cavanaugh et al., 2000; Boswell et al., 2004; Podsakoff et al., 2007). In this study, the validity of challenge and hindrance stressors was supported from several aspects: The *CFA* data show that the two-factor model (challenge and hindrance stressors as two separate constructs) fit data better than the one-factor model (the combination of challenge and hindrance stressors as one factor); both challenge and hindrance stressors have acceptable internal consistency; the four-factor model (challenge stressors, hindrance stressors, perceived strain and burnout as four separate factors) fit data better than other combined models; and challenge and hindrance stressors indeed have differing effects on burnout after considering perceived

strain as a mediator. These results, together with the results of other studies (Cavanaugh et al., 2000; Boswell et al., 2004), provide more empirical evidence about the construct validity of challenge and hindrance stressors. Meanwhile, we also found a limitation of hindrance stressors. The six items of challenge stressors had relatively large factor loadings. Consequently, it yielded a large average variance extracted (*AVE*) indices. In contrast, hindrance stressors yielded an average variance extracted (*AVE*) indices lower than .50 (Fornell and Lacker, 1981), because its five items had relatively small factor loadings. Although previous studies based on the two-dimensional work stressor framework seldom reported the *AVE* for hindrance stressors, it is known that factor loadings of hindrance stressors were relatively low (Cavanaugh et al., 2000). Podsakoff et al. (2007) found that the average internal consistency reliability for hindrance stressors was only closer to .70. As implied by Boswell et al. (2004), perhaps this limitation may be addressed by the development of a more comprehensive hindrance scale which could measure various job and work stressors that could be hindering.

Second, the relationships between the two stressors and burnout can be examined in different approaches. One approach is to consider burnout as a composite of its three dimensions. Research into this direction is meaningful to clarify the correlation between the two stressors and burnout. In the literature, different correlations have been reported. Previous studies (Boswell et al., 2004; LePine et al., 2005; Podsakoff et al., 2007) indicated that both challenge and hindrance stressors are moderately correlated with burnout. However, these studies did not actually measure burnout. They either examined one dimension of burnout such as exhaustion or used burnout and strain comprehensively. The meta-analysis (Crawford et al., 2010) reported that challenge and hindrance stressors

were only weakly correlated with burnout. Meanwhile, this meta-analysis might have relied on studies that did not explicitly measure challenge or hindrance stressors. Thus, the limitations in the primary studies used by the meta-analysis might have constrained the conclusions made from the meta-analysis. This meta-analysis did not consider whether perceived strain mediates the relationship between the two stressors and burnout either. Jamal and Ahmed (2012) reported that the two stressors had similar positive effects on burnout. However, their study examined challenge and hindrance stressors separately. In contrast, this study is the first to report that the two stressors are related to burnout in differing directions. The generalizability of the results of the present study is enhanced, given that survey participants had a wide-range of backgrounds in terms of their gender, age, education, tenure, job title, different organizations and different occupations. Additional research is needed to shed new light on this issue.

Another approach is to examine the relationship between the two stressors and the three dimensions of burnout. The existing studies related to the three dimensions of burnout (Boswell et al., 2004; Broeck et al., 2010) have reported mixed findings. Boswell et al. (2004) reported that both stressors were positively related to exhaustion, while Broeck et al. (2010) reported that challenge stressors were not related to exhaustion. Unfortunately, these studies only examined one element of burnout. Although exhaustion is important to reflect the individual stress dimension of burnout, this element alone fails to capture other critical aspects of the relationship people have with their jobs (Maslach, 1998; Maslach and Leiter, 2008). Future research should examine how the two stressors relate to the three dimensions of burnout including cynicism and inefficacy. Research into this direction is important for several reasons. First, studies have shown that the three

dimensions have unique correlates (Lee and Ashforth, 1996; Maslach and Leiter, 2008). Second, the use of burnout as a comprehensive construct may have some statistical limitations. In order to examine the distinctiveness between the two stressors, perceived strain and burnout, we tested different nested models using χ^2 difference tests. Although the χ^2 difference tests supported that the four-factor model (challenge stressors, hindrance stressors, perceived strain and burnout as four separate factors) fit data better than other combined models, we also identified a limitation. Even the four-factor model did not have appropriate fit index. For instance, *CFI* for this model is still lower than .95. This may be because that the four-factor model did not recognize the three dimensions of burnout.

Third, it is worthwhile to test the mediating effect of perceived strain using data from multiple sources. Although the hypotheses tested in this study (e.g., differing effects of the two stressors on burnout after considering perceived strain as a mediator) cannot be explained by the typical problems associated with self-reported day (Boswell et al., 2004; Gilboa et al., 2008; Wallace et al., 2009; Webster et al., 2010), multiple sources could be used to measure the two stressors, perceived strain, in-role performance and burnout. For instance, coworkers could provide information about the amount of challenge and hindrance stressors present on the job. Supervisors could provide information about perceived strain, in-role performance and burnout that their subordinates might experience. Other measures of health problems can be obtained from organizational records or doctor's records. Studies using multiple data sources may provide useful contexts for our understanding of employees' appraisals of and reactions to the objective job environment.

Fourth, longitudinal designs could be helpful to fully support the results of this study. The results of this study are relevant for some reasons. First, they provide a needed refinement to the conclusion generated by some meta-analyses (Crawford et al., 2010; LePine et al., 2005; Podsakoff et al., 2007). Although the primary research included in these meta-analyses were normally cross-sectional, they concluded that challenge stressors were positively related to burnout. These conclusions may appear less accurate after burnout is considered as a distal outcome of the two stressors. Second, the hypothesized mediating effects of perceived strain had strong a theory base. They were derived from the two-dimensional work stressor framework and the existing knowledge regarding the distinct between perceived strain and burnout. Nevertheless, the inference of causality permitted by the present study with one time data collection is limited.

Fifth, the results of this study generate useful guidance for future research to explore the mechanisms that link the two stressors to outcome variables. This study, as well as other studies (Crawford et al., 2010; LePine et al., 2005; Podsakaff et al., 2007), assumed that challenge and hindrance stressors influence outcome variables through both the motivation mechanism and the energy-depleting process. Specifically, we proposed that the two stressors have differing effects on burnout through motivation mechanism and that they have similar effects on burnout through the energy-depleting process. A fruitful research direction is to explore whether motivation variables such as expectancy and instrumentality (LePine et al., 2005) actually mediates the relationship between the two stressors and burnout. If studies show motivation variables such as expectancy and instrumentality and perceived strain as dual mediators, this may increase our confidence of the relevance of the motivation mechanism and the energy-depleting process.

Future research may also consider other mediators besides motivation and perceived strain. LePine et al. (2005) found that the two stressors had positive direct effects on job performance after considering both motivation and strain as mediators. The present study showed that challenge and hindrance stressors were only weakly related to in-role performance, .11 and (-.24), respectively. Wallace et al. (2009) reported a similar low relationship between the two stressors and role-based performance. All these indicated the possibility that other mediators are still missing. One relevant mediator is P-E fit. It has been suggested that demand-ability fit is a proximal predictor of job performance, and supply-need fit is a proximal predictor of job satisfaction (Edwards, 1996, 2008). Future research should examine whether the two stressors affect job performance through the demand-ability fit and impact on job satisfaction through the supply-need fit.

It is also worthwhile for future research to examine whether the two stressors have differing effects on other important criteria. Research has shown that challenge and hindrance stressors are differentially related to job performance, job satisfaction, and withdrawal behavior (turnover intention and job search) and burnout. Many other criteria could be considered such as deviant behavior in the workplace (Appelbaum & Shapiro, 2006), work-family conflict (Bhave, Kramer, & Glomb, 2010; Edwards & Rothbard, 1999) and other health symptoms such as heart disease (Appelbaum, 1984; Xie et al., 2008).

This study attempted different ways to explore the moderating effects of Type A behavior. It appears that the use of the two subscales is more effective than the use of Type A behavior as a global scale. Nevertheless, this study only examined whether the

two subscales moderate the direct effects of the two stressors on outcome through the motivation mechanism, after controlling perceived strain. Future studies should examine whether the two subscales moderate the relationship between the two stressors and perceived strain and whether the two sub scales moderate the relationship between perceived strain and outcome variables such as in-role performance, job satisfaction and burnout.

Incorporating potential moderators represents new opportunities to enhance the two dimensional perspective. Research has found that environmental factors such as social support (Wallace et al., 2009) and individual factors such as neuroticism (Rodell & Judge, 2009) moderated the effect of the two stressors. The present study reported the moderating effects of gender and Type-A behavior. Other contextual factors such as leadership styles and individual factors such as proactive personality should be examined (Chan, 2006).

Another potential limitation of this study is that it used self-reported data. From a theoretical perspective, we are confident that findings in this study are indicative of true relationships among the variables, rather than due to common method variance. The results of this study showed that challenge stressors had nonsignificant zero order correlations with in-role performance and job satisfaction. Nevertheless, challenge and hindrance stressors were related to in-role performance and job satisfaction but in differing directions, after the two stressors were added into one equation. Meanwhile, they had similar positive effects on burnout. These findings are unlikely attributed to common method variance (Boswell et al., 2004; Wallace et al., 2009). This study found that Type A behavior moderated the effects of challenge and hindrance stressors. The

interaction effects cannot be explained by common method variance either (Evans, 1985; Podsakoff et al., 2012). A recent meta-analysis (Gilboa et al., 2008) also concluded that common method variance was not a threat to research on job stressors, although research in this topic relied heavily on self-reported questionnaires.

Meanwhile, concerns about common method bias are warranted. It is likely that some of our findings could be inflated due to common method variance, because our data were collected by the same self-reported source at one time (Podsakoff et al., 2003). I conducted two tests to determine the extent of method variance in the current data. First, a Harmon one-factor test was conducted (Podsakoff & Organ, 1986). Results from this test suggested that the one factor explained 27% of the variance, indicating that common method effects are not a likely contaminant of the results observed in this investigation. To confirm this result, we conducted unmeasured latent method factor (Podsakoff et al., 2012; Williams, Gavin, & Williams, 1996). Results from this test suggested that adding a common factor accounted for about 1% of the variance. This further confirmed that common method effects are not a rival explanation for the findings reported in this investigation. The relatively low effect of method biases is partially attributed to the research designs. For instance, I have used well established measures, outsourced Qualtrics Labs to conduct the survey rather than collecting data through management teams, and used a variety of scales. Another reason can be that the topic of this survey was of great interest to participants and they were highly motivated to respond.

5.6. Conclusion

The two-dimensional work stressor framework provides a useful perspective for researchers to systematically examine and compare the differing effects of challenge and

hindrance stressors (Boswell et al., 2004; Broeck et al., 2010; Jamal & Ahmed, 2012; LePine et al., 2005; Podsakaff et al., 2007; Rodell & Judge, 2009; Wallace et al., 2009; Webster et al., 2010). It is also meaningful in encouraging managers to take advantage of the potential benefits of challenge stressors. However, several issues remain unaddressed. Specifically, whether do the two stressors have differing relationships with burnout and whether do individual factors moderate the effects of the two stressors? Although no single study can provide definite answers to such an important issue as job stressors, the results of the present study are encouraging. They increase our confidence about the validity of the challenge and hindrance stressors framework. This study converses several important messages. First, perceived strain and burnout are not created equal. Once the mediating role of perceived strain is highlighted, it becomes apparent that challenge and hindrance have differing direct effects on burnout. Challenge stressors may negatively rather than positively relate to burnout. Second, different people indeed perceive and react to the two stressors differently. There is some evidence that Type As may make full use of high challenge stressors to improve in-role performance; they may maintain job satisfaction in the face of hindrance stressors. Third, the two mechanisms, namely the motivation mechanism and the energy-depleting mechanism, are important. They are useful in explaining the effects of the two stressors. They are also useful for researchers in their efforts to further incorporate individual factors into the two-dimensional perspective. Finally, organizations can apply the results of this study to fit employees with their job demands. Managers may consider increasing levels of challenge stressors strategically to attract and satisfy those who seek out, persist and thrive in highly challenging jobs.

Table 1: Descriptive Statistics and Bivariate Correlations

		M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Age	3.5	1.16	--												
2	Gender	.6	.50	-.03	--											
3	Marital status	2.1	.95	.25**	.14**	--										
4	Education	2.4	1.18	-.06	-.01	-.04	--									
5	Tenure	8.4	7.38	.36**	-.00	.08	-.04	--								
6	Type-A behavior	2.6	.69	-.09*	.08	-.00	.08	-.01	*.76*							
7	WLC	3.9	.74	.08	.07	.07	-.02	.09*	-.16**	*.77*						
8	C-stressors	3.5	.94	-.07	.04	-.05	.14**	.03	.56**	-.10*	*.94*					
9	H-stressors	3.0	.95	-.15**	-.03	-.07	.16**	-.05	.46**	-.40**	.53**	*.81*				
10	Perceived strain	2.9	.94	-.19**	.08	-.06	.08	-.05	.70**	-.35**	.62**	.61**	*.93*			
11	In-role performance	6.5	.73	.19**	.15**	.05	-.01	.14**	-.07	.21**	-.02	-.20**	-.21**	*.89*		
12	Job satisfaction	5.3	1.60	.09*	.04	-.00	.11*	.06	-.11*	.25**	-.07	-.33**	-.29	.23**	*.95*	
13	Burnout	2.5	.75	-.23**	-.02	-.08	.00	-.06	.46**	-.43**	.43**	.66**	.71**	-.32**	-.58**	*.89*

Note:

1. Correlation larger than .11 is significant at the 0.01 level (2-tailed).

2. Correlation larger than .08 is significant at the 0.05 level (2-tailed).

3. Sample size, $N = 518$

4. Reliability estimates of variables (i.e. coefficient alpha) are in italics on the diagonal.

5. For age, 1=18 to 24, 2=25 to 34, 3=35 to 44, 4=45 to 54, 5=55 to 64, 6=65 or over

6. For gender, 0= male, 1=female

7. For Marital status, 1=single, 2=married, 3=separated, 4= divorced

8. For education, 1=High school, 2=2-year college degree, 3=4-year college degree, 5=Master degree, 6=Doctoral degree, 7=Professional degree

9. For Type-A behavior, high score = Type-A, low score = Type-B

10. WLC: Work locus of control, high score = internals, low score=external

11. C-stressors: Challenge stressors

12. H-stressors: Hindrance stressors

*$p<.05$

√$p<.01$

Table 2: Results of Confirmatory Factor Analysis of the Distinctiveness of the four concepts

Model	CFI	RMSEA	SRMR	χ^2	df	$\Delta\chi^2$	Δdf
The four-factor Model	.77	.09	.09	4060	733		
The three-factor model	.73	.10	.11	4612	736	552**	3
The two-factor model	.76	.11	.11	5098	738	476**	2
The one-factor model	.64	.12	.11	5971	739	873**	1

Note. The four-factor model treats challenge stressors, hindrance stressors, perceived strain and burnout as four separate factors. The three-factor model treats the two stressors as one factor, and perceived strain and burnout as the other two factors. The two-factor model treats the two stressors as one factor, and perceived strain and burnout as the other one factor. The one-factor model combines challenge stressors, hindrance stressors, perceived strain and burnout as one factor. *CFI* = the comparative fit index, *RMSEA* = the root mean square error approximation, and *SRMR* = the standardized root mean residual. $\Delta\chi^2$ = change in chi square between the alternative model and the previous model; Δdf = change in degrees of freedom between alternative model and the previous model. ***p* < .01

Table 3: Results of Hierarchical Regression Analysis of In-role Performance on Challenge Stressors and Hindrance Stressors (both un-standardized and standardized Beta)

Analysis	Hypothesis	Variable	B	β	*T*	*p*	R^2	ΔR^2	*F* Change
Step 1		Age	.09	.15	3.219	.001	.04		5.371
		M-status	.01	.01	.150	.881			
		Education	.00	.01	.156	.876			
		Tenure	.01	.08	1.796	.073			
Step 2	H-1a, 1b	C-stressor	.08	.11	2.214	.027	.08	.04	10.909
		H-stressor	-.18	-.24	-4.67	.000			

Note:

1. C-stressor: Challenge stressors
2. H-stressor: Hindrance stressors
3. M-status: Marital status
4. Adding gender as another control variable had no influences on the findings.

Table 4: Results of Hierarchical Regression Analysis of Job Satisfaction on Challenge Stressors and Hindrance Stressors (both un-standardized and standardized Beta)

Analysis	Hypothesis	Variable	B	β	*T*	*p*	R^2	ΔR^2	*F* Change
Step 1		Age	.13	.09	1.949	.052	.02		3.085
		M-status	-.04	-.03	-.581	.562			
		Education	.16	.12	2.641	.009			
		Tenure	.01	.03	.721	.471			
Step 2	H-2a, 2b	C-stressor	.23	.13	2.757	.006	.15	.13	37.775
		H-stressor	-.70	-.41	-8.486	.000			

Note:

1. C-stressors: Challenge stressors
2. H-stressors: Hindrance stressors
3. M-status: Marital status
4. Adding gender as another control variable had no influences on the findings.

Table 5: Results of Hierarchical Regression Analysis of Burnout on Challenge Stressors and Hindrance Stressors (both un-standardized and standardized Beta)

Analysis	Hypothesis	Variable	B	β	*T*	*p*	R^2	ΔR^2	*F* Change
Step 1		Age	-.15	-.23	-4.863	.000	.05		7.237
		M-status	-.02	-.03	-.577	.564			
		Education	-.01	-.01	-.205	.838			
		Tenure	.00	.02	.478	.633			
Step 2	H-2a, 2b	C-stressor	.09	.11	2.907	.004	.47	.42	203.531
		H-stressor	.47	.60	15.554	.000			

Note:

1. C-stressors: Challenge stressors
2. H-stressors: Hindrance stressors
3. M-status: Marital status
4. Adding gender as another control variable had no influences on the findings.

Table 6: Results of the Standardized Regression Analysis for the Mediating Effects of Perceived Strain on the Relationship between In-role Performance and Challenge and Hindrance Stressors (H - 4)

Predictors	Model 1: In-role performance	Model 2: Perceived Strain	Model 3: In-role performance	
			Step 1	Full model
Age	.13**	-.11**	.12*	.11*
Marital status	.01	.01	.00	.01
Education	.03	-.05	.02	.02
Tenure	.08	-.00	.09	.08
C-stressors	.11*	.42**		.20**
H-stressors	-.24**	.37**		-.16**
Perceived strain			-.18**	-.22**
R^2	.08	.50	.07	.10
Adjusted R^2	.07	.50	.06	.09
ΔR^2				.03
F	7.355	86.383	7.976	8.660
df	511	511	512	510

Note:

1. C-stressors: Challenge stressors

2. H-stressors: Hindrance stressors

4. Adding gender as another control variable had no influences on the findings.

**$p < .01$ * $p < .05$

Table 7: Results of the Standardized Regression Analysis for the Mediating Effects of Perceived Strain on the Relationship between Job Satisfaction and Challenge and Hindrance Stressors (H - 5)

Predictors	Model 1: Job satisfaction	Model 2: Perceived Strain	Model 3: Job satisfaction	
			Step 1	Full model
Age	.05	-.11**	.04	.02
Marital status	-.03	.01	-.03	-.03
Education	.16**	-.05	.13**	.15**
Tenure	.03	-.00	.04	.03
C-stressors	.13**	.42**		.24**
H-stressors	-.41**	.37**		-.32**
Perceived strain			-.29**	-.25**
R^2	.15	.50	.10	.18
Adjusted R^2	.14	.50	.10	.17
ΔR^2				.08
F	14.943	86.383	11.893	23.488
df	511	511	512	510

Note:

1. C-stressors: Challenge stressors

2. H-stressors: Hindrance stressors

3. Adding gender as another control variable had no influences on the findings.

**p<.01 *p<.05

Table 8: Results of the Standardized Regression Analysis for the Mediating Effects of Perceived Strain on the Relationship between Job Burnout, and Challenge and Hindrance Stressors (H - 6)

Predictors	Model 1: Burnout	Model 2: Perceived Strain	Model 3: Burnout	
			Step 1	Full model
Age	-.14**	-.11**	-.10**	-.08**
Marital status	-.01	.01	-.02	-.01
Education	-.11**	-.05	-.05	-.09**
Tenure	.01	-.00	-.00	.01
C-stressors	.11**	.42**		-.11**
H-stressors	.60**	.37**		.40**
Perceived strain			.69**	.52**
R^2	.47	.50	.52	.61
Adjusted R^2	.47	.50	.51	.60
ΔR^2				.10
F	76.477	86.383	108.538	61.839
df	511	511	512	510

Note:

1. C-stressors: Challenge stressors

2. H-stressors: Hindrance stressors

3. Adding gender as another control variable had no influences on the findings.

**$p<.01$ *$p<.05$

Table 9: Results of the Standardized Regression Analysis for the Moderating Effects of Gender

	In-role performance (H – 7a, 7b)			Job satisfaction (H – 8a, 8b)			Burnout (H – 9a, 9b)		
Predictors	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Control									
C-stressors	.20**	.20**	.53**	.24**	.24**	.43**	-.11**	-.11**	-.23*
H-stressors	-.16**	-.14*	-.40*	-.32**	-.32**	-.46**	.40**	.40**	.35**
Perceived strain	-.22**	-.24**	-.23**	-.25**	-.26**	-.25**	.52**	.53**	.53**
Gender		.17**	.30		-.05	.13		-.05	.24*
Gender x C-stressors			-.55*			-.31			.20
Gender x H-stressors			.38			.21			.06
R^2	.10	.13	.14	.18	.18	.19	.61	.61	.61
Adjusted R^2	.90	.12	.12	.17	.17	.17	.60	.61	.61
ΔR^2		.03	.01		.00	.00		.00	.00
F	8.342	15.620	2.508	15.952	1.442	.866	113.6	3.043	1.406
Sig. F Change	.000	.000	.082	.000	.230	.421	.000	.082	.246
df	510	509	507	510	509	507	510	509	507

Note:

1. Control variables: Age, marital status, and tenure

2. C-stressors: Challenge stressors

3. H-stressors: Hindrance stressors

4. For gender, 0= male, 1=female

*$p<.05$

**$p<.01$

Table 10: Results of the Standardized Regression Analysis for the Moderating Effects of Type-A Behavior

	In-role performance (H – 10a, 10b)			Job satisfaction (H – 11a, 11b)			Burnout (H – 12a, 12b)		
Predictors	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Control									
C-stressors	.20**	.18**	-.33	.24**	.21**	.18	-.11**	-.10*	-.14
H-stressors	-.16**	-.16**	-.16	-.32**	-.32**	-.72**	.40**	.40**	.64**
Perceived strain	-.22**	-.27**	-.28**	-.25**	-.34**	-.35**	.52**	.57**	.57**
Type-A		.09	-.51*		.15**	-.26		-.07	.11
Type-A x C-stressors			1.00**			.10			.05
Type-A x H-stressors			-.00			.64*			-.38 [a]
R^2	.10	.11	.13	.18	.19	.20	.61	.61	.62
Adjusted R^2	.90	.09	.11	.17	.18	.19	.60	.61	.61
ΔR^2		.00	.02		.01	.01		.00	.00
F	8.342	2.419	5.6	15.952	7.024	3.358	113.6	3.276	2.215
Sig. F Change	.000	.120	.004	.000	.008	.022	.000	.071	.110
df	510	509	507	510	509	507	510	509	507

Note:

1. Control variables: Age, marital status, and tenure

2. C-stressors: Challenge stressors

3. H-stressors: Hindrance stressors

4. For Type-A behavior, high score = Type-A, low score = Type-B

5. Adding gender as another control variable had no influences on the findings.

*$p<.05$

**$p<.01$

[a]. $p = .058$

Table 11: Results of the Standardized Regression Analysis for the Moderating Effects of Work Locus of Control (WLC)

	In-role performance (H – 13a, 13b)			Job satisfaction (H – 14a, 14b)			Burnout (H – 15a, 15b)		
Predictors	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
Control									
C-stressors	.20**	.18**	.46	.24**	.21**	.47	-.11**	-.08*	.02
H-stressors	-.16**	-.12*	-.17	-.32**	-.29**	-.40 [c]	.40**	.36**	.24
Perceived strain	-.22**	-.19**	-.19*	-.25**	-.22**	-.22**	.52**	.49**	.49**
WLC		.10*	.26		.08 [b]	.19		-.12**	-.12
WLC x C-stressors			-.33			-.30			-.11
WLC x H-stressors			.04			.10			.11
R^2	.10	.11	.11	.18	.18	.19	.61	.62	.62
Adjusted R^2	.90	.10	.10	.17	.17	.17	.60	.61	.61
ΔR^2		.01	.00		.01	.00		.01	.00
F	8.342	3.944	.822	15.952	3.022	.605	113.6	14.562	.260
Sig. F Change	.000	.048	.440	.000	.083	.546	.000	.000	.771
df	510	509	507	510	509	507	510	509	507

Note:

1. Control variables: Age, marital status, and tenure

2. C-stressors: Challenge stressors

3. H-stressors: Hindrance stressors

4. WLC: Work locus of control, high score = internals, low score=external

5. Adding gender as another control variable had no influences on the findings.

*p<.05

**p<.01

[b]. p =.083

[c]. p =.057

Table 12: Bivariate Correlations in the Measurement Model - SEM

	Variables	1	2	3	4	5
1	Challenge stressors	--				
2	Hindrance stressors	.62**	--			
3	Perceived strain	.67**	.74**	--		
4	In-role performance	.01	-.25**	-.24**	--	
5	Job satisfaction	-.06	-.33**	-.34**	.27**	--
6	Burnout	.46**	.76**	.83**	-.39**	-.62**

Table 13: Results of Standardized Regression Analysis for the Moderating Effects of the Two Subscales of Type-A Behavior

	In-role performance			Job satisfaction			Burnout		
Predictors	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3	Step 1	Step 2	Step 3
C-stressors	.24**	.21**	.27**	.23**	.22**	.21	-.10**	-.09*	-.09*
H-stressors	-.14**	-.13*	-.13*	-.31**	-.30**	-.31**	.39**	.38**	.39**
Perceived strain	-.25**	-.32**	-.36**	-.26**	-.30**	-.29**	.53**	.55**	.55**
HC		.14**	-.12**		.18**	-.17**		-.11**	-.10**
TP		.07	.09		.02	.01		.00	.00
HC * C-stressors			-.08			.13**			-.06 [b]
HC * H-stressors			.11*			-.02			-.00
TP * C-stressors			.18**			-.10*			.05
TP * H-stressors			-.05			.13**			-.07*
R^2	.15	.17	.20	.19	.22	.25	.62	.63	.64
Adjusted R^2	.13	.15	.18	.18	.21	.23	.62	.63	.63
ΔR^2		.02	.03		.03	.03		.002	.003
df	514	512	508	514	512	508	514	512	508

Note:

1. Control variables: Age, marital status, and tenure

2. C-stressors: Challenge stressors

3. H-stressors: Hindrance stressors

4. HC: Hard-driving/competitive

5: TP: Pressed for time

6. Step 1 includes control variables, challenge and hindrance stressors, and perceived strain

*p<.05

**p<.01

[b]. p =.078

Table 14: Summary of Findings Related to Proposed Hypotheses

No.	Hypothesis	Effect	Result
H 1a	Challenge stressors will have a positive relationship with in-role performance.	Differing effects on performance	Supported
H 1b	Hindrance stressors will have a negative relationship with in-role performance.		Supported
H 2a	Challenge stressors will have a positive relationship with job satisfaction.	Differing effects on job satisfaction	Supported
H 2b	Hindrance stressors will have a negative relationship with job satisfaction.		Supported
H 3a	Challenge stressors will have a negative relationship with burnout.	Differing effects on burnout	Not
H 3b	Hindrance stressors will have a positive relationship with burnout.		Supported
H 4	Perceived strain partially mediates the effects of challenge and hindrance stressors on in-role performance.	Perceived strain as a mediator	Supported
H 5	Perceived strain partially mediates the effects of challenge and hindrance stressors on job satisfaction.		Supported
H 6	Perceived strain partially mediates the effects of challenge and hindrance stressors on burnout. The two stressors have differing direct effects on burnout.		Supported
H 7a	The positive effect of challenge stressors on in-role performance is stronger for males than for females.	Gender as a moderator	Supported

H 7b	The negative effect of hindrance stressors on in-role performance is stronger for males than for females.	Gender as a moderator	Not
H 8a	The positive effect of challenge stressors on job satisfaction is stronger for males than for females.		Not
H 8b	The negative effect of hindrance stressors on job satisfaction is stronger for males than for females.		Not
H 9a	The negative effect of challenge on burnout is stronger for males than for females.		Not
H 9b	The positive effect of hindrance stressors on burnout is stronger for males than for females.		Not
H 10a	The positive effect of challenge stressors on in-role performance will be stronger for Type As than for Type Bs.	Type A behavior as a moderator	Supported
H 10b	The negative effect of hindrance stressors on in-role performance will be weaker for Type As than Type Bs.		Not
H 11a	The positive effect of challenge stressors on job satisfaction will be stronger for Type As than for Type Bs.		Not

H 11b	The negative effect of hindrance stressors on job satisfaction will be weaker for Type As than for Type Bs.		Supported
H 12a	The positive effect of challenge stressors on burnout will be stronger for Type As than for Type Bs.		Not
H 12b	The positive effect of hindrance stressors on burnout will be stronger for Type As than for Type Bs.		Not
H 13a	The positive effect of challenge stressor on in-role performance is stronger for internals than for externals.	Work locus of control as a moderator	Not
H 13b	The negative effect of hindrance stressor on in-role performance is weaker for internals than for externals.		Not
H 14a	The positive effect of challenge stressor on job satisfaction is stronger for internals than for externals.		Not
H 14b	The negative effect of hindrance stressor on job satisfaction is weaker for internals than for externals.		Not
H 15a	The negative effect of challenge stressors on burnout is stronger for internals than for externals.		Not

H 15b	The positive effect of hindrance stressors on burnout is weaker for internals than for externals.		Not

Table 15: Results of the Standardized Regression Analysis for the Moderating Effects of Gender on In-role Performance without Considering Perceived Strain

Analysis	Variable	B	β	*T*	*p*	R^2	ΔR^2	*F* Change
Step 1	Age	.10	.16	3.382	.001	.04		.000
	Marital status	.00	.01	.115	.909			
	Education	-.00	.00	-.002	.999			
	Tenure	.01	.08	1.768	.078			
Step 2	C-Stressors	.10	.13	2.694	.007	.09	.04	.000
	H-Stressors	-.19	-.25	-4.894	.000			
Step 3	Gender	.24	.16	3.823	.000	.11	.03	14.618
Step 4	Gender X C-Stressors	-.22	-.72	-2.887	.004	.13	.02	4.401
	Gender X H-Stressors	.16	.47	2.060	.040			

Note:

1. C-stressors: Challenge stressors

2. H-stressors: Hindrance stressors

Table 16: Results of the Standardized Regression Analysis for the Moderating Effects of Gender on Burnout without Considering Perceived Strain

Analysis	Variable	B	β	*T*	*p*	R^2	ΔR^2	*F* Change
Step 1	Age	-.15	-.23	-4.925	.000	.06		.000
	Marital status	-.02	-.03	-.589	.556			
	Education	-.00	-.01	-.157	.876			
	Tenure	.00	.02	.519	.604			
Step 2	C-Stressors	.08	.10	2.761	.006	.47	.42	.000
	H-Stressors	.47	.60	15.851	.000			
Step 3	Gender	-.01	-.01	-.232	.817	.47	.00	.054
Step 4	GenderXC-Stressors	.12	.39	1.998	.046	.48	.01	2.608
	GenderXH-Stressors	-.00	-.01	-.068	.946			

Note:

1. C-stressors: Challenge stressors

2. H-stressors: Hindrance stressors

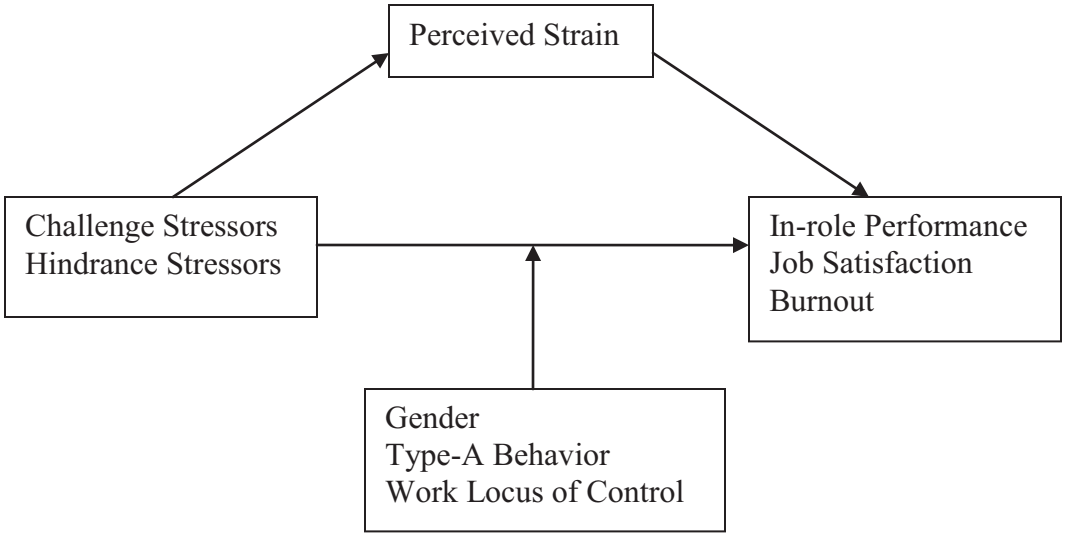

FIGURE 1

An Integrative Model of the Stressors-Individual Outcomes Relationship

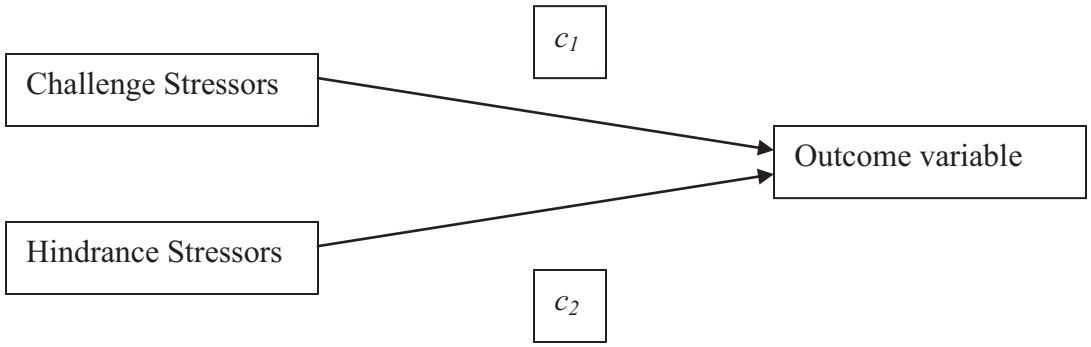

FIGURE 2

Regression Analysis in Testing Main Effects

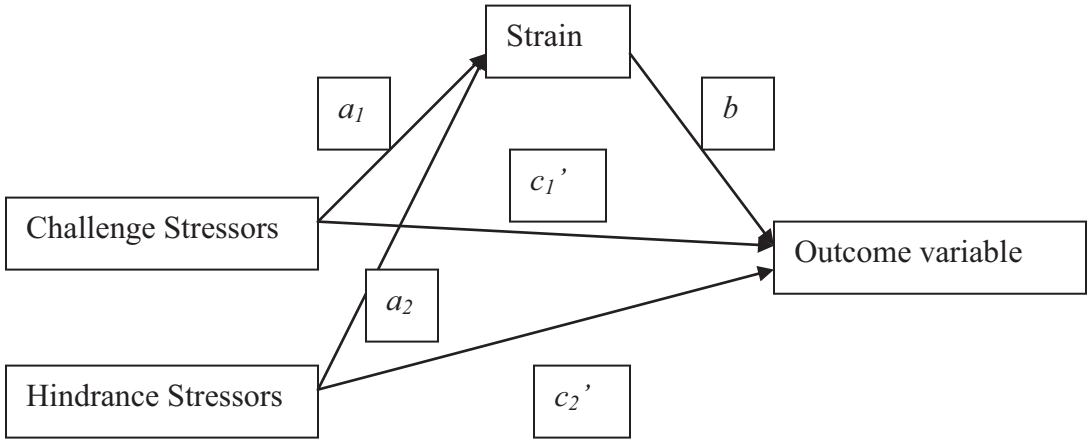

FIGURE 3

Regression Analysis in Testing Mediating Effects

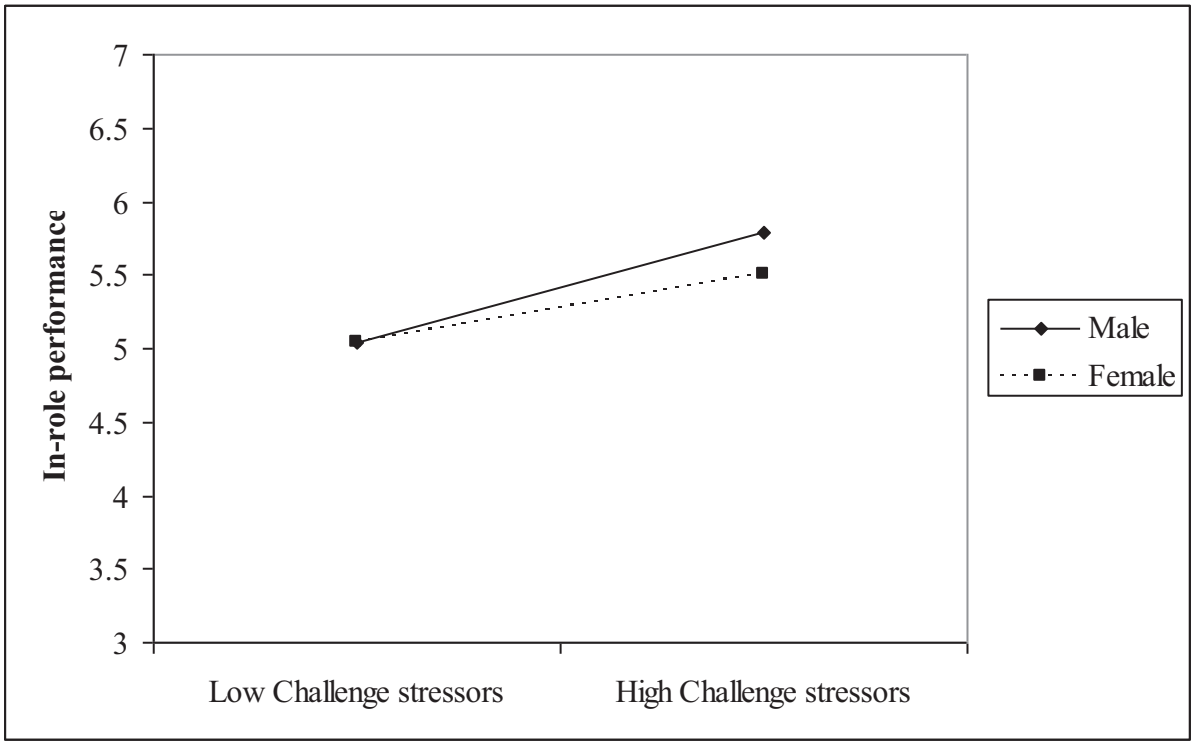

FIGURE 4

Interaction between Gender and challenge stressors on in-role performance

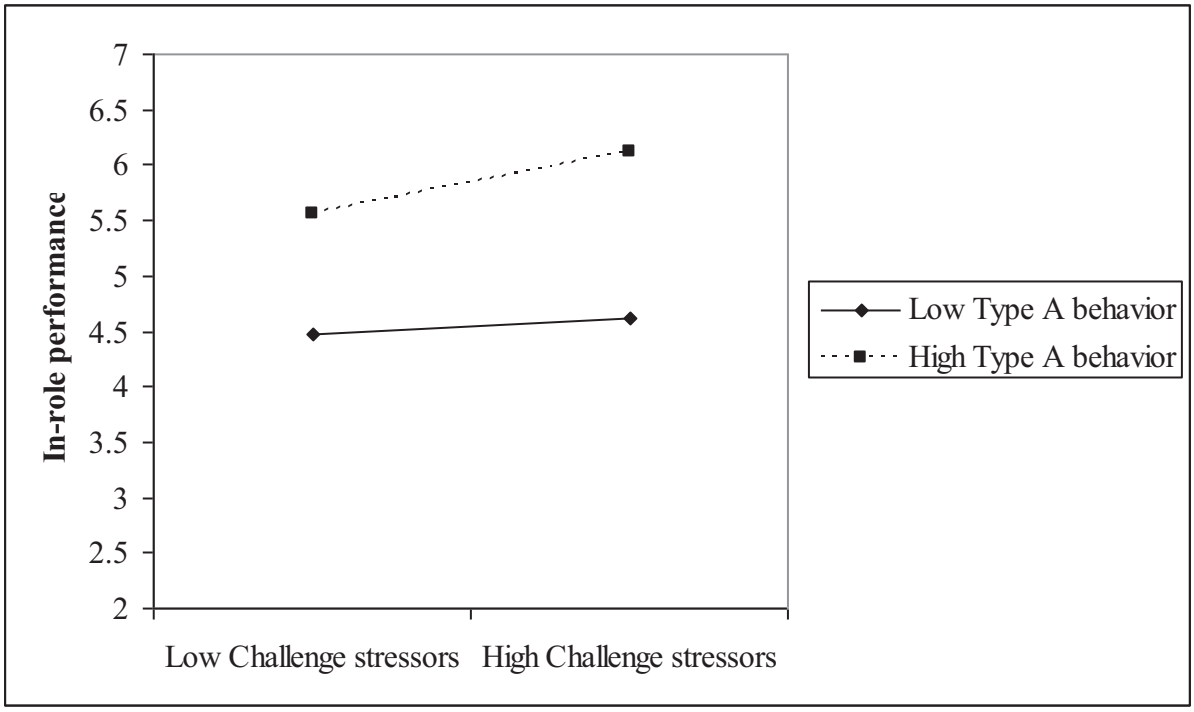

FIGURE 5

Interaction between Type-A behaviour and challenge stressors on in-role performance. Type-As have scores higher than and equal to the mean of 2.6. Type-Bs have scores lower than the mean of 2.6.

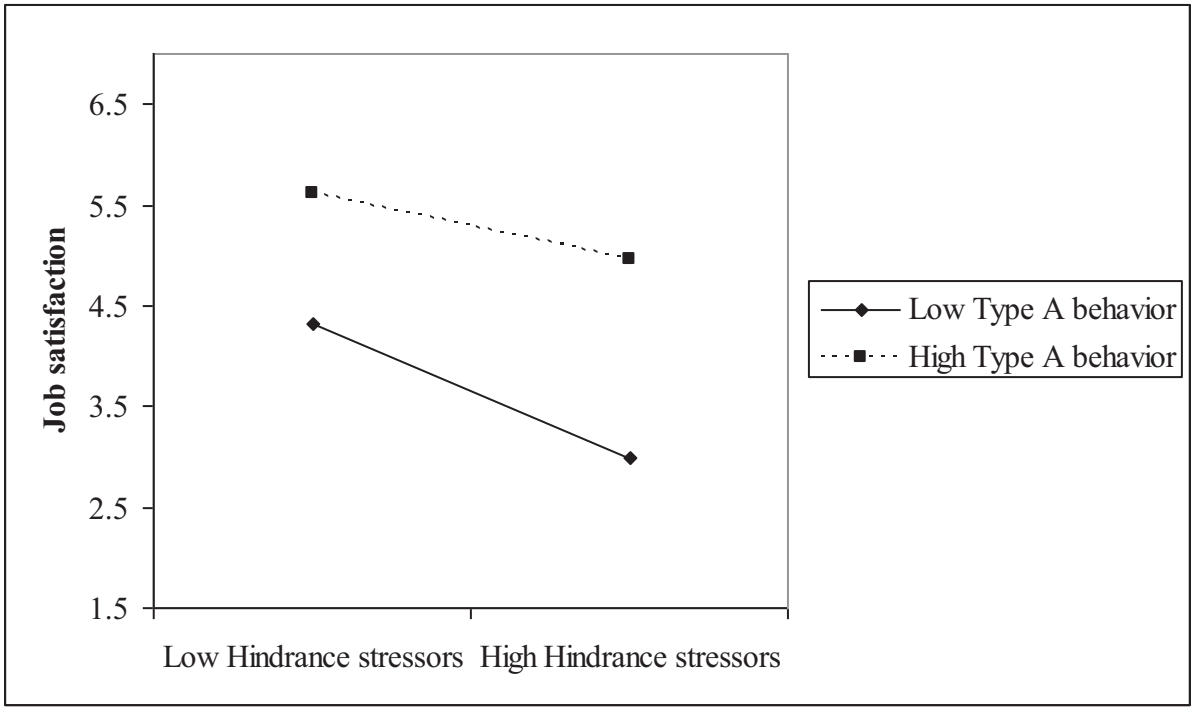

FIGURE 6

Interaction between Type-A behaviour and hindrance stressors on job satisfaction. Type-As have scores higher than and equal to the mean of 2.6. Type-Bs have scores lower than the mean of 2.6.

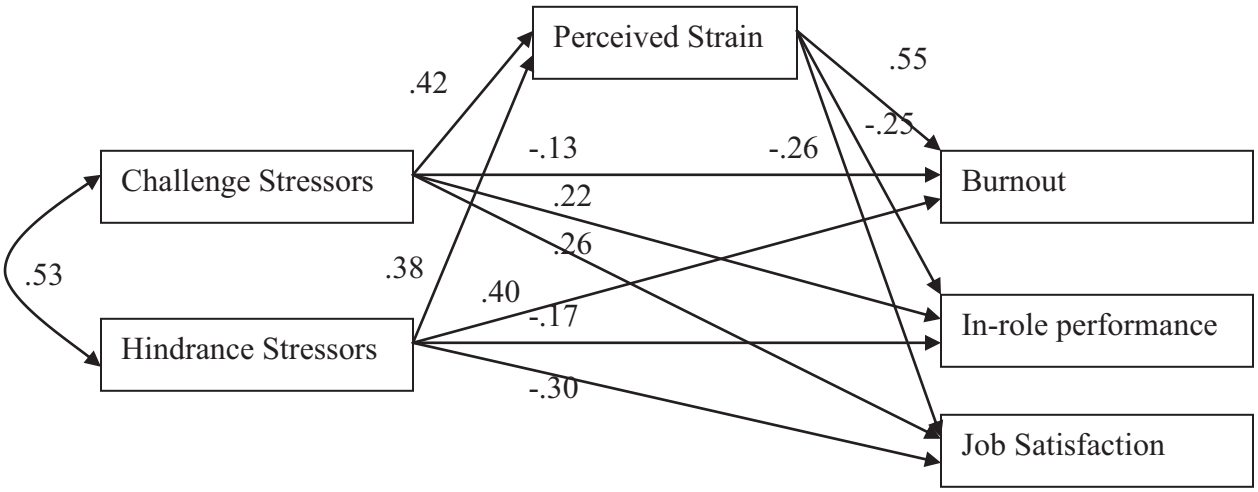

FIGURE 7

Path analysis -- -- perceived strain as the mediator and burnout, in-role performance, and job satisfaction are the outcomes.

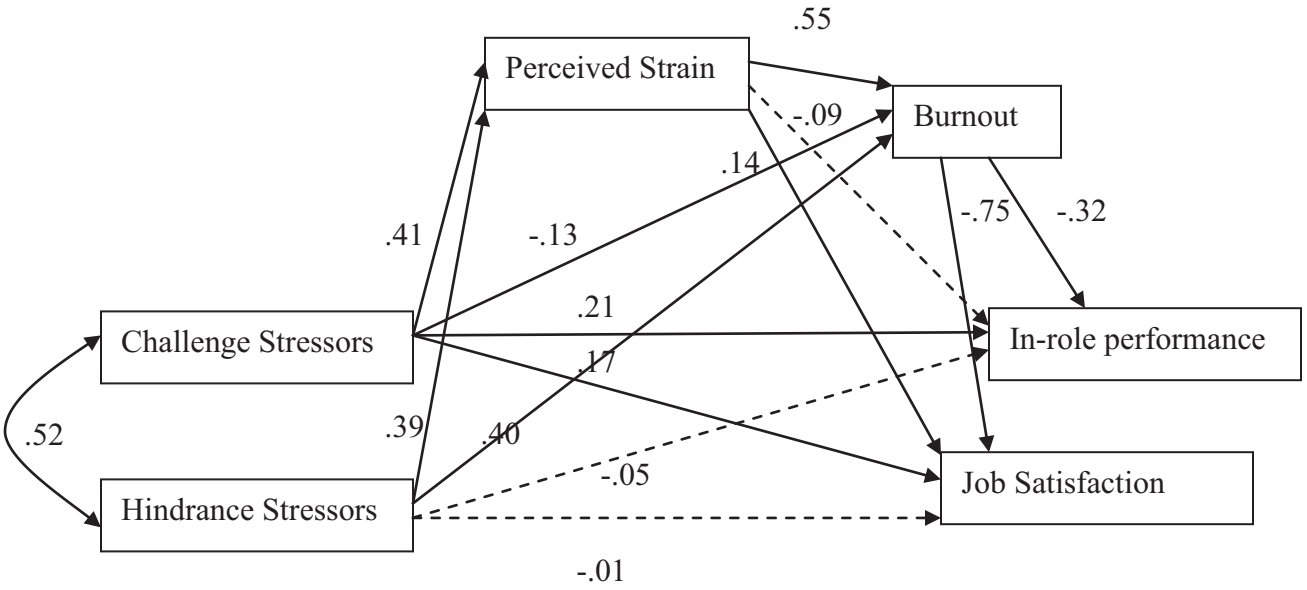

FIGURE 8

A modified path analysis -- perceived strain and burnout as two mediators. In-role performance and job satisfaction as the outcomes. The direct paths between hindrance stressors and in-role performance and job satisfaction become non-significant. The path between perceived strain and in-role become non-significant.

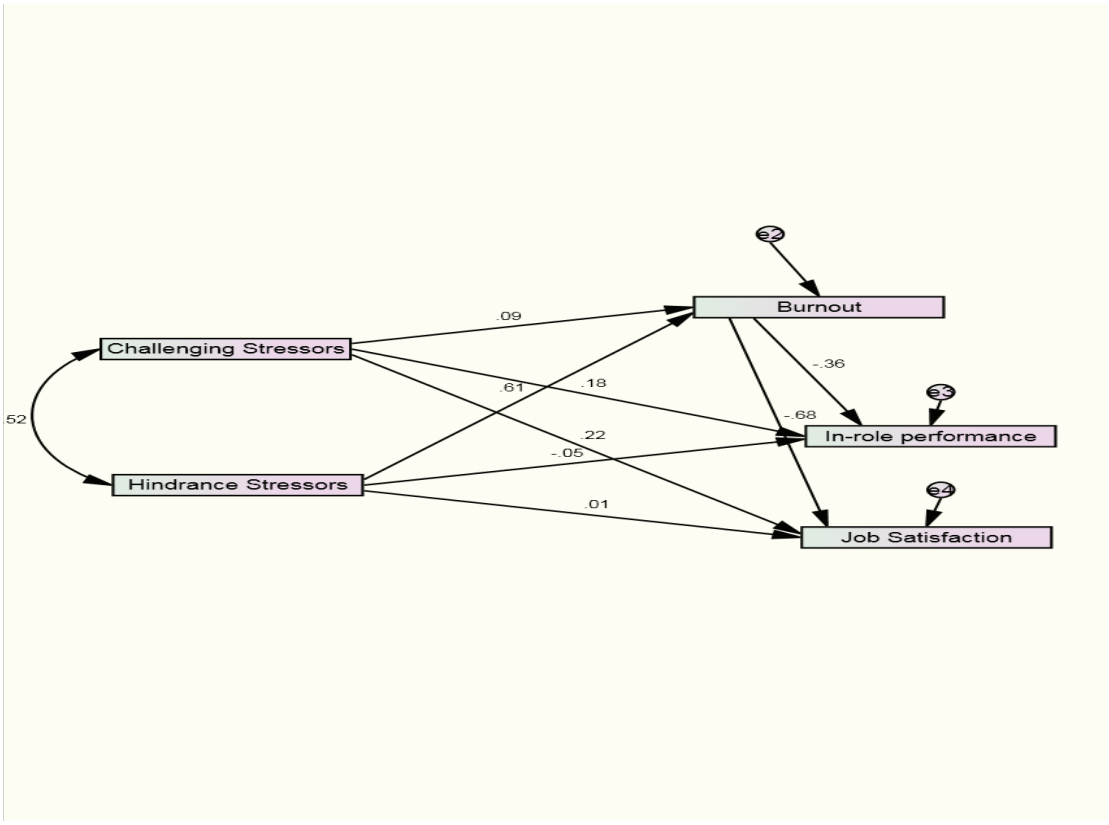

FIGURE 8a

A modified path analysis -- burnout as the sole mediator. The direct paths between hindrance stressors and in-role performance and job satisfaction become non-significant. Thus, burnout completely mediates the relationship between hindrance stressors and in-role performance and job satisfaction.

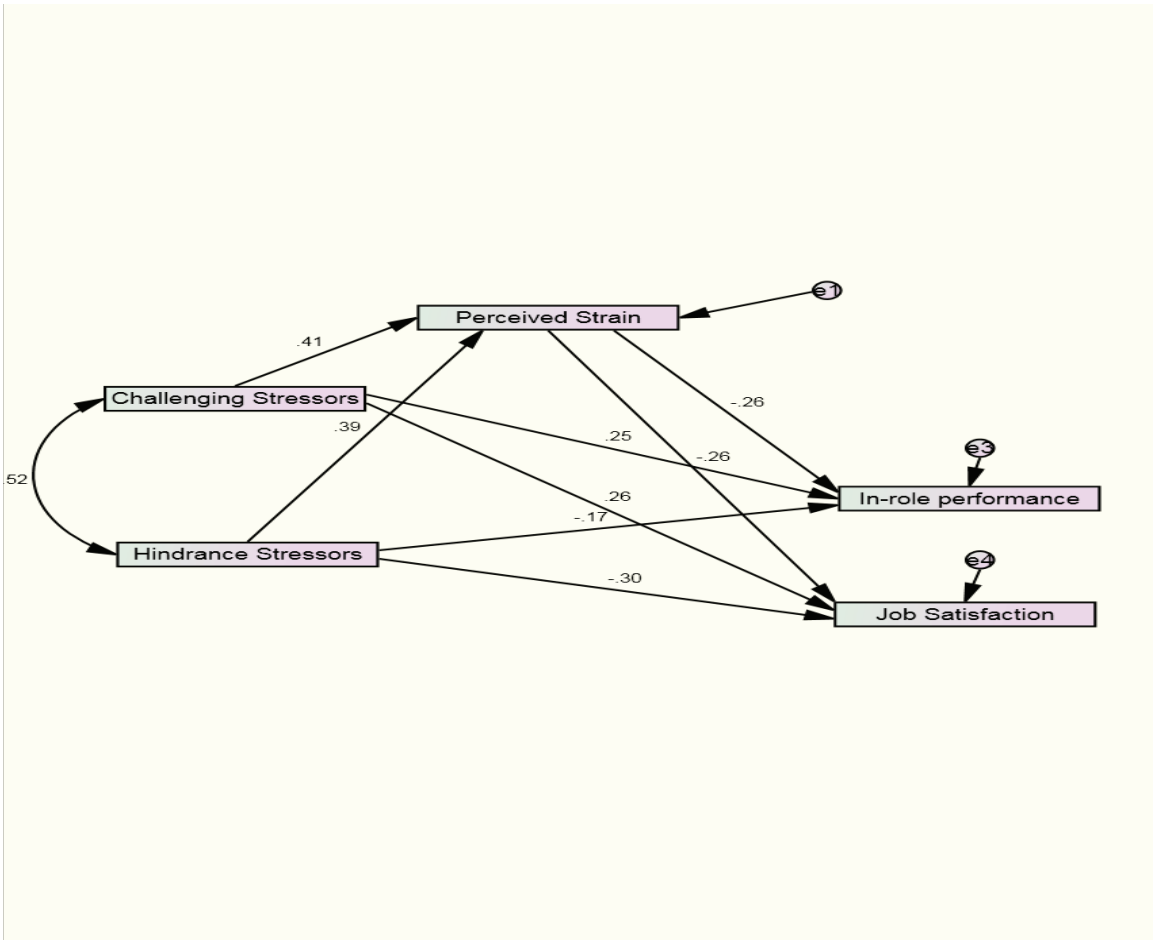

FIGURE 8b

A modified path analysis – perceived strain as the sole mediator. Perceived strain partially mediated the relationships between challenge and hindrance stressors and in-role performance and job satisfaction.

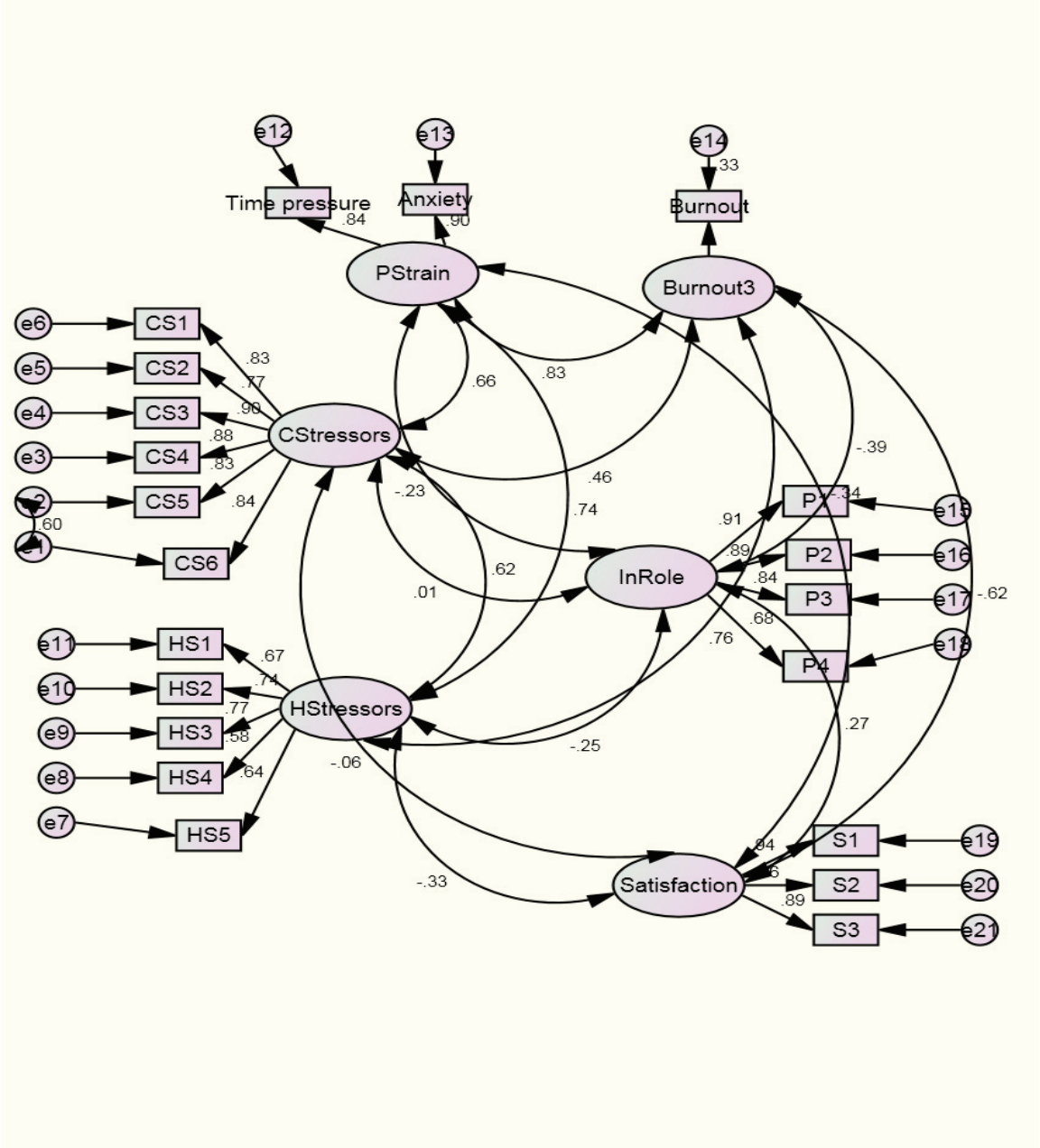

FIGURE 9

A measurement model including challenge and hindrance stressors, perceived strain, burnout, in-role performance and job satisfaction. Burnout has only one indicator.

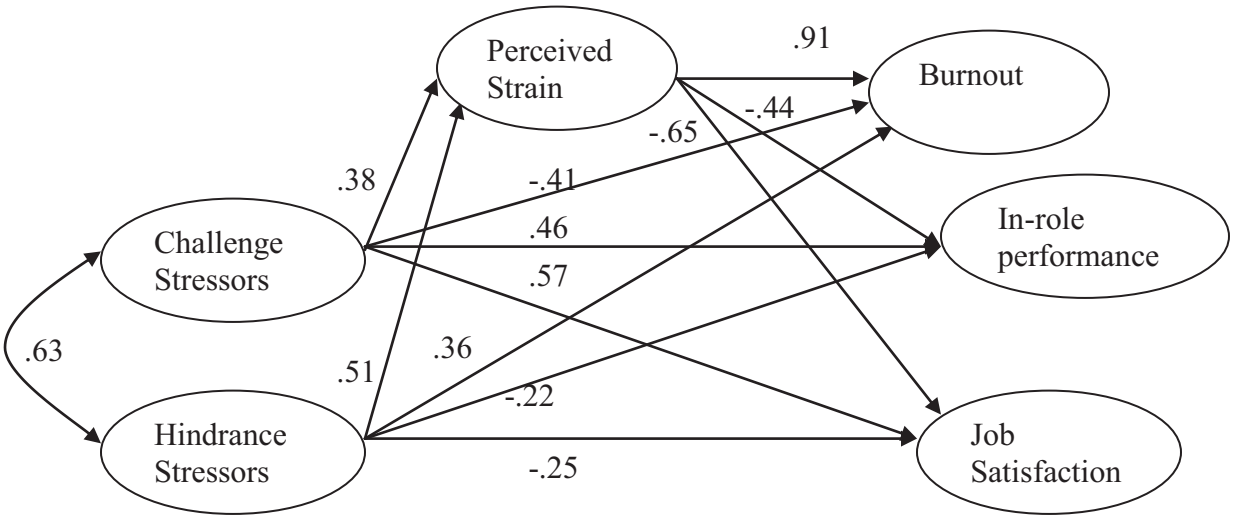

FIGURE 10

A structural model -- perceived strain as the mediator and burnout, in-role performance, and job satisfaction are the outcomes. Burnout has one indicator.

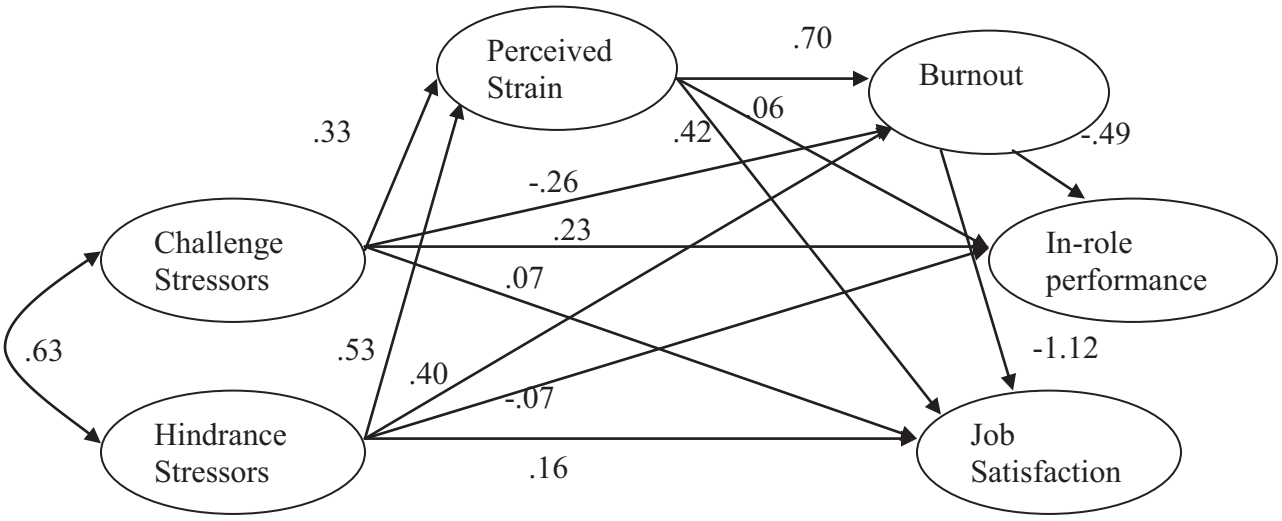

FIGURE 11

A modified structural model -- perceived strain and burnout as two mediators. In-role performance and job satisfaction as the outcomes. Burnout has one indicator. Burnout links with in-role performance and job satisfaction (*βs* = -.49 and -1.12). The direct paths between hindrance stressors and in-role performance and job satisfaction become non-significant. The direct path between perceived strain and in-role also become non-significant. Burnout has only one indicator in this model.

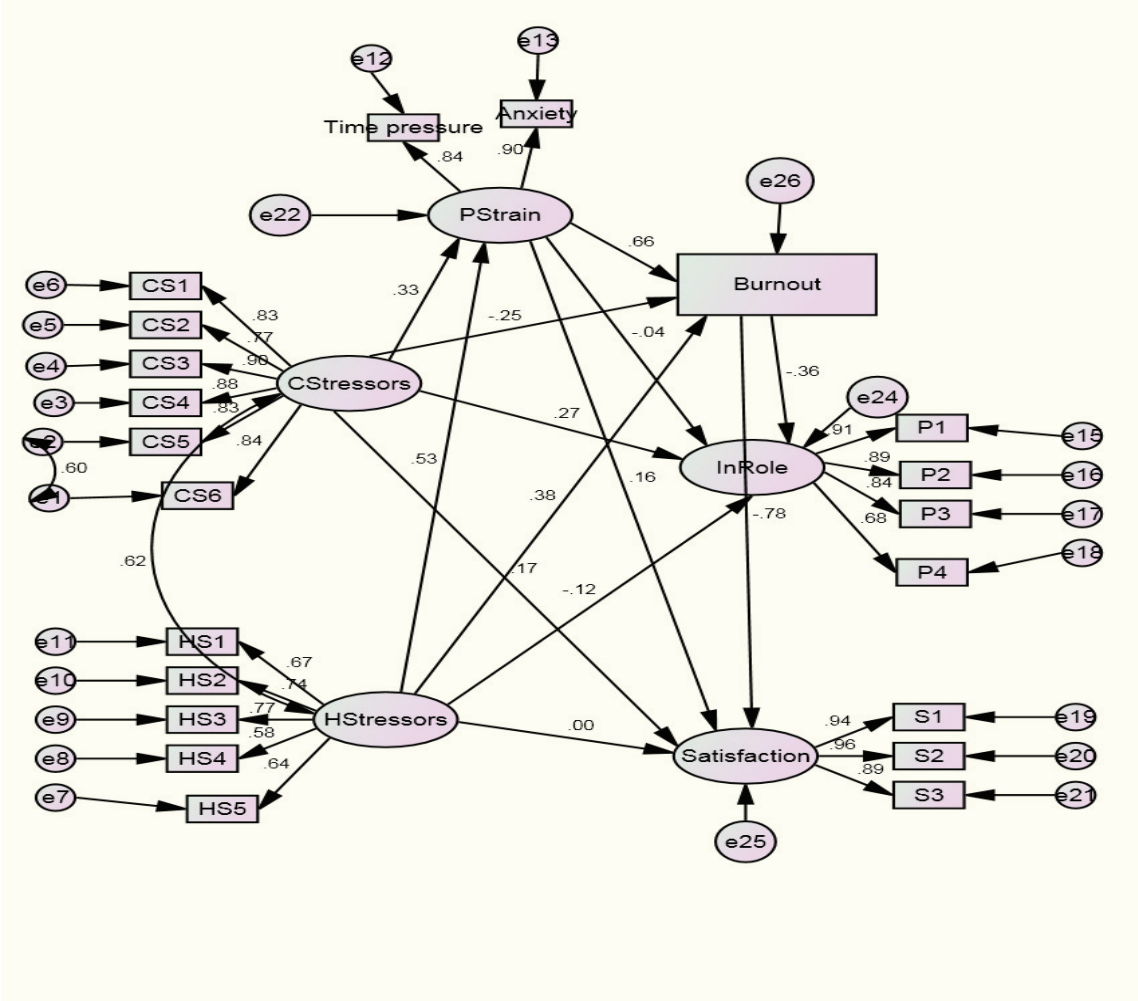

FIGURE 12

A modified structural model -- perceived strain and burnout as two mediators. In-role performance and job satisfaction as the outcomes. Burnout is treated as an observed variable.

Burnout links with in-role performance and job satisfaction (*βs* = -.36 and -.78).

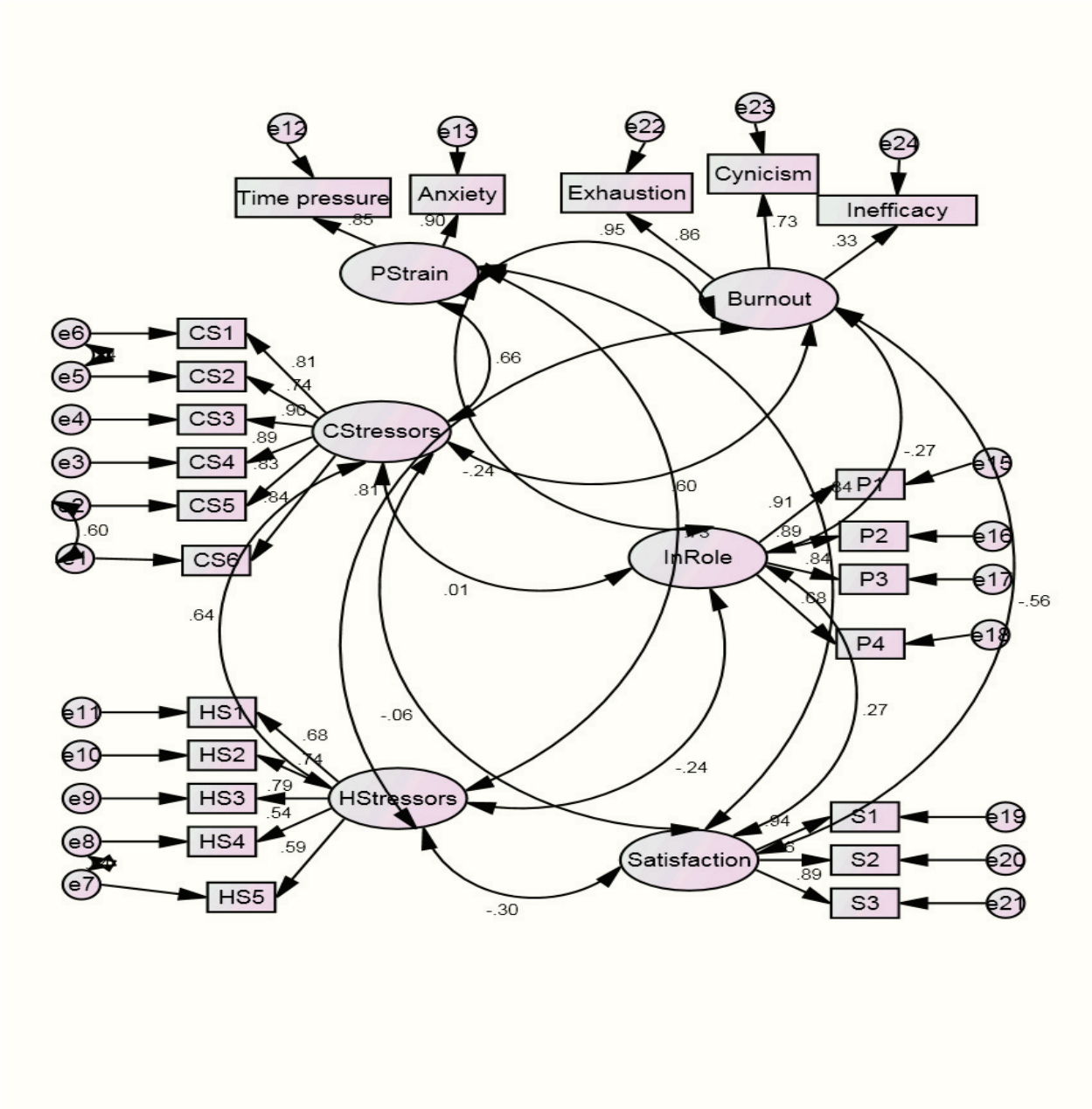

FIGURE 13

A measurement model including challenge and hindrance stressors, perceived strain, burnout, in-role performance and job satisfaction. Burnout has three parcels.

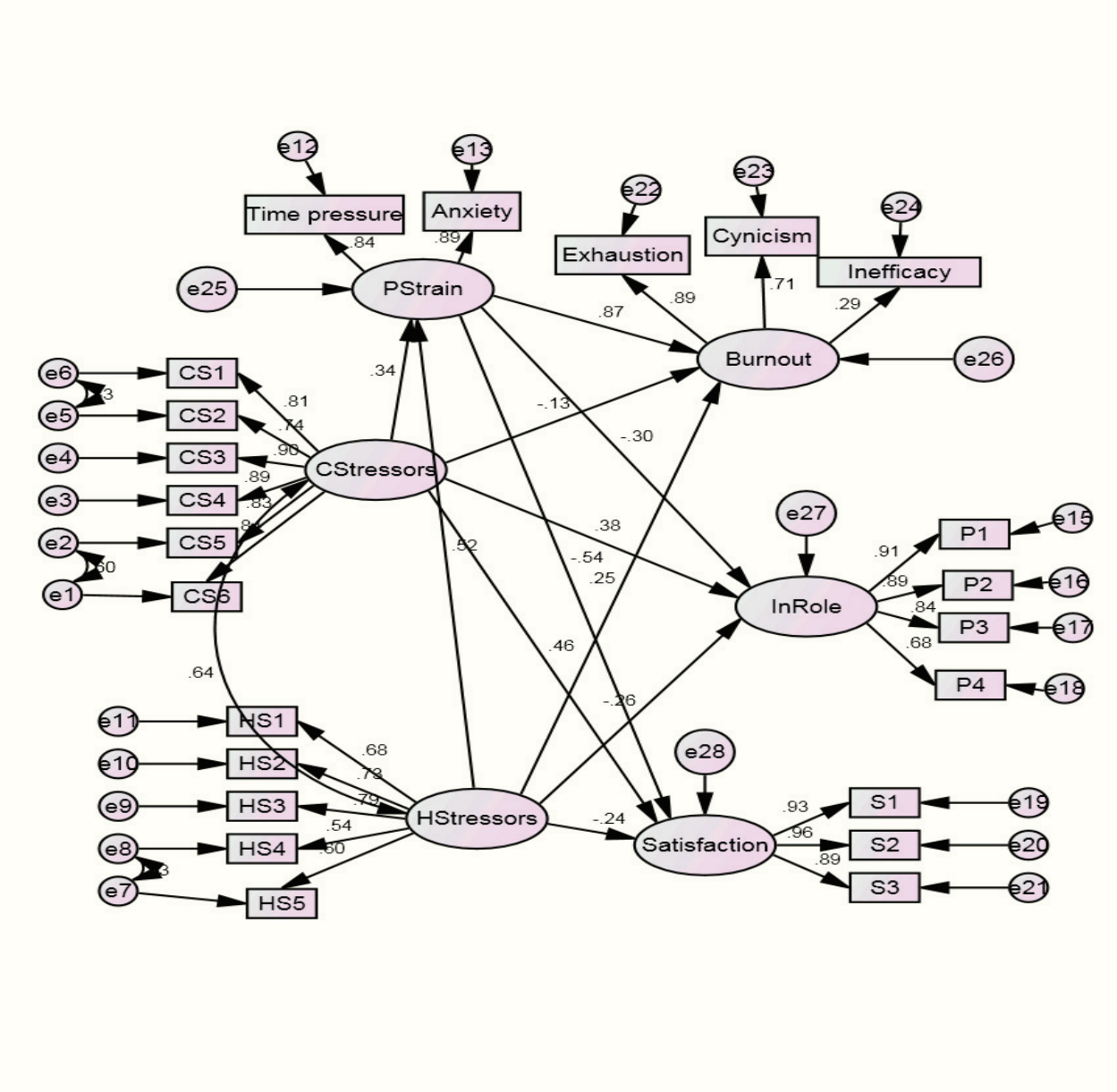

FIGURE 14

A structural model -- perceived strain as the mediator and burnout, in-role performance, and job satisfaction are the outcomes. Burnout has three parcels.

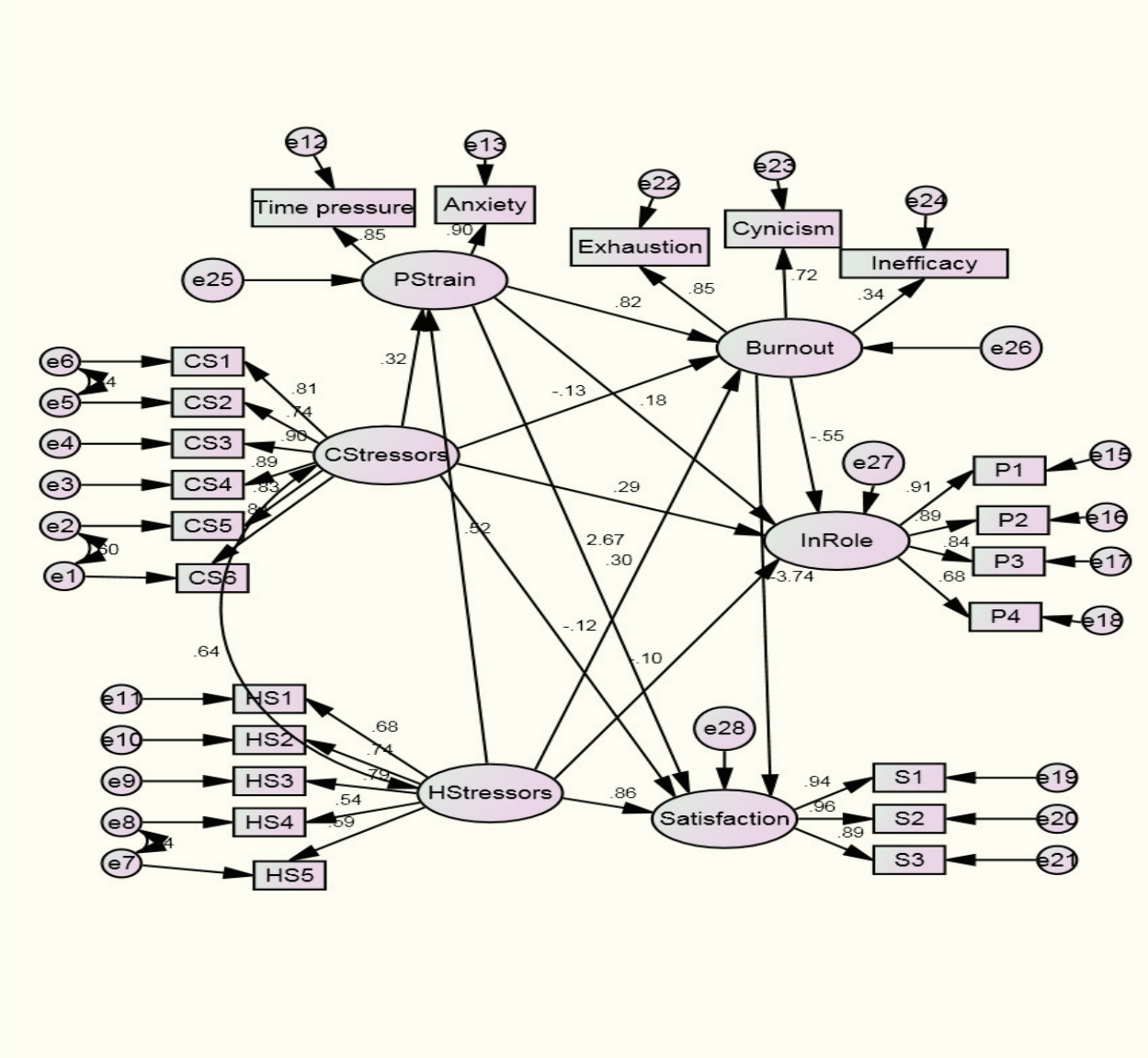

FIGURE 15

A modified structural model -- perceived strain and burnout as two mediators. In-role performance and job satisfaction are the outcomes. Burnout has three parcels. This model shows a Heywood case.

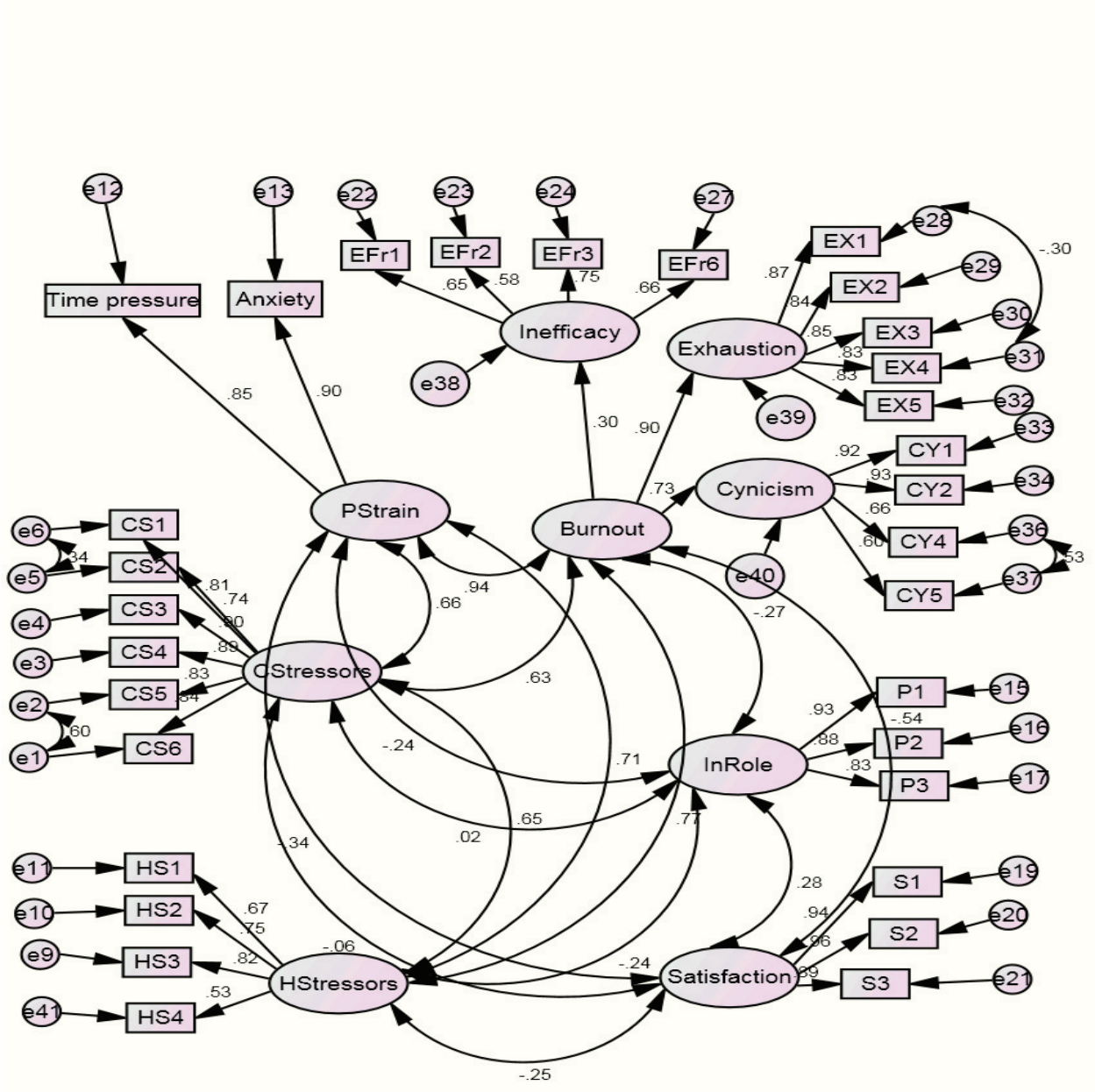

FIGURE 16

A measurement model including challenge and hindrance stressors, perceived strain, burnout, in-role performance and job satisfaction. Burnout has full items.

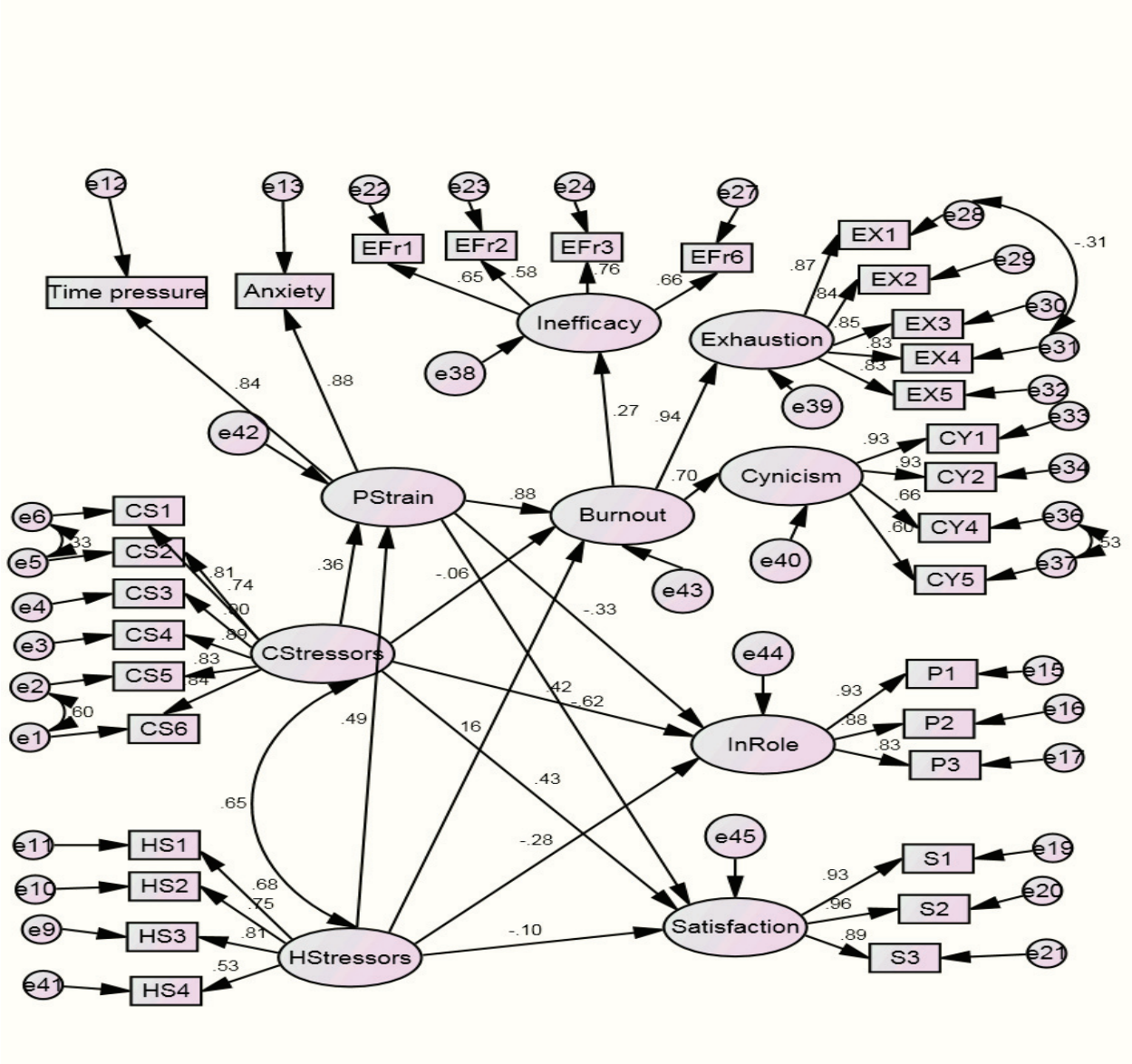

FIGURE 17

A structural model -- perceived strain as the mediator and burnout, in-role performance, and job satisfaction are the outcomes. Burnout has full items.

References

Appelbaum, S. H. (1984). Occupational Stress and Coronary Disease: Implications for North American Managers, *Hong Kong Journal of Business Management*, *11*, 31-53.

Appelbaum, S. H. & Shapiro, B. T. (2006). Diagnosis and Remedies for Deviant Workplace Behaviors, *Journal of American Academy of Business*, *9*, 14-20.

Baba, V. V., Jamal, M. & Tourigny, L. (1998). Work and mental health: A decade in Canadian research. *Canadian Psychology*, *39*, 94-107.

Barling, J., & Charbonneau, D. (1992). Disentangling the relationship between the achievement striving and impatience-irritability dimensions of type A behavior, performance and health. *Journal of Organization Behavior*, *3*, 369–377.

Beehr, T. A. & Newman, J. E. (1978). Job stress, employee health, and organizational effectiveness: A facet analysis model, and literature review. *Personnel Psychology*, *31*, 365-399.

Beehr, T. A. & Schuler, R. (1980). Stress in organizations. In K. Rowland & Ferris (Eds.), *Personnel management* (pp. 390-419). Boston: Allyn and Bacon.

Beehr, T. A., Glaser, K. M., Canali, K. G., & Wallwey, D. A. (2001). Back to basics: Re-examination of demand control theory of occupational stress. *Work & Stress*, *15,* 115-130.

Beehr, T. A. (1998). An organizational psychology meta-model of occupational stress. In C. L. Cooper (Ed.), *Theories of Organizational Stress*: Oxford University Press.

Begley, T., Lee, C., & Czajka, J. (2000). The relationship of Type A behavior and optimism with job performance and blood pressure. *Journal of Business & Psychology*, *15*, 215-227.

Bellman, S., Forster, N. S., Still, L.V. & Cooper, C. L. (2003). Gender Differences in the Use of Social Support as a Moderator of Occupational Stress, *Stress and Health*, *19*, 45-58.

Bergeron, D. M. (2007). The potential paradox of organizational citizenship behavior: good citizens at what cost? *Academy of Management Review*. *32*, 1078-1095.

Bhave, D., Kramer, A., & Glomb, T. M. (2010). Work-family conflict in work groups: Social information processing, support and demographic dissimilarity. *Journal of Applied Psychology*, *95*, 145-158.

Blauner, R. (1964). *Alienation and Freedom: The factory worker and his industry*. The University of Chicago Press. Chicago and London.

Bowling, N. A., & Hammond, G. D. (2008). A meta-analytic examination of the construct validity of the Michigan Organizational Assessment Questionnaire Job Satisfaction Subscale. *Journal of Vocational Behavior, 73*, 63-77.

Boswell, W. R., Olson-Buchanan, J. B., & LePine, M. A. (2004). Relations between stress and work outcomes: The role of felt challenge, job control, and psychological strain. *Journal of Vocational Behavior, 64*, 165-181.

Bradley, H. (1969). Community-based treatment for young adult offenders. *Crime and Delinquency*, *15*, 359-370.

Broeck, A. V., Cuyper, N. D., Witte, H. D. & Vansteenkiste, M. (2010). Not all job demands are equal: Differentiating job hindrances and job challenges in the Job Demands–Resources model, *European Journal of Work and Organizational Psychology*, *19*, 735-759

Caplan, R. D., Cobb, S., French, J. R.P., Harrison, R.V., & Pinneau, S. R. (1975). *Job Demands and worker Health*, The Institute for Social Research, University of Michigan, Ann Arbor, MI.

Cavanaugh, M., Boswell, W., Roehling, M., & Boudreau, J. W. (2000). An empirical examination of self-reported work stress among U.S. managers. *Journal of Applied Psychology, 85*, 65-74.

Cooper, C. J., Dewe, P. J., & O'Driscoll, M. P. (2001). *Organizational Stress: A Review and Critique of Theory*, *Research and Applications.* Sage Publications.

Cordes, C. L. & Dougherty, T. W. (1993). A review and an integration of research on job burnout. *Academy of Management Review*, *18*, 621.

Cranny, C. J., Smith, P. C., & Stone, E. F. (1992). *Job satisfaction: how people feel about their jobs and how it affects their performance*. New York: Lexington Press.

Crawford, E. R., LePine, J. A., & Rich, B. L. (2010). Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *Journal of Applied Psychology, 95,* 834-848.

Chan, D. (2006). Interactive effects of situational judgment effectiveness and proactive personality on work perceptions and work outcomes. *Journal of Applied Psychology, 91*, 475–481.

Deaux, K. (1985). Sex and gender. *Annual Review of Psychology*, *36*, 49-81.

De Hoogh, A.H.B., & Den Hartog, D.N. (2009). Neuroticism and locus of control as moderators of the relationships of charismatic and autocratic leadership with burnout. *Journal of Applied Psychology, 94*, 1058-1067.

De Lange, A. H., Taris, T. W., Kompier, M. A. J., Houtman, I. L. D., & Bongers, P. M. (2003). The very best of the Millennium': Longitudinal research and the Demand-Control-Support Model. *Journal of Occupational Health Psychology*, *8*, 282-305.

Edwards, J. R. (1991). Person-Job Fit: A Conceptual Integration, Literature Review and Methodological Critique. In C. L. Cooper, & I. T. Roberston (Eds.), *International Review of Industrial and Organizational Psychology*, *6*, 283. New York: Wiley.

Edwards, J. R. (1996). An Examination of Competing Versions of the Person-Environment Fit Approach to Stress. *Academy of Management Journal*, *39*, 292-339.

Edwards, J. R. (2008). Theories of person-environment fit: An assessment of theoretical progress. *Academy of Management Annals, 2*, 167-230.

Edwards, J. R., & Baglioni, A. J. (1991). Relationship between Type A behavior pattern and mental and physical symptoms: A comparison of global and component measures. *Journal of Applied Psychology*, *76*, 276-290.

Edwards, J. R., Baglioni, A. J., & Cooper, C. L. (1990). Examining the relationships among self-report measures of Type A behavior pattern: The effects of dimensionality, measurement error, and differences in underlying constructs. *Journal of Applied Psychology*, *75*, 440-454.

Edwards, J. R., & Rothbard, N. P. (1999). Work and family stress and well-being: An examination of person-environment fit in the work and family domains. *Organizational Behavior and Human Decision Processes*, *77*, 85-129.

Elangovan, A. R., & Xie, J. L. (1999). Effects of perceived power of supervisor on subordinate stress and motivation: The moderating role of subordinate characteristics. *Journal of Organizational Behavior, 20*, 359-373.

Evans, M. (1985). A monte carlo study of the effects of correlated method variance in moderated multiple regression analysis. *Organizational Behavior and Human Decisions Processes*, *36*, 305-323.

French, J. R. P., & Kahn, R. L. (1962). A Programmatic Approach to Studying the Industrial Environment and Mental Health. *Journal of Social Issues*, *18*, 1-48.

French, J., R. P, Rodger, W. L., & Cobb, S. (1974). Adjustment as Person-Environment Fit. In G. Coelho, D. Humburg & J. Adams (Eds.), *Coping and Adaptation*. New York: Basic Books.

French, J., R. P, Caplan, R. D. & Harrison, R. V. (1982). *The Mechanism of Job Stress and Strain*. London: Wiley.

Frese, M. & Zapf, D. (1988). Methodological issues in the study of work stress: Objective vs. subjective measurement of work stress and the question of longitudinal studies. In C. L. Cooper & R. Payne (Eds.), *Causes, coping, and consequences of stress at work.* New York: John Wiley & Sons Ltd.

Freudenberger, H. (1974). Staff burn-out. *Journal of Social Issues, 30*, 159-65.

Ganster, D.C., Mayes, B.T., & Sime, W.E. (1989). Type A behavior in the work setting: A review and some new data. In A. Seigman and T. Dembroski (Eds.), *In Search of Coronary-Prone Behavior: Beyond Type A*. Hillsdale, NJ: Erlbaum.

Ganster, D. C. & Schaubrook, J. (1991). Work Stress and Employee Health. *Journal of Management, 17*, 235-71.

Ganster, D. C. (2008). Measurement challenges for studying work-related stressors and strains. *Human Resource Management Review*. *18*, 259-270.

Gilboa, S., Shirom, A., Fried, I., & Cooper, C. (2008). A meta-analysis of work demand stressors and job performance: Examining main and moderating effects. *Personnel Psychology*, *61*, 227-271.

Gavin, J. F., & Axelrod, W. L. (1977). Managerial stress and strain in a mining organization. *Journal of Vocational Behavior, 11,* 66-74.

Glazer, S., Beehr, T.A. (2005). Consistency of implications of three role stressors across four countries. *Journal of Organizational Behavior*, *26*, 467-487.

Halbesleben, J. R. B. & Buckley, M. R. (2004). Burnout in organizational life. *Journal of Management*, *30*, 859-879.

Harrison, R. V. (1978). Person-Environment Fit and Job Stress. In C. L. Cooper, & R. Payne (Eds.), S*tress at Work*. New York: Wiley.

Harrison, D. A., Newman, D. A., & Roth, P. L. (2006). How important are job attitudes? A meta-analytic comparison of integrative behavioral outcomes and time sequences. *Academy of Management Journal, 49*, 305–325.

Harrison, D. A., & Klein, K. J. (2007). What's the difference? Diversity constructs as separation, variety, or disparity in organizations. *Academy of Management Review, 32,* 1199–1228.

Haynes, S. G., Feinleib, M., & Kannel, W. B. (1980). The relationship of psychosocial factors to coronary heart disease in the Framingham Study: III. Eight-year incidence of coronary heart disease. *American Journal of Epidemiology, 111*, 37-58.

Jackson, S. E. & Schuler, R. S. (1985). A meta-analysis and conceptual critique of research on role ambiguity and role conflict in work settings. *Organizational Behavior and Human Decision Processes*, *36*, 16-78.

Jamal, M. (1984). Job Stress and Job Performance Controversy: An Empirical Assessment. *Organizational Behavior and Human Performance*, *33*, 1-21.

Jamal, M. (1990). Relationship of job stress and Type-A behavior to employees' job satisfaction, organizational commitment, psychosomatic health problems, and turnover motivation. *Human Relations. 43*, 727-739.

Jamal, M. (1999). Job stress, Type-A behavior and well-being: A cross-cultural examination. *International Journal of Stress Management*. *6,* 57-67.

Jamal, M. (2005). Burnout among Canadian and Chinese employees: a cross-cultural study. *European Management Review*. 2, 224-230.

Jamal, M. (2007a). Job Stress and Job Performance Controversy Revisited: An Empirical Examination in Two Countries. *International Journal of Stress Management*, *14*, 175-187.

Jamal, M. (2007b). Type-A behavior in a multinational organization: A study of two countries. S*tress and Health. 23*, 101-109.

Jamal, M. (2008). Burnout among Employees of a Multinational Corporation in Malaysia and Pakistan: An Empirical Examination. *International Management Review*, *4*, 60-70.

Jamal, M. & Badawi, J. A. (1995). Job-stress, Type-A behavior and employees' well-being among Muslim immigrants in North America: A study in workforce diversity. *International Journal of Commerce & Management*, *5*, 6-23.

Jamal, M. & Baba, V. V. (2001). Type-A behavior, job performance and well-being in college teachers. *International Journal of Stress Management, 8*, 231-240.

Jamal, J. & Ahmed, S, W. (2012). Relations of Challenge - Hindrance Stress with Burnout, Job Satisfaction and Health: Type A Behavior as a Moderator. *International Journal of Business and Management Tomorrow,* 2 (5), 1-7.

Janssen, O. (2004). How fairness perceptions make innovative behavior more or less stressful. *Journal of Organizational Behavior, 25*, 201-215.

Jex, S. M. (1998). Stress and job performance. Sage Publications, London.

Jick, T. D. & Mitz, L. E. (1985). Sex differences in work stress. *Academy of Management Review*, *10*, 408-420.

Kahn, R., Wolfe, D., Quinn, R., Snoek,J., & Rosenthal, R. (1964). *Organizational stress: Studies in role conflict and ambiguity*. New York: Wiley.

Karasek, R. A. (1979). Job Demands, Job Decision Latitude, and Mental Strain: Implications for Job Redesign. *Administrative Science Quarterly*, *24*, 285-308.

Karasek, R. A. & Theorell, T. (1990). *Healthy work: Stress, productivity and the reconstruction of working life*. New York: Basic Books.

Keenan, A., & McBain, G. D. M. (1979). Effects of type a behavior, intolerance of ambiguity, and locus of control on the relationship between role stress and work-related outcomes. *Journal of Occupational Psychology*, *52*, 277–285.

Kristof-Brown, A.L., Zimmerman, R.D., & Johnson, E.C. (2005). Consequences of individual's fit at work: A meta-analysis of person-job, person-organization, person-group, and person-supervisor fit. *Personnel Psychology*, *58*, 281 – 342.

Lazarus, R. S. & Folkman, S. (1984). *Stress, appraisal and coping*. Springer Publishing Company, NY.

Lee, R. & Ashforth, B. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, *81*, 123-133.

Lee, C., Ashford, S. J. & Jamieson. L. F. (1993). The effects of Type A behavior dimensions and optimism on coping strategy, health and performance: Summary. *Journal of Organizational Behavior*. *14*, 143-157

Lee, C., Earley, P. C., & Hanson, L. A. (1988). Are Type As better performers? *Journal of Organizational Behavior*, *9*, 263-269.

Leiter, M. P. & Maslach, C. (2005). A mediation model of job burnout. In A. S. G. Antoniou & C. L. Cooper (Eds.), *Research companion to organizational health psychology* (pp. 544-564). Cheltenham, United Kingdom: Edward Elgar.

LePine, J. L., Podsakaff, N. P., & LePine, M. A. (2005). A meta-analytic test of the challenge stressor-hindrance stressor framework: An explanation of the inconsistent relationship among stressors and performance. *Academy of Management Journal*, *48*, 764-773.

Maslach, C. 1998. A multidimensional theory of burnout. In C. L. Cooper (Ed.), *Theories of Organizational Stress*: Oxford University Press.

Maslach, C. & Jackson, S. (1981). *MBI: Maslach burnout Inventory*. Palo Alto, CA: Consulting Psychologists Press.

Maslach, C., Schaufeli, W.B., & Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology, 52*, 397-422.

Maslach, C., & Leiter, M. P. (2008). Early predictors of job burnout and engagement. *Journal of Applied Psychology*, *93*, 498-512.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. *Annual Review of Psychology, 58*, 593-614.

Moyle, P. & Parkes, K. (1999). The effects of transition stress: A relocation study. *Journal of Organizational Behavior*, *20*, 625.

Muse, L. A., Harris, S. G., & Field, H. S. (2003). Has the Inverted-U Theory of Stress and Job Performance Had a Fair Test? *Human Performance*, *16*, 349-316.

Ng, T. W. H., Sorensen , K. L, & Eby, L. T. (2006). Locus of control at work: a meta-analysis. *Journal of Organizational Behavior,* 27, 1031-1154.

Organ, D. W. (1988). *Organizational citizenship behavior: The good soldier syndrome*. Lexington, MA: Lexington Books.

Ortqvist, D., and Wincent, J. (2006). Prominent Consequences of Role Stress: A meta-analytic review. *International Journal of Stress Management, 13,* 399–422.

Parker, D. F., & DeCotiis, T. A. (1983). Organizational determinants of job stress. *Organizational Behavior and Human Performance, 32*, 160–167.

Podsakoff, N.P., LePine, J.A., & LePine, M.A. (2007). Differential challenge stressor-hindrance stressor relationships with job attitudes, turnover intentions, turnover, and withdrawal behavior: A meta-analysis. *Journal of Applied Psychology, 92,* 438-454.

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 63*, 539-569.

Podsakoff, P. M. & Organ, D. W. (1986). Self-reports in organizational research: problems and prospects. *Journal of Management*, *12*, 531–44.

Powell, G. N. (1999). *Handbook of Gender and Work*. Sage Publication.

Perrewe, P. (1987). The moderating effects of activity level and locus of control in the personal control-job stress relationship. *International Journal of Psychology*, *22*, 179-193.

Quick, J. C., Quick, J. D., Nelson, D. L., & Hurrell, J. J. (1997). *Preventive stress management in organizations*. Washington, DC: American Psychological Association.

Riska, E. (2000). The rise and fall of Type A man, *Social Science and Medicine*, *51*, 1665–74.

Rizzo, J., House, R. & Lirtzman, S. (1970). Role conflict and ambiguity in complex organization, *Administrative Science Quarterly*, *15*, 150-163.

Rodell, J. B., & Judge, T. A. (2009). Can "good" stressors spark "bad" behavior?: The mediating role of emotions in links of challenge and hindrance stressors with citizenship and counterproductive behaviors. *Journal of Applied Psychology, 94*, 1438-1451.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs, 80*, 609.

Schaubroeck, J., Ganster, D. C., & Kemmerer, B. C. (1994). Job complexity, Type-A behavior and cardiovascular disorder: A perspective study. *Academy of Management Journal*, *37*, 426-439.

Scheck, C. L., Kinicki, A. J. & Davy, J. A. (1995). A longitudinal study of a multivariate model of the stress process using structural equation modeling. *Human Relations, 48*, 1481-511.

Schuler, R. S. (1982). An integrative transactional process model of *s*tress in organizations. *Journal of Occupational Behavior*, *3*, 5-20.

Schulz, R., Greenley, J. & Brown, R. (1995). Organization, management and client effects on staff burnout. *Journal of Health and Social Behavior*, *36*, 333-345.

Schutte, N., Toppinen, S., Kalimo, R., & Schaufeli, W. B. (2000). The factorial validity of the Maslach Burnout Inventory – General Survey (MBI-GS) across occupational groups and nations. *Journal of Occupational and Organizational Psychology, 73,* 53-66.

Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). Maslach Burnout Inventory–General Survey. In C. Maslach, S. E. Jackson, & M. P. Leiter (Eds.), *The Maslach Burnout Inventory—Test manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.

Scott, W. E. (1966). Activation theory and work design. *Organizational Behavior and Human Performance*, *1*, 3-30.

Shirom, A. Gilboa, S. S., Fried, Y. & Cooper, C. L. (2008). Gender, age and tenure as moderators of work-related stressors' relationships with job performance: A meta-analysis. *Human Relations*, *61*, 1371-1398

Smith, P. C., Kendall, L. M., & Hulin, C. L. (1969). *The measurement of satisfaction in work and retirement*. Reprint. 1975. Bowling Green, Ohio: Bowling.

Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhart (Ed.), *Sociological methodology 1982* (pp.290-312). San Francisco: Jossey-Bass.

Spector, P. S. (1988). Development of the work locus of control scale. *Journal of Occupational psychology, 61*,335-340

Spector, P. E. (1992). A consideration of the validity and meaning of self-report measures of job conditions. In C. L. Cooper & I. T. Robertson (Eds.) *International Review of Industrial and Organizational Psychology* (pp. 123-151). West Sussex, England: John Wiley.

Spector, P. E. (1998). A control theory of the job stress process. In C.L. Cooper (Eds), Theories of organizational stress pp. 153-169. Oxford University Press, Oxford.

Spence, J. T., Pred, R. S., & Helmreich, R. L. (1989). Achievement strivings, scholastic aptitude, and academic performance: A follow up to "Impatience versus achievement strivings in the Type A pattern." *Journal of Applied Psychology*, *74*, 176-178.

Spielberger, C.D., & Reheiser, E.C. (1995). Measuring occupational stress: The Job Stress Survey. In R. Crandall & P.L. Perrewé (Eds.), *Occupational Stress: A Handbook* (pp. 51-69). Washington, DC: Taylor & Francis Publishers.

Sullivan, S. E. & Bhagat, R.S. (1992). Organizational stress, job satisfaction and job performance: where do we go from here? *Journal of Management*, *18*, 353-374.

Tubre, T. C., & Collins, J. M. (2000). Jackson and Schuler 1985 revisited: a meta-analysis of the relationships between role ambiguity, role conflict and job performance. *Journal of Management*, *26*, 156-169.

Taylor, M. S., Locke, E. A., & Gist, M. E. (1984). Type A Behavior and Faculty Research Productivity: What Are the Mechanisms?" *Organizational Behavior and Human Performance*, *34*, 402-18.

Van Der Doef, M., & Maes, S. (1999). The Job Demand-Control (Support) Model of Psychological Well-Being: A Review of 20 Years of Empirical Research. *Work & Stress*, *13*, 87-114.

Van Dyne, L., & LePine, J.A. (1998). Helping and voice extra-role behavior: Evidence of construct and predictive validity. *Academy of Management Journal*, *41*, 108-119.

Wallace, J. C, Edwards, B. D, Arnold, T. Frazier, M. L & Finch, D. M. (2009). Work stressors, role-based performance, and the moderating influence of organizational support. *Journal of Applied Psychology*. *94*, 254-262.

Wang, Q., Bowling, N. A., & Eschleman, K. J. (2010). A meta-analytic examination of work and general locus of control. *Journal of Applied Psychology, 95*, 761-768.

Webster, J. R., Beehr, T. A. & Christiansen, N. D. (2010). Toward a better understand of the effects of hindrance and challenge stressors on work behavior. *Journal of Vocational Behavior*, *76*, 68-77.

Weiss, H. M. (2002). Deconstructing job satisfaction: Separating evaluations, beliefs and affective experiences. *Human Resource Management Review, 12,* 173–194.

Williams, S. & Cooper, C. L. (1998). Measuring occupational stress: Development of the pressure management indicator. *Journal of Occupational Health Psychology*, *38*, 367-374.

Williams, L. J., Gavin, M. B., & Williams, M. L. (1996). Measurement and nonmeasurement processes with negative affectivity and employee attitudes. *Journal of Applied Psychology, 81,* 88-101.

Williams, L. J., Vandenberg, R. J., & Edwards, J. R. (2009). Structural equation modeling in management research: A guide for improved analysis. *The Academy of Management Annals, 3,* 543-604.

Wainwright, D., & Calnan, M. (2002). *Work stress: The making of a modern epidemic*. Philadelphia: Open University Press.

Xie, J. L., Schaubroeck, J., & Lam, S. S. K. (2008). Theories of job stress and the role of traditional values: A longitudinal study in China. *Journal of Applied Psychology*, *93*, 831-848.

Xie, J. L., & Johns, G. (1995). Job scope and stress: Can job scope be too high? *Academy of Management Journal, 38,* 1288-1309.

Yerkes, R. M. & Dodson, J. D. (1908). The relation of strength of stimulus to rapidity of habit-formation. *Journal of Comparative Neurology and Psychology, 18*, 459-482.

Appendix 1. The Framingham Type A Scale (Haynes et al., 1980)

Response Scales: 1 2 3 4 Not at all Somewhat Fairly Much Very Much		
1	I am hard-driving and competitive.	1 2 3 4
2	I am usually pressed for time.	1 2 3 4
3	I am bossy or dominating.	1 2 3 4
4	I have a strong need to excel in most things.	1 2 3 4
5	I eat too quickly.	1 2 3 4
6	I often feel very pressed for time.	yes no
7	Work stayed with me so I was thinking about it after working hours.	yes no
8	Work often stretched me to the very limits of my energy and capacity.	yes no
9	I often felt uncertain, uncomfortable, or dissatisfied with how well I was doing.	yes no
10	Do you get upset when you have to wait for anything?	yes no

Appendix 2. A Short Version of Work Locus of Control Scale (Spector, 1988)

The following questions concern your beliefs about jobs in general. <u>They do not refer only to your present job.</u>

Response Scales:

1	2	3	4	5	6
Disagree Strongly	Disagree Moderately	Disagree Slightly	Agree Slightly	Agree Moderately	Agree Strongly

1	On most jobs, people can pretty much accomplish whatever they set out to accomplish.	1 2 3 4 5 6
2	If you know what you want out of a job, you can find a job that gives it to you.	1 2 3 4 5 6
3	Getting the job you want is mostly a matter of luck.	1 2 3 4 5 6
4	Promotions are usually a matter of good fortune.	1 2 3 4 5 6
5	Promotions are given to employees who perform well on the job.	1 2 3 4 5 6
6	It takes a lot of luck to be an outstanding employee on most jobs	1 2 3 4 5 6
7	People who perform their jobs well generally get rewarded	1 2 3 4 5 6
8	The main difference between people who make a lot of money and people who make a little money is luck.	1 2 3 4 5 6

Appendix 3a. Challenge Stressors Measures (Cavanaugh et al., 2000)

Response Scales:										
1 Produces no stress		**2** Produces little stress		**3** Average	**4** Produces some stress		**5** Produces a great deal of stress			
1	The number of projects and or assignments I have.						1	2	3	4	5
2	The amount of time I spend at work.						1	2	3	4	5
3	The volume of work that must be accomplished in the allotted time.						1	2	3	4	5
4	Time pressures I experience.						1	2	3	4	5
5	The amount of responsibility I have.						1	2	3	4	5
6	The scope of responsibility my position entails.						1	2	3	4	5

Appendix 3b. Hindrance Stressors Measures (Cavanaugh et al., 2000)

Response Scales:										
1 Produces no stress		**2** Produces little stress		**3** Average	**4** Produces some stress		**5** Produces a great deal of stress			
1	The degree to which politics rather than performance affects organizational decisions.						1	2	3	4	5
2	The inability to clearly understand what is expected of me on the job.						1	2	3	4	5
3	The amount of red tape I need to go through to get my job done.						1	2	3	4	5
4	The lack of job security I have.						1	2	3	4	5
5	The degree to which my career seems “stalled.”						1	2	3	4	5

Appendix 4. Perceived Job Strain Scale (Parker & DeCotiis, 1983)

Response Scales:						
1 Disagree Strongly	2 Disagree Moderately	3 Average	4 Agree Moderately	5 Agree Strongly		
1	I have felt fidgety or nervous as a result of my job.				1	2 3 4 5
2	Working here leaves little time for other activities.				1	2 3 4 5
3	My job gets to me more than it should.				1	2 3 4 5
4	I spend so much time at work, I can't see the forest for the trees.				1	2 3 4 5
5	There are lots of times when my job drives me right up the wall.				1	2 3 4 5
6	Working here leaves little time for other activities.				1	2 3 4 5
7	Sometimes when I think about my job I get a tight feeling in my chest.				1	2 3 4 5
8	I frequently get the feeling that I am married to my company.				1	2 3 4 5
9	I have too much work to do and too little time to do it.				1	2 3 4 5
10	I feel guilty when I take time off from job.				1	2 3 4 5
11	I sometimes dread the telephone ringing at home because the call might be job-related.				1	2 3 4 5
12	I feel like I never have a day off.				1	2 3 4 5
13	Too many people at my level in the company get burned out by job demands.				1	2 3 4 5

Appendix 5. In-Role Job Performance Scale (Van Dyne & LePine, 1998)

Response Scales:						
1 Disagree Strongly	2 Disagree Moderately	3 Disagree Slightly	4 Average	5 Agree Slightly	6 Agree Moderately	7 Agree Strongly
1	I fulfill the responsibilities specified in my job description.				1 2 3 4 5 6 7	
2	I perform the tasks that are expected as part of the job.				1 2 3 4 5 6 7	
3	I meet performance expectations.				1 2 3 4 5 6 7	
4	I adequately complete responsibilities.				1 2 3 4 5 6 7	

Appendix 6. Overall Job Satisfaction (Edwards & Rothbard, 1999)

Response Scales:						
1	2	3	4	5	6	7
Disagree Strongly	Disagree Moderately	Disagree Slightly	Neutral	Agree Slightly	Agree Moderately	Agree Strongly
In general, I am satisfied with my job.						1 2 3 4 5 6 7
All in all, the job I have is great.						1 2 3 4 5 6 7
My job is very enjoyable.						1 2 3 4 5 6 7

Appendix 7. The 16-items of MBI-GS (Schaufeli et al., 1996)

Response Scales: 1 Rarely Often	2 Moderately Often	3 Average	4 Somewhat Often	5 Very Often	
I feel emotionally drained from my work.					1 2 3 4 5
I feel used up at the end of the workday.					1 2 3 4 5
I feel tired when I get up in the morning and have to face another day on the job.					1 2 3 4 5
Working all day is really a strain for me.					1 2 3 4 5
I can effectively solve the problems that arise in my work.					1 2 3 4 5
I feel burnout from my work.					1 2 3 4 5
I feel I am making an effective contribution to what this organization does.					1 2 3 4 5
I have become less interested in my work since I started this job					1 2 3 4 5
I have become less enthusiastic about my work.					1 2 3 4 5
In my opinion, I am good at my job					1 2 3 4 5
I feel exhilarated when I accomplished something at work.					1 2 3 4 5
I have accomplished many worthwhile things in this job.					1 2 3 4 5
I just want to do my job and not be bothered.					1 2 3 4 5
I have become more cynical about whether my work contributes anything.					1 2 3 4 5
I doubt the significance of my work					1 2 3 4 5
At my work, I feel confident that I am effective at getting things done.					1 2 3 4 5

Appendix 8.

WORK ADJUSTMENT SURVEY

Dear Research Participant:

I am a PhD Candidate in the Johns Molson School of Business, Management Department, Concordia University. One of my special areas of research is employee adjustment in the workplace. My previous studies in this topic such as person-environment fit have been presented in a variety of academic conferences. In this study, I am interested in how individuals deal with different work stressors.

I am delighted to have this opportunity to conduct my research with you. It presents almost no risk to you and your organization. As a "thank you" I will share my general research findings with you. These insights are useful for both employees and managers in their continuing effort to improve individual well-being in the workplace.

You can participate this research by completing the following online questionnaire, which I think involve major concerns in your everyday working experience. There are no "trick" questions. It takes about 20 minutes to complete. You could answer each item as honestly and frankly as possible. It is important that all of the questions be answered. When you have completed the questionnaire, simply submit it online.

You are free to discontinue your participation at any time. Your responses will be held in the strictest confidence. Note that your organization will not have access to the individual completed questionnaires.

Please read the instructions carefully and answer all questions. I am very grateful for your assistance.

Sincerely,

Angus Yongheng Yao
PhD Candidate
Johns Molson School of Business
Management Department
Concordia University
Tel. (514) (364-6613)

Thesis Supervisor:
Dr. Muhammad Jamal
Professor of Management
Johns Molson School of Business,
Management Department
Concordia University
Tel. (514) (848-2424) Ext. 2935

CONSENT TO PARTICIPATE IN THE RESEARCH OF WORK ADJUSTMENT

This is to state that I agree to participate in a program of research being conducted by Professor Muhammad Jamal and PhD Candidate Yongheng Yao of the Johns Molson School of Business Management Department of Concordia University (Contact: (514) 848-2424 ext. 2935, mjamal@jmsb.concordia.ca and yh_yao@jmsb.concordia.ca).

Purpose: I have been informed that the purpose of the research is to examine the relationship between work stressors and individual performance in different working contexts. **Procedures**: This survey will require about 50 minutes to complete. Participants will answer questions using Likert-type scales such as anchors ranging from strongly disagree to strongly agree. All participants are expected to complete the survey in one sitting and fill it out entirely, if they choose to participate. Private information will be held confidential so that the researchers will know the identity of the participants, but will not disclose their identities in the published research.

Risks and benefits: This research presents no risk to participants. Its goal is to enrich the existing literature concerning the relationship between stressors and performance. These findings are useful for individuals to adjust to working environment. They are also useful for managers to design appropriate stress intervention.

Conditions of Participation: I understand that I am free to withdraw my consent and discontinue my participation at anytime without negative consequences. I understand that the aggregate results of this study may be published. I understand that private information will be held confidential.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

- ❍ Yes
- ❍ No

If at any time you have questions about your rights as a research participant, please contact Adela Reid, Research Ethics and Compliance Officer, Concordia University, at (514) 848-2424 x7481 or by email at areid@alcor.concordia.ca.

Appendix 9.

Certification of Ethical Acceptability for Research Involving Human Subjects

Appendix 10.

Complete survey, titled “Person-Job Fit Survey”