

2013

Extending job demands-resources model: the roles of energy management strategies and recovery experiences in facing differentiated job demands

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EXTENDING JOB DEMANDS-RESOURCES MODEL:
THE ROLES OF ENERGY MANAGEMENT STRATEGIES AND RECOVERY
EXPERIENCES IN FACING DIFFERENTIATED JOB DEMANDS

by
SIU Cho Ngan

A thesis
submitted in partial fulfillment
of the requirements for the Degree of
Master of Philosophy in Social Sciences
(Psychology)

Lingnan University

2013

ABSTRACT

Extending Job Demands-Resources Model: The Roles of Energy Management Strategies and Recovery Experiences in facing Differentiated Job Demands

by

SIU Cho Ngan

Master of Philosophy

Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007) provides valuable insight in identifying the antecedents and consequences of work stress and engagement. Nevertheless, the roles of personal resources and differentiated job demands (i.e., challenge demands and hindrance demands) have received less attention in the literature. Studies on their interaction effects are even rarer. This thesis reports two studies intending to fill this gap of knowledge.

Study 1 aimed to develop a new scale of energy management strategies (EMS) at work and to demonstrate its reliability. A self-administered questionnaire survey adopting a cross-sectional design was conducted among 323 employees recruited from different occupations in Hong Kong. Results of exploratory factor analyses showed that the new scale comprised three main factors with good reliabilities. The aims of Study 2 were two-fold: a) to cross-validate the new EMS scale developed in Study 1; b) to investigate the roles (i.e., as antecedent and moderator) of personal resources (energy management strategies and recovery experiences) and different job demands in the JD-R model. A self-administered questionnaire survey adopting a cross-sectional design was conducted among 173 teachers in Hong Kong. Consistent with the results of Study 1, results of confirmatory factor analyses also suggested a three-factor structure of the energy management strategies scale. As hypothesized, EMS and recovery experiences were positively associated with work engagement, such association was especially strong under challenge demands. Besides, both challenge and hindrance demands were positively related to exhaustion. EMS was the only tested personal resource that could mitigate the relationship between challenge demands and exhaustion. None of the tested personal resources mitigated the relationship between hindrance demands and exhaustion. Theoretical contribution and practical implications of research findings are discussed in the thesis.

DECLARATION

I declare that this is an original work based primarily on my own research, and I warrant that all citations of previous research, published or unpublished, have been duly acknowledged.

SIU Cho Ngan

Date:

CERTIFICATE OF APPROVAL OF THESIS

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Master of Philosophy

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Acknowledgement

The completion of this thesis required a lot of guidance and assistance from many people and I am extremely fortunate to have all these in the past two years. I would attribute all my achievements to such guidance and assistance.

First and foremost, I would like to express my sincere gratitude to my chief supervisor, Prof. Siu Oi-Ling. Prof. Siu has been my teacher since I was an undergraduate student. She is the one who ignited my interest in Psychology. Without her kind reassurance of my academic potential, I would probably not have progressed into an academic path. Prof. Siu's insightful advices and kind supports are crucial to my M.Phil study. Throughout the past two years, not only did she provided me vital guidance on my research direction, but also helped me finding respondents of questionnaires. She is also always generous to provide opportunities, as well as resources, for her students to build up knowledge and widen their horizon. Without Prof. Siu's support and guidance, this M.Phil thesis would never have been produced.

I am also extremely grateful to my co-supervisor, Dr. Yeung Wai-Lan. Dr. Yeung has played a significant role in shaping the thesis by providing detailed-comments and editions of my thesis. Moreover, she taught me the right attitude that is essential for a researcher and guided me to learn how to think systematically and logically. In particular, I would like to thank her for teaching me how to present complicated ideas in a simple and clear manner.

A lot of credit should also be given to Mr. Wang Haijiang for his timely support and encouragement. He is very generous on providing insightful suggestions on my research, as well as sharing his knowledge on research methodology and statistical analyses with me.

I also owe my heartfelt thanks to my colleagues and friends who were willing to share their personal networks with me, and helped me reach the participants of the study. I am honored to have those colleagues and friends including Dr. Lau Chi-Pang, Ms. Elaine Yam, Ms. Hui Pik Man, Ms. Chan Wing Shan, and Ms. Crystal Young. Sincere thanks also go to my respondents who graciously gave their time and energy to my research.

I am also truly thankful to my buddies for their companion and emotional support throughout these two years, including Man Kit, Elaine Yau, Filip Viskupic, Pinko

Wang, Lara Roll, Anson Lai, Jason Chan, Steve Lui, Taki Chan, Arbita Ma, Cerda Alexandre, CaoTing, Rami Chan, Sabrina Huang, Roger Lo, and Roy Law.

Last but not least, my love and appreciation go to my parents, sisters, brother, and Hei-to. Thanks for their unconditional love, patience, and support. Your presence has enriched my life. I am a fortunate person having those wonderful people around me.

Chapter 1: Introduction

1.1 Background of the Study

In many contemporary occupations, employees face high level of job demands such as quantitative workload and time pressure. High job demands not only hinder employees' health in both short and long run, but also increase organisations' cost and expenditures. It has been found that, in the short run, high job demands are associated with stressful experience including having negative emotions at work and at home (Ilies, Schwind, Wagner, Johnson, DeRue, & Ilgen, 2007); while in the long run, high job demands are positively associated with burnout and psychosomatic complaints (Schaufeli & Bakker, 2004). Although high job demands may also bring performance benefits to organisations (LePine, Podsakoff, & LePine, 2005), it is estimated that billions of dollars have been spent on employees' healthcare, absenteeism, and lost productivity due to occupational stress of employees (Weinberg & Cooper, 2012). Hence, one of the issues that every organization needs to deal with is finding efficient and productive ways to diminish negative impacts of high job demands on both individual employees and organisations.

In fact, CEO, senior managers and human resource managers of many organisations nowadays expect employees not only to fulfill their basic job requirements, but also be able to psychologically connected to other co-workers and apply their full capabilities to work. To name a few, to be proactive, seeking for professional development, and willing to exceed performance standard are desirable (Bakker, Albrecht, & Leiter, 2011; Bakker, Schaufeli, Leitier, & Taris, 2008). This kind of expectation is in line with the development of positive psychology at work. Positive psychology is the scientific study investigating the variables that enable

individuals and communities to thrive (International Positive Psychology Association, 2009). In the past decade, scholars tried to integrate positive psychology into occupational context by focusing on positive aspects of work, e.g., work engagement. Work engagement is a positive, fulfilling, affective-motivational state of work that can be seen as opposite to burnout (Bakker et al., 2008). Having work engagement is important because it brings positive impacts at individual (such as enhance job performance and organisational commitment) (e.g., Bakker & Bal, 2010; Hakanen, Bakker, & Schaufeli, 2006) and organisational levels (such as increase customer satisfaction and financial returns) (e.g., Harter, Schmidt, & Hayes, 2002; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). As work engagement is a desirable work experience that leads to positive consequences, another issue that every organization needs to deal with is searching for effective ways to enhance employees' work engagement.

In a nutshell, there are two concerns of the organizations: (1) how to diminish the negative impact of high job demands, and (2) how to enhance employees' work engagement.

1.2 Rationale for the Study

To address the aforementioned two concerns, some scholars have argued that studying job and personal characteristics is equally important, in a sense that these characteristics initiate the processes of, and predict strain and engagement (Bakker, Schaufeli, Leitier, & Taris, 2008). In the occupational health psychology literature, one of the dominant models to study the mechanisms predicting strain and engagement is the Job Demands-Resources model (JD-R model; Bakker, Demerouti,

2007).

The JD-R model provides valuable insight in identifying the antecedents and consequences of work stress and engagement. To explain the process of stress and engagement, the JD-R model distinguishes job characteristics into two categories: job demands and job resources. Job demands refer to those physical, psychological, social, or organisational aspects of the job that require sustained physical and/or psychological effort and are therefore associated with certain physiological and/or psychological costs (Demerouti, Bakker, Nachreiner & Schaufeli, 2001). Job resources referred to the physical, social, or organizational aspects of the job that may: 1) reduce job demands and the associated physiological and psychological costs; 2) be functional in achieving work goals; or 3) stimulate personal growth, learning, and development (Bakker, 2008; Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). The direct and joint effects of job characteristics and employees' personal resources predict employees' well-being (i.e., stress and engagement) and thus performance outcomes.

Nevertheless, a recent study has suggested that job characteristics can be further distinguished into three categories: challenge job demands, hindrance job demands, and job resources (Van de Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010), which coincides with the findings reported by some past studies (e.g., Boswell, Olson-Buchanan, & Judge, 1994; Cavanaugh, Boswell, Roehling, & Boudreau, 2000) that job demands are differentiated as either challenges or hindrance, according to their nature.

Challenge demands are those job demands that create opportunities for

employees to show their competency, which are link to rewards; whereas hindrance demands are those job demands that create unnecessary barriers to constraint employees to achieve their goals. Challenge and hindrance demands have been shown to lead to different motivational, retention, and performance outcomes. In particular, challenge demands are positively related to work engagement and performance, and negatively related to turnover and turnover intentions; on the contrary, hindrance demands are negatively associated with work engagement and performance, and positively associated with turnover and turnover intentions (Crawford, LePine, & Rich, 2010; Podsakoff, LePine, & LePine, 2007; Wallace, Edwards, Arnold, & Frazier, 2009).

In fact, most of the studies adopting the challenge and hindrance framework are meta-analytic studies, and most primary studies include only one category of demands (i.e., either challenge demands or hindrance demands). Studying both challenge and hindrance demands at the same time is important in order to avoid the statistical suppression effects (i.e., the unique contribution of challenge demands could be suppressed if the effects of hindrance demands are not controlled; Boswell, Olson-Buchanan, & Judge, 1994; Cavanaugh, Boswell, Roehling, & Boudreau, 2000). Due to the fact that there is little empirical study that controls both challenge and hindrance demands simultaneously, and that these demands are rarely explored in a Chinese context, the present study intends to fill in this gap of knowledge by testing an empirical model incorporating both challenge and hindrance demands simultaneously in a Chinese context.

It is stated in the JD-R model that both job and personal resources are important predictors of stress and engagement, yet, personal resources have received less

attention (Bakker, Schaufeli, Leiter, & Taris, 2008; Xanthopoulou, Bakker, Bemerouti, & Schaufeli, 2007). Indeed, investigation of personal resources is important not only because of its predictive power of work engagement, but also because they are highly malleable and largely under individuals' discretions, and thus are easier to develop. Among the few studies on personal resources, which usually have limited the operationalization to specific personal resources, i.e., self-esteem, self-efficacy, and optimism (see Bakker, Albrecht, & Leiter, 2011), other types of personal resources, might also be valuable, yet, they are less explored. The present study intends to address this issue by examining two less explored personal resources (i.e., Energy Management Strategies during work and Recovery experiences).

Energy management strategies and recovery experiences are largely under self-discretion and thus are easier to develop. Energy management strategies are those strategies that individuals use at work that help individuals to regulate their behaviors and emotions in compliance with organizational and group norms and expectation (see Fritz, Lam, & Spreitzer, 2011). Recovery experiences are processes that individuals unwind from work stress, which are characterized by four main elements: psychological detachment, mastery experience, relaxation, and control over leisure time (Sonnentag & Fritz, 2007). They are linked to work well-being outcomes such as vitality and engagement (e.g., Fritz et al., 2011; Siltaloppi, Kinnunen, & Feldt, 2009) and could potentially considered as personal resources.

In addition to the direct effect of job and personal characteristics, their joint effects could also contribute to the understanding of stress and motivation process (Bakker & Demerouti, 2007). In other words, the multiplicative effects of job and

personal characteristics could provide insight in, how and/or under what conditions such job / personal characteristics could particularly predict strain and motivation. Previous studies revealed that the joint effects of job and personal characteristics, in addition to the direct effect of each, increase the variance explaining work strain and motivation (e.g., Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007; Karatepe, 2009; Xanthopoulou, Bakker, Dollard, Demerouti, Schaufeli, Taris, & Schreurs, 2007). Specifically, job resources influence work engagement more when under high job demands (Bakker et al., 2007); while job resources weaken the negative health effects that job demands places on individuals (Karatepe, 2009; Xanthopoulou, et al., 2007).

However, the joint effects of personal resources and job demands on stress and motivation are unclear. On the one hand, previous studies have shown inconsistent moderator role of personal resources on demands-strain relationship. For instance, while findings of some studies suggested a buffering role of personal resources on the demands-strain relationship (e.g., Makikangas and Kinnunen, 2003), findings from other studies are contradictory or mixed (e.g., Tremblay & Messervey, 2011; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). The present study intends to address this issue and to examine the buffering role of personal resources on the demands-strain relationship. In fact, by exploring a deeper understanding of the process of strain, the present study would go a step further to test whether personal resources buffer both the relationships between challenge demands and strain, and that of hindrance demands and strain.

To date, to the best of my knowledge, no past research has addressed the conditions of which personal resources would particularly influence work

motivation. Investigation of this moderation process has theoretical and practical implications. Theoretically, such investigation could enhance insight in the mechanisms contributing to motivation, and thus leading to favorable work-related outcomes. Practically, such investigation could suggest direction for setting organisational policies and designing training for employees, so as to enhance employees' motivation. Thus, the present study intends to examine the situations in which personal resources would be particularly effective in influencing work engagement. To move one step further, the present study will examine both challenge and hindrance demands as moderators, and to see whether they affect the personal-resources-engagement relationships in the same direction.

To summarize, the present study intends to address the gaps of knowledge in the literature by 1) investigating the challenge and hindrance demands simultaneously; 2) systematically operationalizing personal resources into EMS and recovery experiences; 3) exploring the buffering role of personal resources in demands-strain relationship; 4) investigating the joint effects of personal resources and differentiated job demands on strain and motivation; and (5) extending the JD-R model of work engagement.

1.3 Purpose and Significance of the Study

In order to address the afore-mentioned gaps of knowledge, the present study will first validate a scale measuring Energy Management Strategies (EMS, a kind of personal resource); then extends the JD-R model by including two less explored personal resources (i.e., EMS and recovery experiences) together with the challenge and hindrance demands, and investigate their joint effects on strain and motivation.

The significance of the study contributes to: first, the energy management literature by validating a scale of energy management strategies; second, the stress and motivation literature by providing insights in mechanisms in work stress and motivation processes; and third, the JD-R model of work engagement. .

The present study is also significant from the practical perspective, as it provides directions for setting organisations' policy and designing for training for employees to reduce strains and enhance motivation. It suggests how and under what situation employees would feel less tired and more motivated.

1.4 Organization of the Thesis

There are six chapters in this thesis. In Chapter two, I review the literatures on the JD-R model, the roles of personal resources in the JD-R model, rethinking the concepts of personal resources, energy management, recovery experiences, and differentiated job demands. Chapter three presents the theoretical framework of the present study and research hypotheses. Chapter four reports the findings of Study 1, which aims at validating a new scale measuring energy management strategy. Chapter five reports the findings of Study two, which aims at investigating the roles (direct and moderator) of personal resources and differentiated job demands in the JD-R model. It also cross-validates the energy management strategy scale developed in Study 1. Finally, Chapter six provides a summary of the two studies, discussion of the findings, theoretical and practical implications of the findings, as well as the limitations of the current study and suggested direction for future study.

Chapter 2: Literature Review

This chapter reviews the literature on the concepts and theoretical background of the studied variables, including the JD-R model, different job demands, the roles of personal resources in the JD-R model, and rethinking the concept of personal resources.

2.1 Definition of Terms

To avoid confusion, definitions of the studied variables are defined and distinguished from similar concepts as below:

Job Demands. Job demands refer to those physical, psychological, social, or organisational aspects of the job that require sustained physical and/or psychological effort and are therefore associated with certain physiological and/or psychological costs (Demerouti, Bakker, Nachreiner & Schaufeli, 2001). Recently, some scholars made differentiation of challenge demands and hindrance demands (e.g., Boswell, Olson-Buchanan, & Judge, 1994; Cavanaugh, Boswell, Roehling, & Boudreau, 2000) suggesting that challenge demands and hindrance demands are different in nature. The present study adopted such conceptualization to study the effects of differentiated job demands on employee' work well-being.

Personal Resources. Personal resources are defined as the “lower-order, cognitive-affective aspects of personality; developable systems of positive beliefs about one's ‘self’ (e.g., self-esteem, self-efficacy) and the world (e.g., optimism, faith) which motivate and facilitate goal-attainment, even in the face of adversity”

(Van Den Heuvel, Demerouti, Bakker, & Schaufeli, 2010). This definition is rather narrow, and had limited personal resources to the affective-cognitive level. Indeed, in the literature, personal resources are usually operationalized as self-esteem, self-efficacy, and optimism (see Bakker, Albrecht, & Leiter, 2011). Nevertheless, there are actually some other personal resources that are valuable and should not be neglected. According to the Conservation of Resources theory (COR; Hobfoll, 1989), resources are those objects, personal characteristics, conditions, or energies that are either (a) valued by individuals, as they have symbolic value to help define people as who they are; or (b) serve as means for attainment of these objects, personal characteristics, conditions, or energies, as they have instrumental values to achieve goals. Based on Hobfoll's (1989) broad conceptualization of resources, in the present study, I will explore two less studied resources, namely EMS and recovery experiences.

Exhaustion. Exhaustion is the central quality of burnout. It refers to a feeling that an individual is overtaxed and his/her emotional and physical resources are depleted (Maslach, Schaufeli, & Leiter, 2001). In general, burnout refers to a crisis in one's relationship with work that is characterized by exhaustion, cynicism (or depersonalization), and reduced professional efficacy. While exhaustion reflects the stress perspective of burnout, cynicism refers to individuals' detachment from aspects of jobs. Reduced professional efficacy refers to the lack of feeling of competency at work, and thus followed by decreased achievement and productivity of the individual (Maslach, Jackson, & Leiter, 1996). Among the three aspects, exhaustion is argued to be the predominant aspect of burnout and the other two dimensions may be incidental or unnecessary (Shirom, 1989).

Work Engagement. Schaufeli, Salanova, Gonzalez-Roma, and Bakker (2002) viewed work engagement as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (p.74). Schaufeli and Bakker (2004) further defined the terms of vigor, dedication and absorption: “Vigor was characterized by high level of energy and mental resilience while working; dedication refers to being strongly involved in one’s work and experienced a sense of significance, enthusiasm, and challenge; and absorption was characterized by being fully concentrated and happily engrossed in one’s work, whereby time passes quickly and one has difficulties with detaching oneself from work” (p. 295). Work engagement is a desirable motivational state of work that leads to positive individual and organisational outcomes, such as higher job performance (see Bakker, Schaufeli, Leiter, & Taris, 2008).

According to Maslach, Schaufeli, and Leiter (2001), engagement is different from some positive outcome variables such as organizational commitment and job involvement. To illustrate, organizational commitment refers to an employee’s personal attachment to his or her working organization. The focus is on the organization, whereas engagement focuses on the work itself. Besides, job involvement does overlap the involvement aspect of engagement, but it does not include other aspects such as energy devotion. Thus, the term engagement provides a more complex and thorough perspective on an individual’s relationship with his/her work.

2.2 The Job Demands-Resources Model

The Job Demands-Resources Model (JD-R model; Bakker & Demerouti, 2007) is a well-established model that predicts employee and organisational well-being, by

considering a variety of job characteristics and their corresponding interactions on stress and motivation. The JD-R model is a dual-processes model that integrates the stress and motivation literature. The first process (i.e., the health impairment path) is initiated by job demands, and illustrates the potential harms that job demands would place on individuals' health, thus work related-outcomes such as job performance. The second process (i.e., motivational path) is initiated by job resources, and depicted the motivational nature of job resources that affects individuals' work-related outcomes. The two processes interact to provide a deeper understanding on the mechanism of employees' well-being. Below describes the main features of the model in more detail.

Firstly, the JD-R model lies in a main assumption that every occupation has its own specific stimulating factors that associate with job stress and motivation. The model itself thus is an overarching model operating regardless of any specific job characteristics. Instead of emphasizing particular job demands or resources, the model broadly categorizes job characteristics into two categories: job demands and job resources. Job demands are aspects of the job that require continuous effort and are hence related to certain physiological and/or psychological costs (Demerouti, Bakker, Nachreiner & Schaufeli, 2001). Examples of job demands are quantitative workload and organizational politics. To illustrate, increasing teacher's teaching load require teachers to put more physical and psychological effort to complete work tasks, and hence teachers feel more tired and exhausted. Job demands may become stressors when individuals fail to recover from coping with the demands, which contribute to negative outcomes (Meijman & Mulder, 1998).

Job resources refer to "physical, psychological, social, or organizational aspects

of the job that are either functional in achieving work goals, reducing job demands and the associated physiological and psychological costs, or stimulating personal growth, learning, and development” (Schaufeli & Bakker, 2004, p.296). Examples of job resources are job autonomy and support from colleagues. For instance, job autonomy enhances one’s awareness of own responsibility to the problem thus one would be more willing to try out or master new skills or knowledge in order to complete work tasks (Parker, 1998; Parker, Wall & Jackson, 1999). In line with the JD-R model, the Conservation of Resources (COR) theory (Hobfoll, 1989) has also highlighted the importance of resources. COR theory is one of the leading theories in understanding work stress (Gorgievski & Hobfoll, 2001). The central principle of the COR theory is that individuals strive to obtain, retain, and protect resources; and that the potential and actual loss of resources, and the failure to obtain resources would cause stress. Thus, resources are important not only because of their function to cope with job demands, but also because they act as means to achieve or protect other valued resources.

Secondly, the JD-R model is a dual-process model that integrates stress and motivation research. The first psychological process is health-impairment process, which implies that job demands would use individuals’ mental or physical resources, leading to strain or exhaustion and thus health problems. Job demands lead to strain because coping with demands is energy depleting. Hockey’s control model of demand management (1993) illustrates the process that demands drain employees’ energies. According to Hockey’s model, individuals use “performance protection strategies” to cope with environmental demands. Recruitment of those strategies requires the mobilization of sympathetic activation (autonomic and endocrine) and the investment of more subjective effort (e.g., on information processing). And these

would cost energy depletion and fatigue, thus potentially leading to strain (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Hockey, 1993).

The health-impairment path of the JD-R model receives empirical supports. For instance, Demerouti and colleagues (2001) reported strong and significant positive correlation between job demands (e.g., physical workload, time pressure, recipient contact, shift work, and physical environment) and exhaustion among staff from various industries. In a 2-wave study, Boyd, Bakker, Pignata, Winefield, Gillespie, and Stough (2011) reported a significant casual relationship between job demands (e.g., work pressure and academic workload) and strain in a three-year time frame. Particularly, in their study, they showed that Time 1 job demands predicted Time 2 strain, which relationship was fully mediated by Time 1 resources. Furthermore, a meta-analytic study conducted by Crawford, LePine, and Rich (2010), which covered over 10 job demands (e.g., quantitative subjective workload and organisational politics) reported a positive relationship between demands and burnout among 64 independent samples. Thus, job demands place potential harms to individuals through increasing the strain.

The second psychological process refers to the motivational path. It suggests that job resources may lead to motivational outcomes, e.g., work engagement, and positive personal or organizational outcomes (see Bakker & Demerouti, 2006; Demerouti & Bakker, 2009; Bakker, Demerouti, & Schaufeli, 2003; Demerouti, Bakker, Nachreiner, & Schaufeli, 2000, 2001; Leiter, 1993) Work engagement is defined as “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli et al., 2002, p.74). In other words, Engaged workers are those who are willing to invest their energy at work, passionate

about their work, and fully immerse in their work.

Job resources foster motivation because they play either an intrinsic motivational role or an extrinsic motivational role (Bakker & Demerouti, 2006). Some job resources play an intrinsic role because they fulfill basic human needs, including the need for autonomy and relatedness (Ryan & Frederick, 1997). For instance, support from colleagues arouses sense of cohesiveness and helps fulfilling the need for relatedness. Some job resources however play an extrinsic motivational role as they help defining and achieving goals. When goals are clearer and easier to achieve, individuals are more willing to invest efforts and are more likely to be able to complete the work task (Meijman & Mulder, 1998). For example, feedback from supervisor helps to define goals clearly, thus employees may invest more effort to complete work task as they see increased likelihood of successfully achieving the work tasks.

The motivational path of the JD-R model is widely supported by empirical studies. In a two-year longitudinal study done by Mauno, Kinnunen, and Ruokolainen (2007), job resources (i.e., job control and organisatioanl based self-esteem, OBSE) in time 1 predicted work engagement 2 years later (time 2) among staff of public health-care organisations. Moreover, Bakker and Bal (2010) showed that, among primary teachers, weekly job resources (i.e., autonomy, exchange with the supervisor, and opportunities for development) were positively related to weekly job performance, through mediation of work engagement. Furthermore, Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009) found that a job resource (i.e., supervisor coaching) was positively associated with financial returns of the company, partially through enhancement of work engagement. Thus, it

is generally believed that resources at work enhance individual and organisational performance through increasing one's engagement to work.

The third main feature of the JD-R model is the predictive power of the interactions of job demands and resources on employees' well-being. One of the interactions proposed is: job resources buffer the relationship between job demands and strain (Bakker & Demerouti, 2006). The idea is that, while job demands generally depletes one's energies and potentially harms one's health, those who possess adequate or more resources could better cope with job demands and suffer less. In contrast, those who are lacking of resources or who possess less resources may not be able to cope with job demands effectively, thus suffering more. To illustrate, high quantitative workload (a kind of job demand) drains one's energies and places potential harms to individuals, yet those who have more support from colleagues (a kind of job resource) may get extra hands to complete tasks, and those who receive more coaching from supervisors (a kind of job resource) may integrate supervisor's experience of work and employ a better strategy to finish tasks. In both cases, the individuals would feel less tired. This is in line with Karasek's (1998) Demand Control Model (DCM), which states that job demands particularly cause strain when individual has low job control (a kind of job resource that represents the degree of potential or actual control of an individual over his/her work).

There are empirical findings support the moderation role of job resources on the demands-strain relationship. Karatepe (2010) showed a significant buffering role of organisational support and job autonomy (job resources) in the relationship between emotional dissonance and disengagement. Besides, researchers also reported that four job resources (job autonomy, social support, performance feedback, and

opportunities for professional development) buffered some dimensions of job demands and strains relationship among health-care workers (Xanthopoulou, Nakker, Dollard, Demerouti Schaufeli, Taris, & Schreurs, 2007).

Another interaction effect proposed in the JD-R model is: job demands boost the relationship between job resource and work motivation (Bakker & Demerouti, 2006). That is, job resources influences motivation most when job demands are high. In other words, under an occupational context of high job demands, whether there are enough resources to cope with those demands is an important factor to determine whether an individual is willing to invest their energies at work. In contrast, if job demands are low, it may not be necessary for an individual to mobilize much resources to finish job tasks, thus the role of job resources may not be an important factor to determine whether an individual is willing to invest their energies at work. For instance, an employee may need to seek for supports from colleagues when the work tasks are urgent (i.e., when time pressure is high), but when they have plenty of time to finish work tasks, whether receiving support from colleagues or not may not be so important. This is in line with the Conservation of Resources theory (COR; Hobfoll, 1989), which states that resources are particularly salience in the context of resource loss, and people strive to obtain, retain, and protect resources. The COR theory suggests that an individual is more willing to invest their energies to bring in new resources in the face of high job demands where resources lost quickly.

A considerable amount of empirical research has provided support to the boosting role of job demands on resources-motivation relationship. Bakker and his colleagues (2007) reported that the relationship between job resources (i.e., job control, supervisor support, climate, innovativeness, information, and appreciation)

and work engagement was stronger when Finnish teachers were under high job demands (e.g., pupil misbehaviours). Moreover, job demands (i.e., workload and unfavorable physical environment) boosted the relationship between job resources (i.e., variability in the required professional skills and peer contacts) and work engagement among Finnish dentists (Hakanen, Bakker, & Demerouti, 2005). Figure 1 depicts the main features of the JD-R model.

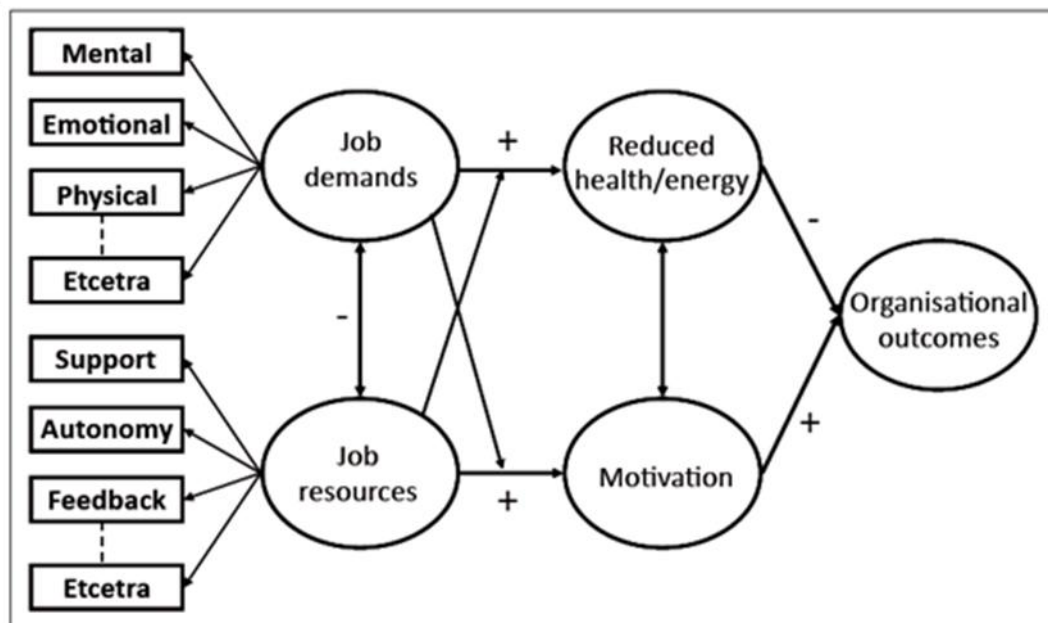


Figure 1.1: The Job Demands-Resources Model (JD-R model).
Source from Bakker and Demerouti (2007).

2.3 Different Job Demands

The JD-R model provides valuable insight in how job characteristics (i.e., job demands and job resources) influence employees' work well-being and work-related outcomes (e.g., job performance, work engagement). Nevertheless, there are inconsistent findings concerning the relationship between job demands and various work-related outcomes (see Jex, 1997; Rosen, Chang, Djurdjevic, & Eatough, 2010 for a review of the inconsistent findings). Some empirical findings reported a

positive relationship between job stressors and performance. For instance, it is reported that role conflict is positively related to job performance (Babin & Boles, 1996). Besides, job stress is positively related to performance among those with organizational commitment and long job tenure (Hunter & Thatcher, 2007). Nevertheless, some have reported a negative relationship between job stressors and performance. For example, it is reported that T3 workload is negatively related to job performance in T3 and T4 (Fritz & Sonnentag, 2006). This poses a challenging question to researchers to explain for the inconsistency.

To explain the inconsistent findings obtained, some researchers provided an quantitative explanation (i.e., suggesting a quadratic relationship of job demands and performance); while some researchers attributed the inconsistencies to the qualitative differentiation claiming the job demands have different natures. The former line of research assumes a homogenous nature of job demands, and suggests that the relationship of job demands and work-related outcomes depends on the level (high vs. low) of job demands. In the sense that too high or too low job demands could not contribute to positive work-related outcomes, rather a moderate level of job demands could enhance work motivation and job performance (e.g., Bakker, Demerouti, & Schaufeli, 2005; Rosen, Chang, Djurdjevic, & Eatough, 2010). Yet, this line of explanation received only little empirical support (Rydstedt, Ferrir, & Head, 2006).

Another line of research explained the inconsistency by proposing that job demands could be classified into challenge demands and hindrance demands, and gains some empirical supports. For instance, Cavanaugh, Boswell, Roehling, and Boudreau (2000) were one of the earliest to explicitly label demands as either

challenge or hindrance in nature. In their study, a two-factor structure of 11 work-related items (6 items of challenge demands and 5 items of hindrance demands) was diagnosed among 1886 U.S. managers, the validity and reliability were also established. Boswell, Olson-Buchanan, and LePine (2004) replicated the study of Cavanaugh et al. (2000) using employees in lower job level, similar results were found. These findings suggested that job demands were distinguished into hindrance and challenge not only among employees from higher job level, but also those from lower job level. The distinction of job demands was further supported by a two-sample study of Van de Broeck, de Cuyper, de Witte, and Vansteenkiste (2010). In their study, they explored the underlying factors of 21 items of job demands and resources among two independent samples. Based on their data, Van de Broeck et al., (2010) identified three (instead of two) categories of job characteristics, namely challenge demands, hindrance demands, and job resources (also see Crawford, LePine, & Rich, 2010; LePine, Podsakoff, & LePine, 2005; Podsakoff, LePine, & LePine, 2007). Since the differentiated framework of job demands is promising, the present study would adopt this framework and examine the role of different job demands in the JD-R model.

Challenge demands are job demands that are expected to create challenges or opportunities for personal development and achievements (Podsakoff et al., 2007). In other words, this type of demands tend to be perceived as opportunities to learn, achieve, and show their competence, which tend to be rewarded. Examples of challenge demands include high workload, time pressure, and high level of job responsibility. Challenge demands tend to trigger positive emotions such as feeling of confidence, and that would lead to an active or problem-solving style of coping such as strategizing.

Hindrance demands are job demands that might create potential threats to personal growth, learning, and goal attainment (Podsakoff et al., 2007). This type of demands is perceived as barriers that unnecessarily hinder one's goal attainment and reward at work. Examples of hindrance demands include organisational politics, role ambiguity, and red tapes. Hindrance demands tend to evoke negative emotions such as feeling of incompetency and anxiety, and would lead to passive or emotional-style of coping such as rationalization (see Crawford, LePine, & Rich, 2010; LePine, Podsakoff, and LePine, 2005; Wallace, Edwards, Arnold, Frazier, & Finch, 2009).

The differentiation of challenge and hindrance demands provides insightful explanation of the weak or inconsistent relationship of job demands and work-related outcomes. Through initiating different emotional reactions and coping styles, challenge demands and hindrance demands lead to different motivational, performance, and retention-related outcomes. For example, findings of several meta-analytic studies showed that, challenge and hindrance demands were differently related to motivation (Crawford, LePine, & Rich, 2010), role-based performance (Wallace, Edwards, Arnold, Frazier, & Finch, 2009), job attitudes and turnover (Podsakoff, LePine, & LePine, 2007).

First, challenge and hindrance demands link to motivation in different directions. In a meta-analytic study conducted by LePine, Podsakoff, and LePine (2005) using 101 independent samples, hindrance demands were negatively related to motivation, while challenge demands were positively related to motivation. Similar findings were reported in other meta-analytic studies as well (see Crawford et al., 2010;

Podsakoff, LePine, & LePine, 2007). In a Chinese context, Lin, Siu, Shi, and Bai (2009) reported a positive relationship between quantitative workload (challenge demands) and vigor, yet a negative relationship between office politics (hindrance demands) and vigor among 199 Chinese nurses.

Second, challenge and hindrance demands link to role-based performance in different directions. In particular, Wallace and colleagues (2009) reported a positive relationship between challenge demands and role-based performance (i.e., task performance, citizenship performance, and customer service performance), yet a negative relationship was reported between hindrance demands and these three dimensions of role-based performance.

Third, challenge and hindrance demands link to retention criteria in different directions. For instance, a meta-analytic study done by Podsakoff and colleagues (2007) reported that, while challenge demands were positively related to job attitudes (i.e., job satisfaction and organisational commitment) and negatively related to retention variables (i.e., turnover intentions and turnover), the story of hindrance demands is in opposite. In particular, hindrance demands were negatively related to job attitudes (i.e., job satisfaction and organisational commitment) and positively related to retention variables (i.e., turnover intentions and turnover).

It should be noted that, despite the differences in nature, challenge and hindrance demands both lead to strain. This is in line with the COR theory (Hobfoll, 1989) that, coping with environmental demands (could be challenge or hindrance demands) requires the use of resources, and that the (potential or actual) loss of resources would lead to stress. To cite an example, both quantitative demands (a challenge

demand) and organisational politics (a hindrance demand) may use up emotional and social resources of the individuals, leading to the experience of strain. This is supported by empirical data. In a meta-analytic study conducted by LePine, Podsakoff, and LePine (2005) using 101 independent samples, both hindrance demands (e.g., situational constraints and organisational politics) and challenge demands (e.g., time urgency and workload) were positively related to strains (e.g., fatigue, emotional exhaustion). In a Chinese context, Lin and colleagues (2009) reported a positive relationship among quantitative workload (a challenge demand), office politics (a hindrance demand) and emotional exhaustion (strain).

Based on the findings reported from the meta-analytic studies mentioned above, Crawford, LePine and Rich (2010) proposed to incorporate challenge and hindrance demands into the JD-R model, which is re-named as the differentiated job demands-resources model. The differentiated job demands-resources model provides clearer illustration of how job characteristics affect work-related outcomes by summarizing the relationship of challenge and hindrance demands with strain and motivation.

Up to now, only a few studies have adopted the theoretical framework of differentiated job demands-resources model, and tested the impacts of challenge and hindrance demands simultaneously. In fact, most of the studies using the challenge and hindrance framework are meta-analytic studies, in which most primary studies only included one category of demands (i.e., either challenge demands or hindrance demands). Nevertheless, it is argued that studying both challenge and hindrance demands simultaneously is important due to statistical suppression effects (i.e., the unique contribution of challenge demands could better be revealed by controlling

hindrance demands; Boswell et al., 1994; Cavanaugh et al., 2000). Moreover, rarely there are studies that controls both challenge and hindrance demands simultaneously in a Chinese context.

2.4 The Roles of Personal Resources in JD-R Model

An important extension of the JD-R model is the inclusion of personal resources (Bakker & Demerouti, in press; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007). Nevertheless, in comparison to job resources, personal resources have relatively been less explored. Based on the study of Xanthopoulou and colleagues (2007), personal resources play roles of antecedent and mediator in the JD-R model. Yet Xanthopoulou and colleagues (2007) failed to find a buffering role of personal resources in the relationship between job demands and strain.

Personal resources could be an antecedent in the JD-R model. Like job resources, personal resources play either intrinsic or extrinsic motivational role. Previous studies have shown that personal resources predicted work engagement over time. In a 18-month longitudinal study done by Xanthopoulou, Bakker, Demerouti, and Schaufeli (2009), personal resources (self-efficacy, organisational-based self-esteem; OBSE, and optimism) at T1 significantly predicted work engagement 18 months later. Besides, Weigl, Hornung, Parker, Petru, Glaser, and Angerer (2010) reported that, longitudinally, personal resource (active coping) at T1 predicted work engagement at T2 (one year later); and active coping at T2 predicted work engagement at T3 (1.5 years later).

Besides the main effect, personal resources also play a mediating role between job resources and work engagement. It means that the availability of job resources

cultivates one's sense or ability to cope with environmental demands (personal resources), increases the individual's willingness to invest their energy at work (work engagement). Xanthopoulou, Bakker, Bemerouti, and Schaufeli (2007) reported that self-efficacy, Organisational based self-esteem (OBSE), and optimism (personal resources) partially mediated the relationship between job resources and work engagement among staff from an electrical engineering and electronics company. The results are supported by later studies. For instance, Xanthopoulou, Bakker, Bemerouti, and Schaufeli (2009) found that day-level self-efficacy, OBSE, and optimism (personal resources) fully mediate the relationship between day-level job resources and work engagement. Thus, personal resources play a mediation role in the motivational path of the JD-R model.

Nevertheless, the buffering role of personal resources in the demands-strains relationship remains inconsistent and unclear in the literature. According to the COR theory (Hobfoll, 1989), environmental circumstances often place demands on individuals and deplete their resources. The actual or perceived loss of resources thus causes the individuals to experience psychological stress. The COR theory (Hobfoll, 1989) argues that upon facing the same environmental circumstance, individuals who have a bigger pool of resources (either perceived or actual) may feel less stressed compared to those who have a smaller pool of resource, suggesting a moderating role of (personal) resources.

Although Xanthopoulou et.al., (2007) failed to establish a buffering role of neither one of the three personal resources (i.e., self-efficacy, OBSE, and optimism) on the relationship between job demands and exhaustion, there are some studies reporting a significant buffering role of, at least some, personal resources in the

demand-strain relationship. For example, Makikangas and Kinnunen (2003) reported that optimism and self-esteem at T1 moderated the relationship between job demands and mental distress and exhaustion at T2. Furthermore, Tremblay and Messervey (2011) reported that, compassion satisfaction (a personal resource) moderated the relationship between role overload (a job demand) and job strain among 122 chaplains, however, the respective relationship of role insufficiency, role ambiguity, and role conflict (job demands) with job strain was not moderated by personal resources. Also, Pierce and Gardner (2004) summarized that organisation-based self-esteem (OBSE; a personal resource) buffered the relationship between role ambiguity (a job demand), depression and physical strain symptoms.

Given the theoretical and empirical supports, both differentiated job demands and personal resources are important in predicting employees' work well-being and work related-outcomes (Bakker, Schaufeli, Leitier, & Taris, 2008). Nevertheless, to the best of my knowledge, the conditions under which personal resources particularly influence work motivation has not yet be systematically examined.

2.5 Rethinking Personal Resources

In comparison to job resources, personal resources are less explored in the literature. Among the few studies (e.g., Xanthopoulou et.al., 2007 and 2009), personal resources are usually operationalized as self-esteem, self-efficacy, and optimism. In fact, the Conservation of Resources theory (COR; Hobfoll, 1989) states that resources are those objects, personal characteristics, conditions, or energies that are either (a) valued by individuals, as they have symbolic value to help define people as who they are; or (b) serve as means for attainment of these objects,

personal characteristics, conditions, or energies. Thus, Hobfoll (1989, 2002) hold a broad view of resources and suggested four categories of them, namely object resources, condition resources, energy resources and personal characteristics. It should be noted that the three usual operationalization of personal resources only correspond to the last category of personal resources (i.e., category of personal characteristics) proposed in the COR theory (Hobfoll, 1989); other categories of personal resources such as objects resources, condition resources, and energy resources have less been explored.

The specific operationalization of personal resources is reflected in the definitions of personal resources existed in the literature. Generally, individuals who possess personal resources are those who have positive belief about him/herself and the world, and the positive belief would then help them to pursuit their goals. Thus, personal resources are generally being conceptualized at the affective-cognitive level.

Among the four categories of resources suggested by Hobfoll (1989), personal characteristics are most studied as personal resources. Personal characteristics are individual's positive view of the self and the world, e.g., optimism and self-efficacy (Hobfoll, 1989). Besides personal characteristics, Hobfoll also suggested object resources, condition resources, and energy resources.

Object resources are physical objects that are valued by individuals, e.g., an apartment. Object resources are linked to socio-economic status and are proven to be an important factor to stress resistance (Dohrenwend, 1978; Hobfoll, 1989). Condition resources are state of being that reflects individuals' social role or

experience, e.g., marriage which serves as an important source for individual's stress resistance ability (Hobfoll, 1989). Lastly, energy resources are means that enable individuals to acquire other kinds of resources, e.g., knowledge and skills.

It should be noted that most of the previous studies have included objects, conditions, and personal characteristics as personal resources. So far, there have been a few studies done on the last category of resource: energy resources. Energy resources are important because they are highly malleable, and are relatively easy to cultivate when compared to personality traits. Besides, very few past research on personal resources are carried out in the Chinese context. The present study thus aims at investigating the under-examined energy resources in a Chinese context. More specifically, the current study examines the role of two energy resources in the JD-R model, namely recovery experiences and energy management, since both resources help to create new resources.

2.6 Personal Resources of Recovery Experiences

The first energy resource to be studied is recovery experiences during non-work time. Generally, recovery experiences refers to the process in which one's functional system that has been called upon during a stressful experience returns to their pre-stressor levels (Meijman & Mulder, 1998). In other words, recovery occurs when individuals unwind from stress.

Sonnentag and Fritz (2007), drew on Effort-Recovery Model and the COR theory, validated a scale measuring underlying processes of recovery experience, which is named "Recovery Experience Scale". Effort-Recovery Model (Meijman & Mulder, 1998) depicted that coping with environmental demands require efforts

from individuals, thus leading to load reactions, e.g., fatigue and exhaustion. It is essential for individuals to recover in order to reverse the load reactions, i.e., no longer be exposed to the job demands. So, the Effort-Recovery Model suggested an important condition for recovery: to be away from the demands, or to distract oneself from demands so that the functional systems are not called upon. This suggests that recovery experiences probably occurs during non-work time. COR theory (Hobfoll, 1989) postulated that people strive to obtain, retain, and protect their resources. Potential or actual loss of resources contributes to stress and thus is harmful to individuals' well-being. Individuals have to gain new resources to replace the lost resources. COR theory thus suggests individuals to engage in some activities to create new resources (Parkinson & Totterdell, 1999; Sonnentag & Fritz, 2007).

Integrating the insights from Effort-Recovery Model and the COR theory, Sonnentag and Fritz (2007) proposed four underlying processes of recovery experience, namely psychological detachment, relaxation, mastery experience, and control during leisure time.

Psychological detachment refers to "individual's sense of being away from the work situation" (Etzion, Eden, & Lapidot, 1998, p. 579). This includes physically not engaging in job task and mentally not thinking about one's work during non-work time. Being physically away from demanding environment does not ensure the experience of unwinding from demands. People can still attach psychologically to their work even though they are physically away from the work place, such as via the use of communication technology at home (Park, Fritz, & Jex (2001). So, it is important for individuals not to be both physically and mentally occupied by work-related matters during non-work time.

Relaxation is a process of engaging in leisure activities with low activation of energy. It may take forms of meditation, listening to music, or doing muscle relaxation exercise, etc. (Sonnentag & Fritz, 2007). The main feature of these activities is that few efforts are required (Tinsley & Eldredge, 1995). Similar to psychological detachment, relaxation could be a process to reverse low reactions. Besides, relaxation process helps individuals to recover from stress as it generates positive affects and reduce stress-related complaints (Stone, Kennedy-Moore, & Neale, 1995).

Mastery experience is defined as off-job activities that provide challenging experiences and/or learning opportunities which is not directly related to work tasks. (Sonnentag & Fritz, 2007). Activities related to mastery experience include learning a new hobby, climbing a mountain, and doing sports. Mastery experience helps individuals to recover from negative impacts of job demands through increasing one's positive mood (Parkinson & Toddrell, 1999) and creating other new resources. To illustrate, learning a new hobby could enhance one's sense of competencies and self-efficacy, both serve as a type of new energy resources to the individuals (Bandura, 1997; Hobfoll, 1998). These new resources could be useful to cope with future demands.

Control during leisure time refers to the extent that an individual has autonomy in choosing what to do during leisure time, as well as when and how to do it (Sonnentag & Fritz, 2007). Control experience can be important because the experience of low control may contribute to negative self-evaluations and hence anxiety or depression (Rosenfield, 1989). Having the control experience to decide

what to do in leisure time is an engagement approach to recovery because it can help generating extra new resources such as sense of competencies and self-efficacy (Sonnentag & Fritz, 2007).

In a nutshell, recovery experience could be viewed as a kind of energy resource described by Hobfoll (1989) because it facilitates an individual to create other useful resources such as self-efficacy, and it creates a relaxing environment that reverses the process of load reaction.

2.7 Personal Resources of Energy Management

Effective energy management strategies during work (EMS) could also be a kind of personal resources, more specifically, it belongs to the category of energy resources as proposed by Hobfoll (1989). EMS are strategies that individuals use at work that help individuals to regulate their behaviors and emotions in compliance with organizational and group norms and expectation (see Fritz, Lam, & Spreitzer, 2011). This is a newly emerged concept in the literature.

Like a battery, energy is a limited resource that can be drained by job demands and depleted over time (Hobfoll, 1989; Hobfoll & Shirom, 2001). For example, lecturing requires teacher to stand, talk, and respond to students' questions, which would eventually make the teacher feels physically and mentally tired. Previous findings suggested that depleted energy could be replenished by recovery experience during non-work time (i.e., vacation, weekend, and after work evening; Fritz & Sonnentag, 2005; Sonnentag, Binnewies, & Mojza, 2008; Westman & Eden, 1997). However, effects of recovery experience during non-work time may fade over time (Spreitzer & Grant, 2012). For instance, Westman and Eden (1997) reported that

recovery during vacation reduced employees' level of stress, yet the level of stress returned to pre-vacation level after a few weeks. Thus, it is important to look at other ways to sustain, or replenish energy during work, i.e., energy management during work.

The notion of energy management at work is gaining its popularity in business sector, yet little research studies have been done on this topic. It is not uncommon for companies to provide energy management trainings for employees. In fact, world-wide companies, including Google, Microsoft, and Deloitte, have invested on energy management trainings for their employees.

The idea of energy management is less examined by scientific study. Among the very few studies concerning energy management, Loehr and Schwartz (2003) identified four levers for energy management: physical, mental, emotional, and spiritual. Physical lever refers to ways to build endurance and fitness. Mental lever is ways to create focus and attention. Emotional lever is ways to enable excitement and connection. Spiritual lever is ways to provide centeredness and presence. The four energy levers are hierarchical and interrelated. In other words, physical energy is the foundation for mental energy, mental energy is the foundation for emotional energy, and emotional energy is the foundation for spiritual energy, which rests at the top of the hierarchy.

Fritz, Lam, and Spretizer (2011) further modified the four levers of energy management strategies into physical, relational, mental, and spiritual. They preferred relational strategies to emotional strategies so as to emphasize the importance of relationship at work. Relationship with colleagues at work is important because, first,

it fulfills basic human need for relatedness, and second, having good relationship with co-workers is instrumental to complete work tasks when an individual needs work support or guidance.

According to Fritz, Lam, and Spretizer (2011), among the four categories of strategy, *physical strategies* referred to any activities that fulfill physiological need, e.g., drinking water and going to the bathroom. *Relational strategies* referred to positive interaction and connection with people at work, e.g., showing gratitude to someone at work, offering help to a co-worker. *Mental strategies* referred to focused behaviours, sometimes future-oriented behaviours, e.g., making a to-do list, a plan for an evening or weekend. *Spiritual strategies* are used to help seeing a “bigger picture” of things, e.g., thinking about the meaning of one’s work.

Fritz and colleagues (2011) developed a pool of energy management strategies (42 items). Some of the above-mentioned strategies are labeled as “micro breaks” because they are not linked directly with completion of work tasks, e.g., drinking water, having a snack. Some other strategies are “work-related strategies” as they are related to doing of work, e.g., make a to-do-list, offering help to a co-worker.

Among the 42 strategies studied, eight items of work-related strategies were significantly and positively related to vitality (i.e., energy). These strategies include: “to learn something new”, “to focus on what gives me joy at work”, “set a new goal”, “do something to make a colleague happy”, “make time to show gratitude to someone I work with”, “seek feedback”, “reflect on how I make a difference at work”, and “reflect on the meaning of my work”. These eight strategies are beneficial in maintenance or enhancement of energy at work, hence could

potentially be a valuable personal resource.

Based on Hobfoll's (1988) perspective, EMS can be viewed as an energy resource because they are means to broaden individuals' thought-action repertoires through affect-driven actions like relationship building and exploration, which in turn create new resources (Quinn, Spreitzer & Lam, 2012). For instance, do something to make a colleague happy and to express gratitude toward a colleague help to build relationship among an individual and colleagues, which may in turn increase support from colleagues (a job resource).

2.8 Chinese Teachers as a High Stress Group

Identifying the means to diminish negative impacts of high job demands and enhance employees' working motivation is especially essential and valuable to occupations that involve high level of stress, for example, teachers.

In Hong Kong, teaching has ranked as one of the top four most stressful occupations (Occupational Safety & Health Council-OSHC, 2006). It is reported that the level of stress among primary and secondary teachers in Hong Kong has increased steadily from 2005 to 2010; the major source of work stress is "heavy workload and time pressure" (Chan, Chen, & Chong, 2010). The problem of having high level of stress among teachers should not be neglected because it not only would cause health problems to teachers (in the forms of strain), indeed, in a survey, 99.5% of the respondent teachers reported suffering from at least one type of psychosomatic health problem (Chong & Chan, 2010), but also would create an adverse learning environment to students which would consequently affect their learning performance (Chan & Hui, 1995).

As teachers in Hong Kong are highly stressful and suffer from strain, it is important to identifying means to diminish the negative impacts of high job demands on teachers.

2.9 Summary

This chapter presents the concept and theoretical background of key variables of the preset study including an overview of JD-R model, different job demands, personal resources in the JD-R model, concept of personal resources. By reviewing the literature, the gaps of knowledge are pointed out: 1) little empirical investigation of challenge and hindrance demands simultaneously; 2) limited operationalization of personal resources; 3) the inconsistent buffering role of personal resources in demands-strain relationship; 4) a lack of attention on the joint effects of personal resources and differentiated job demands on strain and motivation.

Chapter 3: Theoretical Model and Hypotheses

This chapter provides rationales for exploring the underlying factors of the Energy Management Strategies (EMS), and for conducting research on the roles of personal resources and differentiated job demands on the JD-R model. To reiterate, the aims of present study are to extend the JD-R model by including 1) the two less-studied personal resources (i.e., EMS and recovery experiences); 2) the differentiated job demands (i.e., challenge demands and hindrance demands); and 3) investigating the interactions effect among these variables.

3.1 Underlying Factor Structure of Energy Management Strategies

As mentioned in Chapter 2, Energy Management Strategies (EMS) during work could be a valuable personal resource reflecting the category of energy resources as suggested by Hobfoll (1989). However, the study of energy management at work is very limited. Fritz and colleagues (2011) developed a pool of energy management strategies and examined their association with energy and fatigue. Among those, eight work-related items (see Table 3.1 for the list of the eight items) were associated positively with energy at work (Fritz et al., 2011).

Table 3.1 Items of Effective Work-Related Energy Management Strategies

Item 1	Learn something new
Item 2	Focus on what gives me joy at work
Item 3	Set a new goal
Item 4	Do something that will make a colleague happy
Item 5	Make time to show gratitude to someone I work with
Item 6	Seek feedback
Item 7	Reflect on how I make a difference at work
Item 8	Reflect on the meaning of my work

These eight strategies may potentially be effective energy management strategies at work. Besides, EMS has not been studied in a Chinese context. The present study aims to adapt these eight energy management strategies developed by Fritz and colleagues (2011) to the development of a scale and validate it in a Chinese context, specifically among Chinese teachers.

The underlying factor structure of the eight energy management strategies is unclear. Although Fritz and colleagues (2011) suggested four categories of energy management strategies (i.e., spiritual, mental, relational, and physical), they did not explicitly label each item according to the corresponding categories. So, an exploration of the underlying factor structure among these eight strategies is necessary. Study 1 was conducted to explore the underlying factor structure using exploratory factor analysis (EFA). Results of EFA were then further cross-validated by Confirmatory Factor Analysis (CFA) in Study 2.

3.2 Main Effect of Different Job Demands

It is proposed that both challenge demands and hindrance demands would be positively related to emotional exhaustion. It is expected that no matter whether an individual is facing challenge or hindrance demands, the individual needs to mobilize resources to cope with the demands, and the use of resources would deplete his/her energy, causing strain. To illustrate, a teacher needs to exert his/her cognitive resources (e.g., grading students' papers) as well as physical resources (e.g., standing long time lecturing) to deal with high teaching workload. Similarly, a teacher needs to exert his/her cognitive or physical resources (e.g. spending time and effort) to go through the processes of bureaucratic red tapes, which is a kind of hindrance demands. Both demands will cause the teacher to experience strain. This is

supported by many empirical studies. For example, LePine, Podsakoff, and LePine (2005) conducted a meta-analytic study using 101 independent samples. In their study, over 20 job demands were included and being categorized into either challenge or hindrance demands. The results showed that, all job demands measures, regardless of challenge or hindrance, were positively related to strain.

Most of the studies examining the differentiated demands-strain relationship used western samples. The present study intends to examine the differential effects of challenge and hindrance stressors in a Chinese context. Furthermore, most of the studies do not model both challenge demands and hindrance demands at the same time (see Boswell, Olson-Buchanan, & Judge, 1994; Cavanaugh, Boswell, Roehling, & Boudreau, 2000). It is hypothesized that, both challenge and hindrance demands would be positively related to exhaustion.

Hypothesis 1a: Challenge demands will be positively related to exhaustion.

Hypothesis 1b: Hindrance demands will be positively related to exhaustion.

3.3 Main Effect of Personal Resources

EMS are strategies one use to sustain their energy during work. Fritz and colleagues (2011) reported that EMS were positively related to vitality (a form of energy). Researchers proposed that for those who can better manage their energy at work, they can invest more and longer duration of effort in activities (Quinn, Spreitzer, & Lam, 2012). EMS also play an extrinsic motivational role because of their instrumental value. For example, the strategy of learning something new at work would enhance the overall competency to work; and the strategy of seeking feedback would provide direction for improvement at work. Thus, it is hypothesized

that EMS would be positively related to motivation at work (i.e., work engagement).

Hypothesis 2a: Effective energy management strategies (EMS) during work will be positively related to work engagement.

Two core dimensions of recovery experience were examined in the present study. They are psychological detachment (the ability to stay mentally away from job demands) and mastery experience (the ability to generate new resources that could be used to cope with job demands) (see Ten Brummelhuis & Bakker, 2012a).

It is hypothesized that psychological detachment, as a kind of personal resource, is positively related to work engagement. Psychological detachment during non-work time could increase motivation at work because first, it implies that an individual is not psychologically affected by the work demands during non-work time, and thus have chances to refresh from previous strain experiences (Binnewies, Sonnentag, & Mojza, 2009); second, it generates positive emotions at non-work time (Sonnentag & Fritz, 2007) which increases the individual's tendency to interpret information in a positive way (see the mood-spillover theory by Rusting & DeHart, 2003). Having positive emotion or think positively helps the individual to aware the opportunities at work and foster a more proactive work style (see the Broaden-and-Build theory by Fredrickson, 2001). In fact, empirical findings have shown that psychological detachment during non-work time could increase engagement at work. Siltaloppi, Linnunen, and Feldt (2009) found that psychological detachment was positively related to work engagement among employees from various industries. More importantly, Ten Brummelhuis and Bakker (2012a) reported that day-level psychological detachment predicted the next day

work engagement among nurses. The present study attempted to replicate these findings by examining the motivational role of general psychological detachment experience.

Hypothesis 2b: Psychological Detachment will be positively related to work engagement.

It is hypothesized that mastery experience, as a personal resource, is positively related to engagement at work. Mastery experience describes the process that individuals seek for challenges or chances of learning during non-work time, which are not directly related to work. Mastery experience could enhance motivation at work because first, it helps to create new resources, e.g. seeking instrumental challenges may be heighten one's self-efficacy which in turn facilitate individuals' goal defining and positive evaluation of demands; second, it promotes positive emotions (Rook & Zijlstra, 2006), thus bearing a similar effect of psychological detachment on work motivation.

Some may argue that mastery experience places extra demands on individuals because individuals need to cope with extra demands from challenging activities. However, empirical data reflected that mastery experience during vacation is actually negatively related to exhaustion after employee returns to work (Fritz & Sonnentag, 2006). Sonnentag and Fritz (2007) also documented the negative relationships between mastery experience and exhaustion. Thus, rather than overtaxing the individuals, mastery experience seemed to reduce individuals' tiredness.

Indeed, Siltaloppi, Kinnunen, and Feldt (2009) found a positive relationship between mastery experience during non-work time and engagement at work. To replicate the findings by Siltaloppi and colleagues (2009) in a Chinese context, a positive relationship between mastery experience and work engagement is hypothesized in the present study.

Hypothesis 2c: Mastery experience will be positively related to work engagement.

3.4 The Joint Effects of Personal Resources and Different Job Demands

To the best of my knowledge, the joint effects of personal resources and challenge/hindrance demands have not been explored under the JD-R framework. Investigating such interactions is especially important in both theoretical and practical perspectives. Theoretically, while considering the effect of demands on strain, one cannot neglect whether an individual possess adequate resources to cope with the demands. Investigation of such interactions is particularly insightful to provide a deeper understanding on the mechanisms of how job characteristics lead to motivational/stress outcomes, which are proximate predictors of employees and organisational performance. Practically, organisations invest huge amount of money to enhance employees' performance, knowing what kind of resources are more beneficial under what kind of situations could ensure meaningful investment by the organizations.

There are two main interaction processes stated in the JD-R model. The first is the joint effect of job resources and demands on strain, i.e., job resources buffer the harms that job demands places on individuals well-being. This buffering hypothesis

received some empirical supports and is generally agreed in the literature. Nevertheless, until now, the buffering role of personal resources is still unclear as the existing empirical findings are mostly inconsistent. One possible explanation of the inconsistent findings is the narrow choice of personal resources, e.g., limited to self-efficacy, self-esteem, and optimism. The present study attempted to extend the past studies and address two other less-explored personal resources, i.e., EMS and recovery experiences. Additionally, the present study tested whether personal resources can mitigate the harms of both challenge and hindrance demands on exhaustion.

The second interaction process stated the joint effects of personal resources and job demands on motivation, i.e., high job demands boost the resource-motivation relationship. I tested how personal resources influence motivation under challenge demands and hindrance demands respectively.

It is hypothesized that, personal resources (EMS, psychological detachment, and mastery experience) would buffer the challenge demands and exhaustion relationship, and the hindrance demands and exhaustion relationship. As mentioned in Chapter 2, the COR theory (Hobfoll, 1989) has suggested a moderator role of resources in the demand-strain relationship, yet received inconsistent empirical support. The present study tested whether differentiating the job demands into challenge and hinderance could help providing a better insight into the buffering role of personal resources in the JD-R model.

Personal resources buffer the potential harm of demands on strain. To take an example, EMS (a kind of personal resources) could buffer the relationship between

demands and strain, but the buffering degree depends on the amount of EMS in used. Those who employ more EMS can sustain their energy longer, or replenish used physical and cognitive resources faster than those who do not employ any strategies or who employ less EMS, thus experience less strain. To cite another example, recovery experiences (another kind of personal resource) during non-work time could reverse the strain process induced by allostatic loads of the environmental demands (see the Effort-Recovery Model, ERI, by Meijman & Mulder, 1998). Again, such buffering effect depends on how well the individuals can recover. If individuals do not have sufficient recovery experiences, job demands can turn into job stressors and contribute to negative outcomes, such as strain. As mentioned earlier, psychological detachment and mastery experience are important elements of recovery experiences (Sonnentag, 2007), I therefore hypothesized that they could buffer the demands- strain relationship.

Hypotheses 3: Personal resources (hypothesis 3a: EMS; hypothesis 3b: psychological detachment; hypothesis 3c: mastery experience) will buffer the relationship between challenge demands and exhaustion.

Hypotheses 4: Personal resources (hypothesis 4a: EMS; hypothesis 4b: psychological detachment; hypothesis 4c: mastery experience) will buffer the relationship between hindrance demands and exhaustion.

It is hypothesized that both challenge and hindrance demands would boost the relationship between personal resources and work engagement. Previous studies have shown that job resources particularly influence work engagement when job demands are high (e.g., Bakker, Hakanen, Demerouti, & Xanthopoulou, 2007). The

question of when personal resources particularly influence work engagement has yet received little attention. The present study addressed this issue by testing the moderator role of challenge and hindrance job demands in personal resource-engagement relationship.

Since personal resources become important when facing certain amount of job demands, both challenge demands and hindrance demands should boost the personal resources-motivation relationship. However, challenge demands should have a stronger boosting effect than hindrance demands. According to the expectancy theory (Vroom, 1964), when one realizes that their goals are unlikely to be achieved, they are less likely to mobilize their personal resources. With regard to the challenge demands which offer the individuals more chances to get reward, the individuals thus would be more willing to invest their resources to deal with the demands. On the contrary, hindrance demands restrain individuals from obtaining reward, individuals are therefore less likely to mobilize their resources and to pay effort to cope with the demands. Indeed, Sonnentag, Mojza, Demerouti, and Bakker (2012) reported that high situational constraints (a hindrance demand) actually weakened the relationship between recovery level and work engagement. Thus, it is expected that both challenge and hindrance demands boost the personal resources-motivation relationship. Challenge demand should act as a stronger enhancer than hindrance demands.

Hypotheses 5: Challenge demands would boost the relationship between personal resources (*hypothesis 5a:* EMS; *hypothesis 5b:* psychological detachment; *hypothesis 5c:* mastery experience) and work engagement; such that personal resources will particularly influence motivation when under high

challenge demands.

Hypotheses 6: Hindrance demands would boost the relationship between personal resources (*hypothesis 6a:* EMS; *hypothesis 6b:* psychological detachment; *hypothesis 6c:* mastery experience) and work engagement; such that personal resources will particularly influence motivation when under high hindrance demands.

3.5 Summary

The present study adopts and extends the JD-R model by including 1) the two less-studied personal resources (i.e., EMS and recovery experiences); 2) differentiated the job demands into challenge and hindrance; and 3) investigating their joint effects. In total, six hypotheses are set to investigate the main effect of different job demands, the main effect of personal resources, the joint effects of personal resources and challenge/hindrance demands on strain, and the joint effect of personal resources and challenge/hindrance demands on motivation.

Two empirical studies were conducted. Study 1 aims to validate the EMS scale in a Chinese context. Study 2 aims to examine the roles (boosting and buffering roles) of personal resources and differentiated job demands on the JD-R model. A proposed model for the study is depicted in Figure 2.

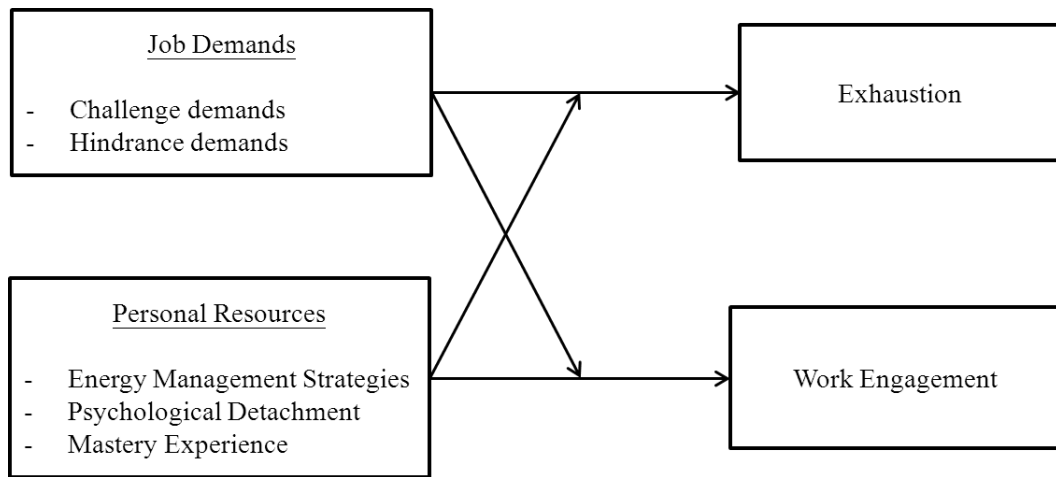


Figure 3.1: The Proposed Theoretical Model of the Present Study.

Chapter 4: Results of Study 1

The aim of study 1 was to explore the underlying factor structure of the eight-item EMS scale. Exploratory Factor Analysis was conducted.

4.1 Adapting Items from a Previous Study

Fritz, Lam and Spreitzer (2011) developed a pool of (42 items) energy management strategies. Among those, eight strategies were found to be significantly and positively related to vitality. Nevertheless, the underlying factor structure of these eight energy management strategies was unclear. Although Fritz and colleagues (2011) suggested classifying energy management strategies into four categories: spiritual, mental, relational, and physical, they did not explicitly label the eight items according to these categories. Thus, an exploration of the underlying factor structure of these eight items is necessary. Study 1 was conducted to explore underlying factor structure by exploratory factor analysis (EFA). Results of EFA then were cross-validated by confirmatory factor analysis (CFA) in Study 2.

4.2 Method

A cross-sectional design was adopted using self-administered questionnaire survey.

Participants. To increase the generalizability of the results, participants from various service industries were recruited. Three hundred and eighty employees from Mass Transit Railway (MTR) company, the Hong Kong Police Force, and Financial companies were approached. In total, three hundred and twenty-three respondents (85% response rate; 81.1% are male and 18.9% are female) completed the

questionnaire: 181 staff came from MTR company (54 frontline staff, 25 staff from supervisory grade, 22 in-house trainers, and 80 staff from managerial grade); 78 staff from the Hong Kong Police Force (43 police constables and 35 police inspectors); and 64 staff from the financial companies. Table 4.1 shows the demographical characteristics of the sample.

Table 4.1 Demographical Characteristics of Participants (N= 323) In Study 1

Variables	Percentage
Age	
under 24	7.7%
25-29	10.9%
30-34	11.9%
35-39	16.3%
40-44	13.8%
45-59	17.9%
50-54	14.4%
55 or above	7.1%
Gender	
Male	81.1%
Female	18.9%

Procedures. Questionnaires were distributed through training workshops to the staff of MTR company and the Hong Kong Police force; and through company visit to the staff of financial companies. First of all, coordinators/managers of the organizations were contacted to seek for consent to participate in the research study. Training workshops and company visits were organized upon receiving the consent. For MTR and Hong Kong Police Force, questionnaires were distributed and collected immediately before the training program started. For financial companies, questionnaires were given to participants and collected through company visits. Participants were asked to complete a questionnaire concerning “work stress and

well-being”. The confidentiality and anonymity of their information, as well as the voluntary basis of their participation were emphasized and assured verbally and in the cover page of the questionnaires.

4.3 Measures

The Energy Management Strategies scale is adapted from Fritz et al., (2010) study. In their study, 42 items of energy management strategies at work were used. Among those, 20 items were identified as work-related strategies and 22 items as non-work related strategies. Fritz and colleagues asked participants to rate the extent to which they use the listed strategies “to manage their energy” from 1 (not at all) to 5 (frequently). The items were then correlated with vitality and fatigue, which represented positive and negative elements of human energy at work respectively. Findings of Fritz et al. (2010)’s study revealed that, only eight items of work-related strategies were found to have significant positive relationship with vitality.

The present study thus adapted these eight items to develop the effective energy management strategies scale. The adapted English items were translated to Chinese. To ensure validities, the translated items were back-translated and cross-checked by an individual who did not have prior knowledge of the items. Example items are “learn something new” and “reflect on how I make a difference at work” (for full items of the adapted EMS scale, please see Table 4.2).

4.4 Results

Exploratory Factor Analysis

Exploratory factor analysis (EFA) was conducted to examine the underlying

structure of the EMS scale. Principle Axis factoring extraction method with Oblimin rotation was applied to the eight adapted EMS items. Conventionally, Kaiser's rule was commonly used to decide number of factors, i.e. factors with eigenvalues greater than one (see Ford, MacCallum, & Tait, 1986; Kim & Mueller, 1978; Stevens, 2012) would be retained. Nevertheless, Jolliffe (1972) suggested that the Kaiser's rule is too strict and suggested to retain all factors with eigenvalue more than .7 (Field, 2013). Jolliffe (2002) reaffirmed such point: "It can be argued that a cut-off at $l_k = 1$ retains too few variables. Consider a variable which, in the population, is more-or-less independent of all other variables. In a sample, such a variable will have small coefficients in $(p - 1)$ of the PCs but will dominate one of the PCs, whose variance l_k will be close to 1 when using the correlation matrix. As the variable provides independent information from the other variables it would be unwise to delete it. However, deletion will occur if Kaiser's rule is used, and if, due to sampling variation, $l_k < 1$. It is therefore advisable to choose a cut-off l^* lower than 1, to allow for sampling variation. Jolliffe (1972) suggested, based on simulation studies, that $l^* = 0.7$ is roughly the correct level" (p. 115). In the current study, the Jolliffe's approach would be followed in order to avoid a mistaken deletion of factors due to sample variation.

The EFA yielded a one-factor solution explaining 42.80% of the common variance. The eigenvalue of the factor was 3.86. Since the eigenvalue of the second and third factors were close to one (eigenvalue were .99 and .85 respectively), another EFA was further conducted to extract a three-factor model of the scale. Results showed that the total variance explained by the three-factor was 54.336%. The three-factor were labeled as followed: spiritual strategies (2 items), relational strategies (3 items), and mental strategies (3 items). Table 4.2 depicts the standard

factor loadings for each item.

Internal Consistency Reliabilities

The cronbach's alpha was computed to check the internal consistency of the EMS scale. The alpha for spiritual strategies, relational strategies and mental strategies were .78, .77 and .68 respectively. The overall scale demonstrated a satisfactory reliability ($\alpha = .85$).

Table 4.2 Standardized Factor Loadings for Items of EMS Scale

	Spiritual Strategies	Relational Strategies	Mental Strategies
Item 1 Learn something new			.629
Item 2 Focus on what gives me joy at work			.519
Item 3 Set a new goal			.522
Item 4 Do something that will make a colleague happy		.611	
Item 5 Make time to show gratitude to someone I work with		.822	
Item 6 Seek feedback		.572	
Item 7 Reflect on how I make a difference at work	.767		
Item 8 Reflect on the meaning of my work	.687		
Eigenvalue	3.864	.990	.854
% of variance explained	42.802%	6.966%	4.568%

Notes. $n = 323$. Factor loadings smaller than .30 were suppressed.

4.5 Summary

The aim of study 1 was to explore the underlying factor structure of the adapted EMS scale. Results of the exploratory factor analysis demonstrated a fairly acceptable three-factor solution (spiritual strategies, mental strategies, and relational strategies) with acceptable internal consistency. Results of EFA were cross-checked

by Confirmatory Factor Analyses (CFA) in study 2, which will be presented in the next chapter.

Chapter 5: Results of Study Two

The aims of Study 2 are two-fold: a) to cross-validate the new EMS scale developed in Study 1; b) to investigate the roles (i.e., as antecedent and moderator) of personal resources and different job demands in the JD-R model.

5.1 Method

A cross-sectional self-administered questionnaire survey design was adopted.

Participants. Two hundred and thirty primary and secondary school teachers from Hong Kong were invited to participate in Study 2. A total of 173 respondents (75% response rate; 36.6% were males and 63.4% were females; with a mean age of 36.14 years, $SD=9.53$; and average job tenure of 11.58 years, $SD=8.58$) completed and returned the questionnaire. After excluding four cases with missing values on EMS items, the final sample size was 169 ($n=169$). The participants were generally highly educated, with 92% holding a college degree. Table 5.1 shows the demographical characteristics of participants.

Procedures. Questionnaires were distributed through a training workshop and personal network of the researcher. 50 of the participants were recruited from a training workshop, questionnaires were distributed and collected immediately before the training program started. 119 of the participants were recruited from personal network, participants were contacted by either email or phone and were asked about their preferred way (i.e. by email or postage) to receive the questionnaires. Questionnaires were sent by post or email according to the preference of the

recipients. To test whether participants recruited from different source were different from each other; an independent t-test was conducted prior combining the data. Figure 5.2 presents the results of the independent t-test. Participants were asked to complete a questionnaire concerning “work stress and well-being”. The confidentiality and anonymity of their information, as well as the voluntary basis of their participation, were assured both verbally and on the cover page of the questionnaires.

Table 5.1 Demographical Characteristics of Participants (N= 169) in Study 2

Variables	Mean	SD
Age	36.14	9.53
Job Tenure (years)	11.85	8.58
no. of working hours/week	52.54	16.19

Variables	Percentage
Gender	
Male	36.6%
Female	63.4%
Educational level	
Associate degree/ diploma	8%
University or above	92%
Marital status	
Single	46.0%
Married/cohabitation	52.3%
Divorce/separated	1.7%

Table 5.2 Comparison of the Participants' Characteristics (N= 169) in Study 2

	Training (n= 50)		personal network (n=119)		<i>t</i>	
	M	SD	M	SD		
Age	39.06	8.19	35.06	9.78	-2.47	**
Educational level	1.96	0.12	1.93	.34	-0.62	
Tenure	13.63	6.91	11.19	9.12	-1.70	
No. of working hours	3.89	.61	52.38	16.95	-0.25	
Job Autonomy	4.25	.91	4.10	.98	-0.97	
EMS			3.71	.54	-1.90	
Psychological Detachment	2.79	.90	2.73	1.00	-0.33	
Mastery Experience	3.04	.85	2.87	.91	-1.16	
Challenge Demands	3.57	.82	3.66	.78	.67	
Hindrance Demands	2.91	.89	2.93	.97	.12	
Exhaustion	3.82	1.12	4.13	1.07	1.68	
Work Engagement	3.54	.83	3.30	1.15	-1.36	

5.2 Measures

Job Demands. Challenge and hindrance demands were measured by a 11-item scale developed by Cavanaugh and colleagues (6 items of challenge demands, 5 items of hindrance demands; Cavanaugh et al., 2000). Participants were asked to rate the extent to which the stated work-related items caused stress for them on a 5-point Likert scale (from 1="produces no stress" to 5="produces a great deal of stress"). Example items of challenge stressors ($\alpha = .93$) are "the volume of work that must be accomplished in the allotted time," and "the scope of responsibility my position entails." Example items of hindrance demands ($\alpha = .85$) are "the inability to clearly understand what is expected of me on the job," and "the amount of red tape I need to go through to get my job done".

Job Autonomy. Job autonomy, as one of the major job resource (Taris, Schreurs,

& van Iersel-van Silfhout, 2001), was assessed by a three-item scale developed by Salanova, Agut, and Peiró (2005). Job autonomy refers to the extent that the job could provide continuous freedom, independence, and discretion to employee to design the schedule and procedures to complete job tasks (Hackman & Oldham, 1975). Participants were asked to rate on a 6-point Likert scale indicating the frequency that they had ever experienced a given situation (from 1="never" to 6="frequently"). An example item was "autonomy to choose what tasks to perform". The scale demonstrated a good reliability ($\alpha = .91$).

Energy Management Strategies (EMS). EMS, a proposed personal resource, was measured by the eight-item EMS scale adapted from Fritz, Lam, and Spreitzer (2011) which was developed in Study 1. Like that in Study 1, participants were asked to rate the frequency that they used the listed strategies to "manage their energy at work" (from 1="not at all" to 5="frequently"). Items were translated and back-translated in Chinese. The scale demonstrated a good reliability ($\alpha = .80$).

Recovery experiences. Recovery experiences, another proposed personal resource, was measured by the Recovery Experience Questionnaire adapted from Sonnentag and Fritz (2007). The two dimensions of recovery experience, namely psychological detachment and mastery experience, were measured. Psychological detachment was measured by a 4-item subscale. Participants were asked to indicate the extent to which they agree that they had encountered the listed experiences (from 1="I do not agree at all" to 5="I fully agree"). A sample item is "I forget about work". Mastery experience was measured by a 4-item subscale. Likewise, participants were asked to indicate their agreement on the listed experiences. A sample item is "I seek out intellectual challenges". All items were translated and

back-translated in Chinese. Both sub-scales showed good reliabilities (psychological detachment subscale: $\alpha=.84$; mastery experience subscale: $\alpha=.85$).

Exhaustion. Exhaustion was assessed by a 5-item subscale of the Maslach Burnout Inventory (General) Schaufeli & Leiter, 1996). Participants were asked to rate the frequency of experiencing certain feelings about their work (from 1="never" to 6="frequently"). An example item is "I feel emotionally drained from my work". The scale showed a good internal consistency ($\alpha=.91$).

Work Engagement. Work engagement was measured by the Utrecht Work Engagement Scale (UWES) (Schaufeli & Bakker, 2003). To reduce the number of items in the questionnaire, a 9-item shortened version was adopted. The shortened version showed a good internal consistency in the past study (Schaufeli & Bakker, 2003). The instrument consisted of three dimensions: vigor, dedication, and absorption. Participants were asked to rate the frequency of experiencing certain feelings about their work (from 0="never" to 6="always"). A sample item of vigor is "At my work, I feel bursting with energy" ($\alpha= .82$). An example item of dedication is "I am enthusiastic about my job" ($\alpha= .87$). An example item of absorption is "I am immersed in my work" ($\alpha= .79$). The overall scale showed good internal consistency ($\alpha= .92$).

Demographical and control variables. Demographical information was also collected, including gender, age, job tenure, educational level, marital status, and number of working hours per week. They also served as control variables.

5.3 Data Analysis

One of the aims of Study 2 was to cross-validate the EMS scale developed in Study 1. To achieve this, a Confirmatory Factor Analyses (CFA) was conducted to cross-check the results of EFA of Study 1. A series of CFA were employed to test a one-factor model (M1: 8 items as one factor), two factor models (M2a: 2-item spiritual strategies as one factor and remaining 6-item as another factor; M2b: 3-item relational strategies as one factor and remaining 5-item as another factor; M2c: 3-item mental strategies as one factor and remaining 5 items as another factor), and a three-factor model (M3: 2-item spiritual strategies, 3-items relational strategies, and 3-item mental strategies). As the results of Study 1 revealed an acceptable three-factor model, thus M3 is expected to be the model of best fit in the CFA.

Besides Chi-square (χ^2) value, Comparative Fit Index (CFI), Normed Fit Index (NFI), Goodness-of-Fit Index (GFI), Standard Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA) were used to compare the fitness of models. Cronbach's alpha was computed demonstrating the internal consistency of the EMS scale. Although there were no strict criteria to assess fit indices, by conventional, a model was generally considered as adequately fit when (a) NFI, CFI, and GFI are .90 or greater (see Bentler, 1990, Tucker & Lewis, 1973; Byrne, 2001), and (b) SRMR and RMSEA are .10 or less (see Browne & Cudeck, 1993, Hu & Bentler, 1999).

Prior to the test of hypotheses, the measurement model of the present study was tested to ensure the construct validity of the studied variables (Joreskog & Sorbom, 1996). A set of CFA was carried out to test the proposed measurement model of the study (seven-factor model). To eliminate the possibility of common method bias, a

Harman's single-factor test was conducted through CFA. The fitness of model was assessed by similar criteria mentioned in the previous paragraph.

To test the main and interactive effects of job demands (challenge and hindrance demands) and personal resources (EMS, Psychological Detachment, and Mastery experience), several hierarchical multiple regressions were implemented. One series of the regressions tested the effects of the above variables on work engagement; while another series tested the effect of the above variables on exhaustion.

The procedures of regression followed the outlines of Aiken and West (1991). Before conducting the analyses, all independent variables were standardized. The interactive terms were computed by the standardized terms in order to avoid multicollinearity (Aiken & West, 1991; Dawson & Richter, 2006). In the first step of the regressions, control variables were entered. According to Becker (2005), one of the criteria of selecting control variables should be based on the significance of correlation between the control variables and the dependent variable, because the inclusion of control variables that were uncorrelated with the dependent variables would reduce power and may lead to type II error (i.e. concluding there was no effect when, actually, there was). The study of Spector, Zapf, Chen, and Frese (2000) demonstrated how the inclusion of uncorrelated variables increased type II error by partialling true variance from the relationship of interest, using the case of negative affectivity as control variable in job stress research. Thus, in the current study, selection of the control variables was based on the significance of correlations between the control variables and the outcome variables. In the second step of regressions, the standardized antecedents were entered so as to test the main effects.

For example, both standardized challenge and hindrance demands were entered in the second steps so as to test the effect of demands on exhaustion. The two demands have to be entered in the same step because to test the effect of one, the other has to be controlled. In the third step, the standardized moderator (personal resources in the first set of regressions; challenge and hindrance demands in the second set of regression) was entered. In the last step, the standardized two-way interactive term (personal resources x challenge/ hindrance demands) was entered.

5.4 Results

Cross-validation of the EMS scale

Confirmatory Factor Analyses (CFA) was employed to verify the result of EFA obtained in Study 1. A series of CFAs was carried out for comparison of fitness of model: one-factor model (M1), two-factor model (M2a, M2b, M2c), and three-factor model (M3).

First of all, four cases with missing value of EMS items were excluded in the CFA. The sample size of CFA thus was 169. To recap, the assessment criteria of fitness of fit is: (a) NFI, CFI, and GFI are .90 or greater (see Bentler, 1990, Tucker & Lewis, 1973; Byrne, 2001), (b) SRMR and RMSEA are .10 or less (see Browne & Cudeck, 1993, Hu & Bentler, 1999), and (c) AIC is smaller the better (Schreiber, Nora, Stage, Barlow & King, 2006).

To evaluate, M3a (first order three factor mode) and M3b (second order three factor model) showed the best fit of the tested model: $\chi^2 (17) = 40.96$, CFI= .94, NFI= .90, GFI= .94, SRMR= .05, RMSEA= .09. Table 5.3 depicts the results of model testing in details. As shown, both M3a and M3b were the models that fulfilled

the selection criteria. It should be noted that the M3a and M3b were equivalent model because they were mathematically equal, i.e. with the same chi-square statistics and goodness-of-fit indices (Worthington & Whittaker, 2006). Worthington and Whittaker (2006) suggested that, “theory should play the strongest role in selecting the appropriate model when comparing equivalent models” (p. 826). According to Loehr and Schwartz (2003) and Fritz and colleagues (2011), there are four levers for energy management (i.e. physical, mental, emotional/ relational, and spiritual), and the four energy levers are hierarchical and interrelated. In other words, each of the categories should reflect a shared concept, i.e. energy management strategies. Based on the exiting studies in the literature, it seems appropriate more appropriate to accept M3b (the second order model) than M3a (the first order model). The results of CFA have replicated the results of EFA reported in Study 1, further supporting that the EMS scale carried a three-factor underlying structure.

Cronbach’s alpha was employed to examine the internal consistency of EMS scale. The reliabilities of the three dimensions of EMS scale were quite high (relational strategies: $\alpha = .75$; spiritual strategies: $\alpha = .71$; and mental strategies: $\alpha = .68$). The overall scale demonstrated a satisfactory reliability ($\alpha = .80$).

Table 5.3 Fit Indices for Tested Models (N=169)

Model	df	χ^2	CFI	NFI	GFI	SRMR	RMSEA	AIC
One factor model (M1)	20	113.15	.76	.73	.86	.07	.17	145.15
Two factor model (M2a) ^a	19	89.81	.82	.78	.88	.06	.15	123.81
Two factor model (M2b)	19	82.07	.84	.80	.89	.06	.14	116.07
Two factor model (M2c)	19	74.64	.86	.82	.90	.06	.13	108.64
Three factor model (M3a: First order model)	17	40.96	.94	.90	.94	.05	.09	78.96
Three factor model (M3b: Second order model)	17	40.96	.94	.90	.94	.05	.09	78.96

Notes. The best-fitting model is M3a and M3b (equivalent model). CFI= comparative fit index; NFI= Bentler–Bonett normed fit index; GFI= goodness-of-fit index; SRMR= standardized root-mean-squared residual; RMSEA= root-mean-squared error of approximation; AIC= Akaike information criterion..

^a M2a: Factor one: 2-item spiritual strategies; Factor two: remaining 6 items

M2b: Factor one: 3-item relational strategies; Factor two: remaining 5 items

M2c: Factor one: 3-item mental strategies; Factor two: remaining 5 items

Tests of Measurement Model

Confirmatory Factor Analyses (CFA) were conducted to test the dimensionality and convergent validity (Joreskog & Sorbom, 1996). A seven-factor measurement model was tested. The measurement model for variables was tested by allocating the respective 41 items to 7 latent factors (EMS, Psychological detachment, mastery experience, challenge demands, hindrance demands, work engagement, and exhaustion). Based on the selection criteria mentioned earlier, the 7-factor model was fairly acceptable: χ^2 (758)=1528.37, CFI=.93, NFI=.87, GFI=.68, SRMR=.09, RMSEA=.08. Please see Table 5.4 for details of the fit indices of the measurement model.

Regarding the factor loadings of the items to the 7 latent factors, the

magnitudes of the factor loadings ranged from .48 to .91 (see Table 5.5 for details of factor loadings). Among the 41 items, only 3 items have factor loadings smaller than .50, yet all the t-values were significant. So, construct validity of the studied variables was established (Anderson & Gerbing, 1988).

The possibility of common method bias was checked by Harman’s single-factor test through CFA. A single factor model was compared with the proposed measurement model (seven latent factors). The results of the single-factor model showed poor fitness, $\chi^2 (779)=3529.12$, CFI=.35, NFI=.31, RMSEA=.15, suggesting that the common method bias was not a critical threat in this study.

Table 5.4 Fit Indices for Measurement Models (N=170)

Model	df	χ^2	CFI	NFI	RMSEA
M1					
<i>Proposed measurement model (7 factors)</i>	758	1528.37	.93	.87	.08
M2					
<i>Single factor model</i>	779	3529.12	.35	.31	.15

Notes. The best-fitting model is M1. CFI= comparative fit index; NFI= Bentler–Bonett normed fit index; RMSEA= root-mean-squared error of approximation.

Table 5.5 Range of Factor Loadings for the Latent Variables (n=170)

Latent Variables	Range of factor loadings
Energy Management Strategies (EMS)	.48 - .72
Psychological Detachment	.65 - .89
Mastery Experience	.69 - .82
Challenge Job Demands	.80 - .85
Hindrance Job Demands	.57 - .91
Work Engagement	.68 - .89
Exhaustion	.76 - .87

Notes. Factor loading for each item was significant at $p < .001$.

Table 5.6
Descriptive Statistics, Intercorrelations and Reliabilities of the Studied Variables

Note. * $p < .05$; ** $p < .01$. Cronbach's alpha reliabilities are in parentheses along the diagonal. ($n = 173$)

	Mean	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11
1. Age	34.14	9.53	--										
2. Gender ^a	1.63	.48	-.04	--									
3. No. of working hours/ week	52.54	16.19	-.11	-.01	--								
4. Job Autonomy	4.14	.96	.08	-.07	-.10	(.91)							
5. Energy Management Strategies	3.76	.56	.04	-.04	-.04	.31**	(.80)						
6. Psychological Detachment	2.75	.97	.02	.02	-.27**	.20**	.05	(.84)					
7. Mastery	2.92	.90	.03	.08	-.29**	.33**	.37**	.36**	(.85)				
8. Challenge Demands	3.63	.79	-.19*	-.02	.29**	-.34**	-.06	-.32**	-.20**	(.93)			
9. Hindrance Demands	2.92	.94	-.29**	-.26**	.17*	-.37**	-.07	-.05	-.01	.46**	(.85)		
10. Work Engagement	3.37	1.07	.03	-.16*	-.14	.39**	.54**	.07	.37**	-.16*	-.22**	(.92)	
11. Exhaustion	4.04	1.09	-.20*	.17*	.21**	-.41**	-.08	-.24**	-.26**	.67**	.50**	-.28**	(.91)

^a coded 1 = Male, 2 = Female.

Descriptive Statistics

Table 5.6 summarized the descriptive statistics including mean, standard deviation, as well as internal consistencies and intercorrelations of the studied variables. As shown in Table 5.6, all scales performed good internal consistency, with the Cronbach's alpha value ranged from .80 to .93.

Preliminary analyses showed that, among the measured demographical variables, only age and gender were substantially related to the outcome variables. Specifically, age was significantly related to exhaustion; gender was significantly related to both work engagement and exhaustion. Thus, age and gender were included in the sets of hierarchical regression as control variables. Besides demographical variables, the number of working hours and job autonomy were also significantly related to work engagement and exhaustion, and thus were also controlled. To reiterate, job autonomy was included as a control variable because it was stated as an important predictor of employees' work well-being (Taris, Schreurs, & van Iersel-van Silfhout, 2001). Thus, unique contribution of personal resources would be revealed after controlling job resources (i.e., job autonomy).

The direction of relationships among all the studied variables was investigated. As expected, job autonomy and personal resources (i.e., EMS, psychological detachment, and mastery experience) were positively related to each other. Besides, both job and personal resources were negatively related to job demands and exhaustion, and positively related to work engagement. Both challenge and hindrance demands were positively related to exhaustion.

Nevertheless, contrary to previous research findings (e.g., Lin et al., 2009;

Podsakoff et al., 2007), challenge demands, which were supposed to be positively related to work engagement, were found to be negatively related to work engagement in Study 2. This would be addressed in the discussion part in Chapter 6.

It is also note-worthy that the predictive validity of EMS scale was established: EMS was positively related to work engagement, which suggested the predictive power of EMS on work engagement.

The associations among the studied variables were weak to moderate, with the correlation coefficients (the Pearson r) from .01 to .67. As all of the correlation coefficients were less than .70, the problem of multicollinearity was unlikely to affect subsequent statistical analyses (Tabachnick & Fidell, 2007).

Main Effect of Different Job Demands and Personal Resources

Hypotheses 1 and 2 concern the main effects of different job demands and personal resources. Hypothesis 1 stated that both challenge demands (*H1a*) and hindrance demands (*H1b*) will be positively related to exhaustion. Tables 5.7 to 5.9 depict the summary of results of the hierarchical regression analyses of exhaustion. The results of Step 2s shows that both challenge ($\beta = .47, p < .001$) and hindrance demands ($\beta = .30, p < .001$) were significant predictors of exhaustion. Hypotheses 1a and 1b thus can be supported.

It is hypothesized that EMS (*H2a*), psychological detachment (*H2b*), and mastery experience (*H2c*), as personal resources, would be positively related to work engagement. Tables 5.10 to 5.12 show summary of the results of the hierarchical regression analyses of work engagement. As shown in Table 5.10, the

result of Step 3 shows that EMS ($\beta = .47, p < .001$) predicted a significant portion of the variance in work engagement, thus Hypothesis 2a can be supported. The results of Step 3, as shown in Table 5.11, show that mastery experience ($\beta = .29, p < .001$) was positively associated with work engagement, Hypothesis 2c is hence supported. Unexpectedly, psychological detachment was not a significant predictor ($\beta = .01, p = .95$) of work engagement, as shown in step 3 of Table 5.11, Hypothesis 2b cannot be supported. In fact, adding psychological detachment into the model could not significantly increase the amount of variance explaining work engagement, implying that psychological detachment may not have a significant predictive power on work engagement. This would be addressed in the discussion section in Chapter 6.

Buffering Role of Personal Resources

Hypotheses 3 and 4 concern the buffering role of personal resources on the demand-strain relationship. It is hypothesized that personal resources (*H3a*: EMS; *H3b*: psychological detachment; *H3c*: mastery experience) will buffer the relationship between challenge demands and exhaustion. Similarly, personal resources (*H4a*: EMS; *H4b*: psychological detachment; *H4c*: mastery experience) would buffer the relationship between hindrance demands and exhaustion.

The Step 4s in Tables 5.7, 5.8, and 5.9 illustrates the joint effects of personal resources (EMS, psychological detachment, and mastery experience) and job demands (challenge and hindrance demands) on exhaustion. In Table 5.7, the results of step 4s showed that EMS ($\beta = -.16, p < .01$) significantly buffered the relationship between challenge demands and exhaustion; yet EMS x hindrance demands was not significant ($\beta = .006, p > .05$). Thus, Hypothesis 3a was supported; Hypothesis 4a

was not supported. Figure 5.1 shows such interactive effect, indicating that for both participants who adopted less and more EMS reported higher level of exhaustion as level of perceived challenge demands increased; yet the effect was weaker for those who adopted more EMS. Refer to the Step 4s in Tables 5.8 and 5.9, both psychological detachment and mastery experience were not significantly buffered the relationship between job demands (i.e. challenge and hindrance) and exhaustion. As such, *H3b*, *H3c*, *H4b*, and *H4c* cannot be supported.

The Boosting Role of Different Job Demands

Hypotheses 5 and 6 concern the boosting role of challenge / hindrance demands on the personal resources-motivation relationship. It is hypothesized that challenge demands would boost the relationship between personal resources (*H5a*: EMS; *H5b*: psychological detachment; *H5c*: mastery experience) and work engagement.

The Step 4s in Tables 5.10 to 5.12 demonstrate the joint effects of personal resources (EMS, psychological detachment, and mastery experience) and job demands (challenge and hindrance demands) on work engagement. As showed respectively in the step 4s of table 5.10, Table 5.11, and Table 5.11, challenge demands boosted the relationship between all personal resources and work engagement (EMS x Challenge demands: $\beta = .17, p < .01$; Psychological Detachment x Challenge Demands: $\beta = .20, p < .01$; Mastery Experience x Challenge Demands: $\beta = .21, p < .01$). Figures 5.2, 5.3 and 5.4 show such interactive effects, indicating that under high challenge demands, those who adopted more EMS, who have more experience of psychological detachment and mastery reported more work engagement than those who adopted less EMS, experienced less psychological detachment and mastery. As such, the current data supported *H5a*, *H5b*, and *H5c*.

Recall that the relationship between psychological detachment and work engagement was reported as non-significant in the previous section. The current data thus could be interpreted this way: when an individual was under low challenge demands, the role of psychological detachment may not be important, yet the role of psychological detachment becomes important only when an individual was under high challenge demands.

It is also hypothesized that hindrance demands will boost the relationship between personal resources (*H6a*: EMS; *H6b*: psychological detachment; *H6c*: mastery experience) and work engagement. As showed respectively in the step 4s of Tables 5.10, 5.11, and 5.12, the joint effects of personal resources and hindrance demands do not have boosting effect on the relationship between any of the personal resources and work engagement. (EMS x hindrance demands: $\beta=.01$, $p=.87$; Psychological detachment x Hindrance demands: $\beta= .01$, $p= .92$; Mastery experience x Hindrance demands: $\beta= .04$, $p= .55$). In fact, the adding of hindrance demands into the model did not increase the variance of explaining work engagement, which indicated that hindrance demands might not affect the personal resources-work engagement relationship. As such, *H6a*, *H6b*, and *H6c* are not supported.

Table 5.7 Hierarchical Regression Analysis for the Relationship between Energy Management Strategies, Job Demands, and Exhaustion ($n = 169$)

Variable and statistics	Standardized betas				
	Step 1	Step 2	Step 3	Step 4	Step 4
Step 1.					
Age	-.098	.026	.026	.035	.035
Gender	.123	.217 ***	.217 ***	.220 ***	.220 ***
No. of working hours	.166 **	.035	.035	.059	.059
Job Autonomy	-.428 ***	-.142 *	-.143 *	-.121	-.121
Step 2.					
Challenge Demands		.466 ***	.466	.472	.472
Hindrance Demands		.299 ***	.299	.313	.313
Step 3.					
EMS			.007	.006	.006
Step 4.					
EMS x Challenge Demands				-.156 **	
Step 4. ^a					
EMS x Hindrance Demands					-.012
<i>F</i>	14.227 ***	32.475 ***	27.654 ***	26.427 ***	24.046 ***
<i>df</i>	4, 151	6, 149	7, 148	8, 147	8, 147
<i>R</i> ²	.274	.567	.567	.590	.567
Adjusted <i>R</i> ²	.254	.549	.546	.568	.543
Change in <i>R</i> ²	.274 ***	.293 ***	.000	.023 **	.000

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

^a To avoid multicollinearity, the two interactive terms (i.e. EMS x Challenge Demand and EMS x Hindrance Demand) were modeled in the Step 4 of separated regression equations. (please refer to Siu, Lu, and Spector, 2012)

Table 5.8 Hierarchical Regression Analysis for the Relationship between Psychological Detachment, Job Demands, and Exhaustion (n = 169)

Variable and statistics	Standardized betas				
	Step 1	Step 2	Step 3	Step 4	Step 4
Step 1.					
Age	.098	.026	.025	.026	.027
Gender	.123	.217 ***	.224 ***	.220 ***	.225 ***
No. of working hours	.166 *	.035	.020	.027	.021
Job Autonomy	-.428 ***	-.142 *	-.132 *	-.133 *	-.133 *
Step 2.					
Challenge Demands		.466 ***	.440 ***	.434 ***	.438 ***
Hindrance Demands		.299 ***	.314 ***	.314 ***	.313 ***
Step 3.					
Psychological Detachment			-.081	-.077	-.085
Step 4.					
Psychological Detachment x Challenge Demands				.045	
Step 4. ^a					
Psychological Detachment x Hindrance Demands					.025
<i>F</i>	14.227 ***	32.475 ***	28.272 ***	24.769 ***	24.629 ***
<i>df</i>	4,151	6,149	7,148	8,147	8,147
<i>R</i> ²	.274	.567	.572	.574	.573
Adjusted <i>R</i> ²	.254	.549	.552	.551	.549
Change in <i>R</i> ²	.274 ***	.293 ***	.005	.002	.001

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

^a To avoid multicollinearity, the two interactive terms (i.e. Psychological Detachment x Challenge Demand and Psychological Detachment x Hindrance Demand) were modeled in the Step 4 of separated regression equations. (please refer to Siu, Lu, and Spector, 2012)

Table 5.9 Hierarchical Regression Analysis for the Relationship between Mastery Experience, Job Demands, and Exhaustion (n = 169)

Variable and statistics	Standardized betas				
	Step 1	Step 2	Step 3	Step 4	Step 4
Step 1.					
Age	-.098	.026	.029	.014	.036
Gender	.123	.217 ***	.209 ***	.214 ***	.205 ***
No. of working hours	.166 *	.035	-.013	-.021	-.014
Job Autonomy	-.428 ***	-.142 *	-.091	-.079	-.101
Step 2.					
Challenge Demands		.466 ***	.449 ***	.440 ***	.446 ***
Hindrance Demands		.299 ***	.334 ***	.344 ***	.331 ***
Step 3.					
Mastery Experience			-.172 **	-.173 **	-.175 **
Step 4.					
Mastery Experience x Challenge Demands				-.088	
Step 4. ^a Interactive term					
Mastery Experience x Hindrance Demands					.061
<i>F</i>	14.227 ***	32.475 ***	30.516 ***	27.329 ***	26.912 ***
<i>df</i>	4,151	6,149	7,148	8,147	8,147
<i>R</i> ²	.274	.567	.591	.598	.594
Adjusted <i>R</i> ²	.254	.549	.571	.576	.572
Change in <i>R</i> ²	.274 ***	.293 ***	.024 **	.007	.004

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

^a To avoid multicollinearity, the two interactive terms (i.e. Mastery Experience x Challenge Demand and Mastery Experience x Hindrance Demand) were modeled in the Step 4 of separated regression equations. (please refer to Siu, Lu, and Spector, 2012)

Table 5.10 Hierarchical Regression Analysis for the Relationship between Energy Management Strategies, Job Demands, and Work Engagement (n = 169)

Variable and statistics	Standardized betas				
	Step 1	Step 2	Step 3	Step 4	Step 4
Step 1.					
Gender	-.124	-.168 *	-.152 *	-.156 *	-.150 *
Job Autonomy	.380 ***	.330 ***	.176 *	.155 *	.177 *
Step 2.					
Challenge Demands		.028	.001	-.009	.001
Hindrance Demands		-.156	-.163 *	-.178 *	-.163 *
Step 3.					
EMS			.474 ***	.476 ***	.475 ***
Step 4.					
EMS x Challenge Demands				.169 **	
Step 4. ^a					
EMS x Hindrance Demands					.010
<i>F</i>	16.476 ***	9.158 ***	20.418 ***	19.017 ***	16.917 ***
<i>df</i>	2,165	4,163	5,162	6,161	6,161
<i>R</i> ²	.166	.183	.387	.415	.387
Adjusted <i>R</i> ²	.156	.163	.368	.393	.364
Change in <i>R</i> ²	.166 ***	.017	.203 ***	.028 **	.000

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

^a To avoid multicollinearity, the two interactive terms (i.e. EMS x Challenge Demand and EMS x Hindrance Demand) were modeled in the Step 4 of separated regression equations. (please refer to Siu, Lu, and Spector, 2012)

Table 5.11 Hierarchical Regression Analysis for the Relationship between Psychological Detachment, Job Demands, and Work Engagement (n = 169)

Variable and statistics	Standardized betas				
	Step 1	Step 2	Step 3	Step 4	Step 4
Step 1.					
Gender	-.124	-.168 *	-.168 *	-.180 *	-.168 *
Job Autonomy	.380 ***	.330 ***	.330 ***	.320 ***	.329 ***
Step 2.					
Challenge Demands		.028	.030	.005	.029
Hindrance Demands		-.156	-.157	-.160	-.157
Step 3.					
Psychological Detachment			.005	.010	.004
Step 4.					
Psychological Detachment x Challenge Demands				.200 **	
Step 4. ^a					
Psychological Detachment x Hindrance Demands					.007
<i>F</i>	16.476 ***	9.158 ***	7.282 ***	7.686 ***	6.003 ***
<i>df</i>	2,165	4,163	5,162	6,161	6,161
<i>R</i> ²	.166	.183	.184	.223	.184
Adjusted <i>R</i> ²	.156	.163	.158	.194	.153
Change in <i>R</i> ²	.166 ***	.017	.000	.039 **	.000

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

^a To avoid multicollinearity, the two interactive terms (i.e. Psychological detachment x Challenge Demand and Psychological detachment x Hindrance Demand) were modeled in the Step 4 of separated regression equations. (please refer to Siu, Lu, and Spector, 2012)

Table 5.12 Hierarchical Regression Analysis for the Relationship between Mastery Experience, Job Demands, and Work Engagement (n = 169)

Variable and statistics	Standardized betas				
	Step 1	Step 2	Step 3	Step 4	Step 4
Step 1.					
Gender	-.124	-.168 *	-.163 *	-.180 *	-.165 *
Job Autonomy	.380 ***	.330 ***	.236 **	.202 **	.229 **
Step 2.					
Challenge Demands		.028	.074	.089	.071
Hindrance Demands		-.156	-.210 *	-.243 **	-.215 *
Step 3.					
Mastery Experience			.290 ***	.285 ***	.288 ***
Step 4.					
Mastery Experience x Challenge Demands				.208 **	
Step 4. ^a					
Mastery Experience x Hindrance Demands					.041
<i>F</i>	16.476 ***	9.158 ***	11.175 ***	11.407 ***	9.334 ***
<i>df</i>	2,165	4,163	5,162	6,161	6,161
<i>R</i> ²	.166	.183	.256	.298	.258
Adjusted <i>R</i> ²	.156	.163	.234	.272	.230
Change in <i>R</i> ²	.166 ***	.017	.073 ***	.042 **	.002

Note. * $p < .05$; ** $p < .01$; *** $p < .001$.

^a To avoid multicollinearity, the two interactive terms (i.e. Mastery Experience x Challenge Demand and Mastery Experience x Hindrance Demand) were modeled in the Step 4 of separated regression equations. (please refer to Siu, Lu, and Spector, 2012)

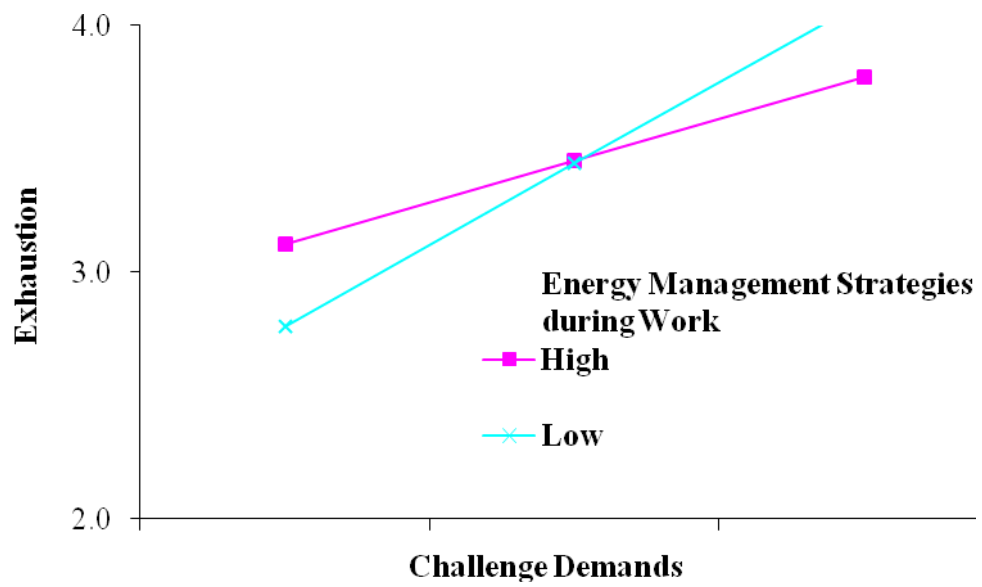


Figure 5.1. Interaction of Energy Management Strategies (EMS) and Challenge Demands on Exhaustion.

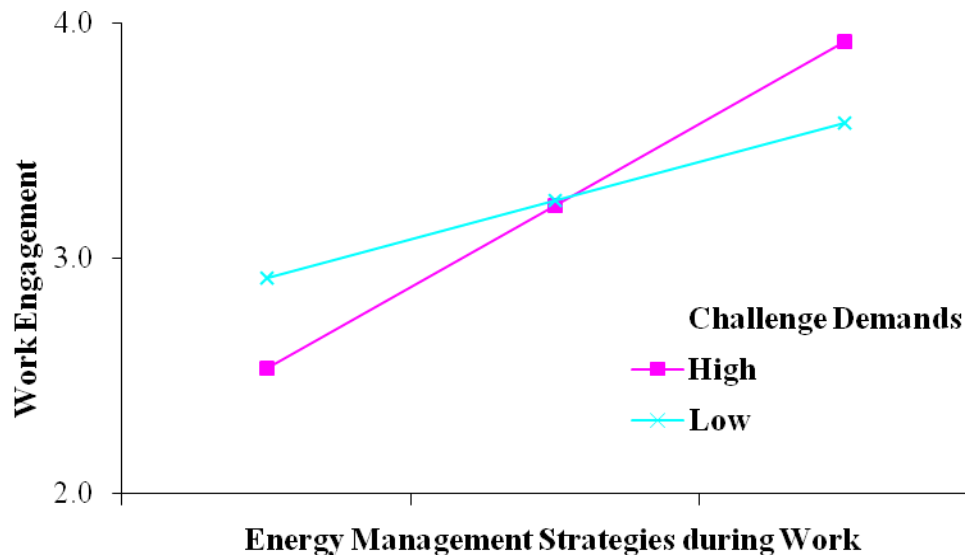


Figure 5.2. Interaction of Energy Management Strategies (EMS) and Challenge Demands on Work Engagement.

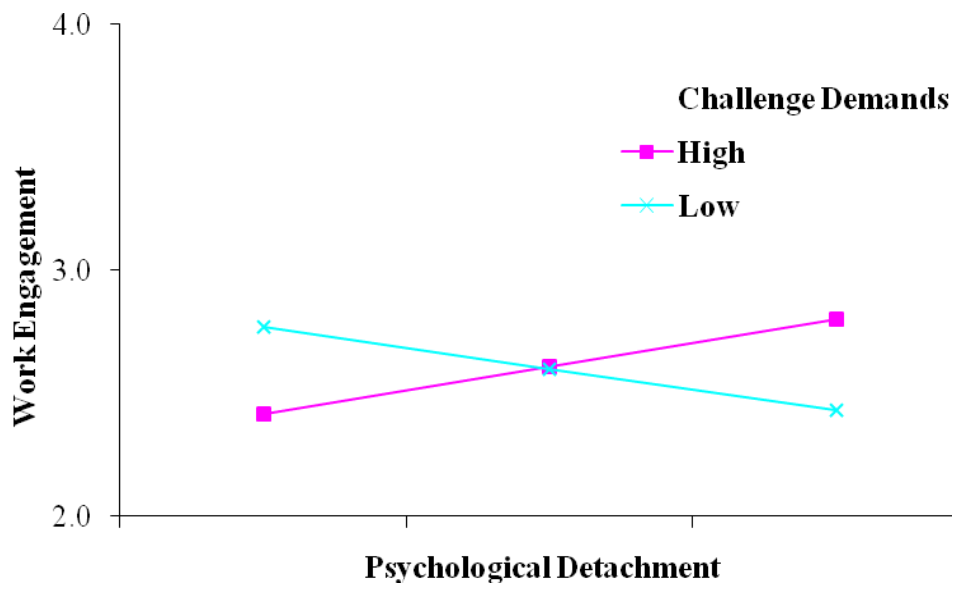


Figure 5.3. Interaction of Psychological Detachment and Challenge Demands on Work Engagement.

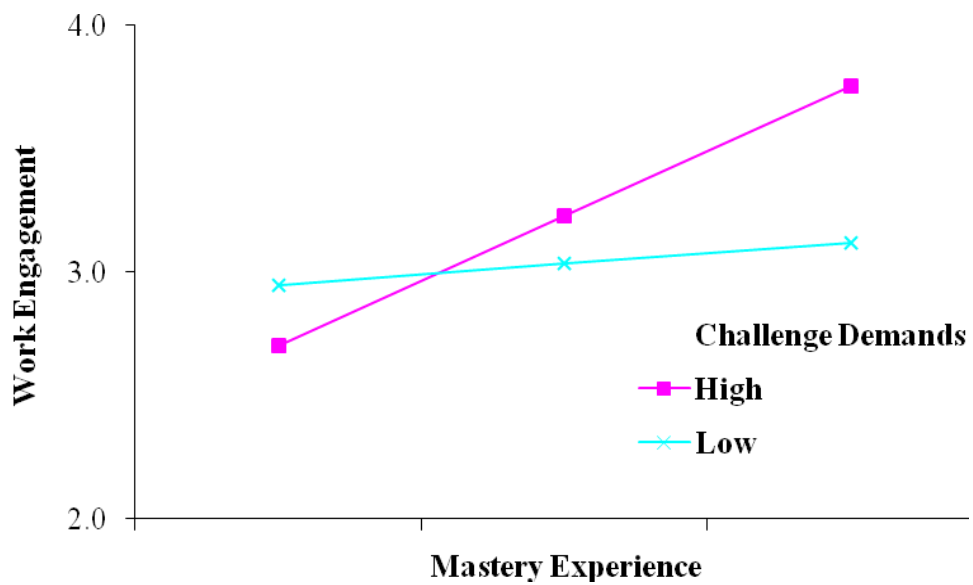


Figure 5.4. Interaction of Mastery Experience and Challenge Demands on Work Engagement.

5.5 Summary

The aims of Study 2 are two-fold: a) to cross-validate the EMS scale; b) to investigate the roles of personal resources and different job demands in the JD-R model. Results of CFA replicated the findings of EFA from Study 1, supporting that the EMS scale consists of three underlying factors. They are spiritual strategies, relational strategies, and mental strategies.

In general, most of the hypotheses were supported. Regarding the main effects, both challenge and hindrance demands were positively related to exhaustion; personal resources (except psychological detachment) were positively related to work engagement. Consistent with the literature, the buffering role of personal resources was mixed. Only EMS weakened the relationship between challenge demands and exhaustion. Regarding the boosting role of job demands, challenge demands enhanced the personal resources-work engagement relationship; hindrance demands did not affect the personal resources-work engagement relationship. In other words, personal resources particularly influence under challenge demands, yet not under hindrance demands.

Chapter 6: Discussion and Conclusion

This chapter discusses the findings and their theoretical and practical implications. Limitations of the present study, and the direction for future study are also discussed.

6.1 Discussion on Findings and Theoretical Implications

The purposes of the present study are: 1) to explore the underlying factor of a personal resource, EMS; 2) to extend the JD-R model by examining the roles of energy management strategies, recovery experiences and differentiated job demands.

To summarize, there are four main findings. First, Energy Management Strategies (EMS) are best characterized by three factors: spiritual strategies, relational strategies and mental strategies. Second, the main effects of personal resources and different job demands replicated similar findings from previous research (e.g., LePine, Podsakoff, & LePine, 2005; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). Third, consistent with the literature, the buffering role of personal resources on the demand-exhaustion relationship is mixed. More Specifically, EMS is the only personal resource that buffers the relationship between challenge job demands and exhaustion; none of the tested personal resources buffer the relationship between hindrance job demands and exhaustion. Fourth, enhancement of personal resources-engagement relationship did not depend on the level of demands, instead on the nature of demands in the sense that challenge demands boosted the relationship between all the three tested personal resources and work engagement; whereas hindrance demands was not found exerting any effect on any of the relationships.

There are several theoretical contributions of the present study: first, the present

study has advanced knowledge for future studies on energy management at work by validating the EMS scale and exploring the underlying factor structure of the scale. Secondly, the present study provides valuable insight in the potential impacts of each type of demands on motivation and strain, especially in a Chinese context, by putting challenge and hindrance demands in a model simultaneously. Thirdly, the present study provides further evidence to expand the literature on the inconsistent moderator role of personal resources on demands-strain relationships. Last and most importantly, the present study represents a novel investigation of the joint effects of differentiated job demands and personal resources on strain and motivation, thus extending the JD-R model and providing valuable insights on the mechanism of strain and motivation.

The Main Effect of Different Job Demands

As expected, job demands, no matter challenge or hindrance, were positively related to exhaustion. This implies that, job demands, regardless of the nature, could exert harmful effects on individuals' health. These findings corroborate previous studies on outcomes of different job demands (e.g., Boswell, Olson-Buchanan, & LePine, 2002; Cavanaugh, Boswell, Roehling, & Boudreau, 2000) and extend the robustness of the theory by generalizing to a Chinese sample and by controlling for both types of demands simultaneously.

The Main Effect of Different Personal Resources

The JD-R model can be extended by inclusion of a new category of personal resources (i.e. energy resources). The finding that personal resources (i.e., EMS and mastery) were positively related to work engagement suggested that adopting energy management strategies, and seeking challenges during non-work time are important

to maintain and promote teacher’s work engagement. Inclusion of these personal resources is important because first, it demonstrated the potential predictive power of these kinds of personal resources; second, it addresses categories of personal resources that have received little attention in the literature.

By referring to the category of energy resources proposed by Hobfoll (1989), the idea of EMS and recovery experiences is also consistent with a new concept of resources recently proposed by Ten Brummelhuis and Bakker (2012b): volatile personal resources. To illustrate, Ten Brummelhuis and Bakker (2012b) have categorized resources as either contextual or personal; and either structural or volatile. Figure 6.1 is the summary of typology of resources by Ten Brummelhuis and Bakker (2012b). Volatile personal resources are those fleeting or temporal resources that are proximate to the self (Ten Brummelhuis & Bakker, 2012b). EMS and recovery experiences fits the category of volatile personal resources because they are highly malleable and largely under individuals’ discretion.

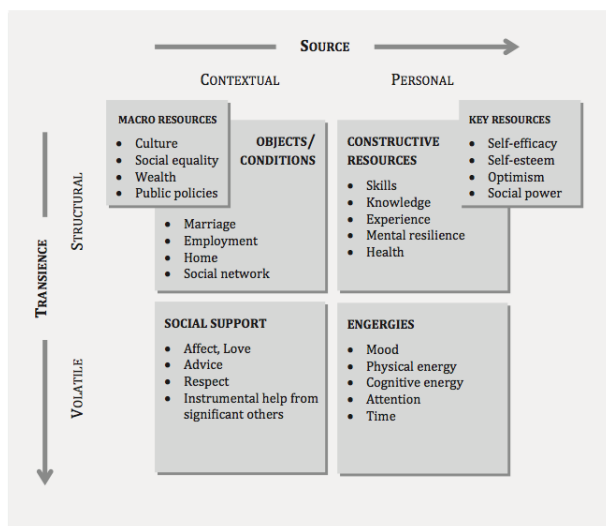


Figure 6.1. Summary of typology of resources by Ten Brummelhuis and Bakker (2012b)

Different from the results obtained from past studies (e.g., Siltaloppi, Linnunen, & Feldt, 2009; Ten Brummelhuis & Bakker, 2012a), psychological detachment was not found significantly related to work engagement in the Study 2. This may be due to the relatively lower level of psychological detachment reported among the participants in study two. The mean level of psychological detachment experience reported in the present study was 2.75, whereas the ones reported by the past studies were higher (e.g., M=3.23, among employees from colleges and university; Fritz, Yankelevich, Zarubin, & Barger, 2010; and M=3.84 among employees from public service organisations; Sonnentag, Binnewies, & Mojza, 2008). It will be interesting for future studies to explore the experience of psychological detachment in a Chinese context, and to see whether Chinese employees generally report lower level of psychological detachment, in comparison to Western samples.

The Buffering Role of Personal Resources

The JD-R model can also be extended by linking personal resources to the challenge demands-exhaustion relationship and hindrance demands-exhaustion relationship, which have rarely been explored in previous studies. Regarding the buffering role of personal resources, the results of present study are mixed. On one hand, EMS is the only tested personal resource that buffers the relationship between challenge demands and exhaustion. When facing challenge demands (e.g., workload, time pressure), those who adopt more energy management strategies would feel less exhausted, in comparison to those who adopt less energy management strategies.

On the other hand, none of the tested personal resources buffer the relationship between hindrance demands and exhaustion. Our results showed that personal resources, especially the energy resources, were unlikely to mitigate the harms that

hindrance demands place on individuals. It is important for future studies to explore other resources that can effectively cope with hindrance job demands.

The Moderating Role of Different Job Demands

Regarding the boosting role of challenge / hindrance demands on the personal resources-work engagement relationship, findings of the present study suggested that not all demands could boost the personal resources-work engagement relationship: only challenge demands (but not hindrance demands) boosted the relationship between all tested personal resources and work engagement. It means that personal resources are particularly important in maintaining or promoting work engagement only when individuals are under challenge demands. But when individuals are under hindrance demands (e.g., red tapes and organisational politics), possessing personal resources may not be so helpful to enhance individuals' work engagement.

These findings could further support the differentiation of job demands by showing their different roles in the workplace. Previous studies suggested the differentiation of challenge and hindrance demands, and showed that the demands link differently with motivational, retention criteria, and performance outcomes (e.g. Crawford, LePine, & Rich, 2010; Podsakoff, LePine, & LePine, 2007; Wallace, Edwards, Arnold, & Frazier, 2009). The present study further supports the differentiation of challenge and hindrance demands by demonstrating that they play different roles in the resource-engagement relationships.

Besides, the present study goes a step further to show that, the enhancement of the resources-engagement relationship does not merely depend on the level of job

demands, but the nature of job demands. One of the propositions of the JD-R model states that job demands are moderators in the resources-engagement relationship, as such whether an individual possess enough resources to cope with the demands is particularly important when they are under high level of demands; yet resources may not be very important when individuals are under low level of demands (Bakker & Demerouti, 2007). In other words, the JD-R model suggests that the enhancement of resources-engagement relationship depends on the level of job demands. Nevertheless, the findings of present study show that the nature of demands also plays an important role. The enhancement of the resources-engagement relationship actually depends on the nature of demands, in which possession of personal resources particularly enhance work motivation when an individual is under high challenge demands; while possession of personal resources does not particularly enhance work motivation when an individual is under (no matter high or low level of) hindrance demands.

6.2 Practical Implications

The present study suggests practical implications that may help employees to be engaged, and feel less exhausted at work. First, the findings of the present study suggest that EMS are important to: a) maintain or enhance employees' work engagement, particularly when an employee is under high challenge demands; b) reduce exhaustion when an employee is under high challenge demands. Thus, it is recommended to managers that they can organize training to teach employees to use more energy management strategies that is applicable to specific organisations. In general, the training should emphasize the follows: the promotion/ reflection on meaning of the job (i.e. spiritual strategies), establishing and maintaining good relationship with co-workers (i.e. relational strategies), and to be mentally focused

(i.e. mental strategies).

Second, the findings of the present study suggest that mastery experience (i.e. seeking challenges and learning opportunities in non-work domains) is important to maintain or enhance employees' work engagement, particularly when an employee is under high challenge demands. A recent research done by Siu, Cooper, and Philips (in press) has reported that recovery experiences, especially mastery experience, could be trained by a 2.5 day training workshop in Hong Kong. Organisations may also establish policies to encourage employees to seek for mastery experience, for example, by subsidizing employees to learn some new knowledge, encouraging employees to play sports, etc.

Third, psychological detachment is important to work engagement only in a work context with high challenge demands. So, in comparison to organisations with high hindrance demands, it is more important for organisations with high challenge demands to respect the boundary between employees' work and non-work lives.

Furthermore, as the positive association of personal resources and work engagement is especially strong under high challenge job demands, it will be more efficient and make more sense to cultivate employees' personal resources in organization with a challenge demand (vs. hindrance demand) job type.

6.3 Limitations and Direction for Future Study

This study is subject to a few limitations, and suggests direction for future studies. First, the cross-sectional nature of the study limits inferences of the causal relationships among the studied variables. Future studies may adopt a longitudinal

design in order to validate the findings of the present study overtime.

Second, in the present study, the relationships in the research model were measured based on self-report data, in which common-method variance might affect the strength of the relationships (Podsakoff, MacKenzie, & Podsakoff, 2003). Although Herman's single factor test demonstrated that the common method variance was not a critical problem, this test could only assess whether the threat of common method bias exists (Kandemir, Yaprak, & Cavusgil, 2006). Future studies could employ multiple sources of data to minimize the threat of common method bias.

Thirdly, the sample of study one consists of largely males (over 80%). Although it may due to the occupations selected (i.e. rail company, police, and financial companies), the generalization of the results of study one should be interpreted in caution. Future studies should try to tackle this potential sampling bias and to test whether the result would be similar within female-dominant or equal gender industries.

Finally, the present study focused on homogeneous sample, teachers in Hong Kong. The generalizability of the findings is limited. Future studies can explore more diverse samples by including participants from different types of organizations.

6.4 Conclusion

Despite several limitations due to time and resource constraints, the present

study still provides significant contributions. All in all, the present study has extended the JD-R model by testing the roles of EMS, recovery experiences, challenge demands and hindrance demands. The findings highlighted the beneficial role of EMS and recovery experiences in maintaining and enhancing employees' work well-being; EMS and recovery experiences are even more beneficial in maintaining work motivation in the face of challenge job demands. Organisations are recommended to cultivate employees' energy management strategies and recovery experiences through training and company policies.

APPENDIX I: SAMPLE OF THE QUESTIONNAIRE (ENGLISH)

Survey

Thank you for participating in the “work stress and work well-being” survey. The survey will be conducted in anonymity. All information collected will be kept confidential.

Job Resource

1 **2** **3** **4** **5** **6**
Never **Very** **Sometimes** **Often** **Very Often** **All the time**
 Occasionally

Please circle your response in the table below

1. How often are you able to do the following?		1	2	3	4	5	6
1.1	Decide on my own way of how to carry out the work.	1	2	3	4	5	6
1.2	Use my personal initiative or judgment in carrying out the work in my workplace.	1	2	3	4	5	6
1.3	Have considerable autonomy in my workplace.	1	2	3	4	5	6

Effective Energy Management Strategies

1 **2** **3** **4** **5**
Not at all **Rarely** **Sometimes** **Often** **Frequently**

Please circle your response in the table below

2. How often do you use behaviors below "to manage your energy at work"?		1	2	3	4	5
2.1	Learn something new	1	2	3	4	5
2.2	Focus on what gives me joy at work	1	2	3	4	5
2.3	Set a new goal	1	2	3	4	5
2.4	Do something to make a colleague happy	1	2	3	4	5
2.5	Make time to show gratitude to someone I work with	1	2	3	4	5
2.6	Seek feedback	1	2	3	4	5
2.7	Reflect on how I make difference at work	1	2	3	4	5
2.8	Reflect on the meaning of my work	1	2	3	4	5

Psychological Detachment

1 2 3 4 5
Fully disagree Disagree Neutral Agree Fully agree

Please circle your response in the table below

3. Generally, during time after work...						
3.1	I forget about work.	1	2	3	4	5
3.2	I don't think about work at all.	1	2	3	4	5
3.3	I distance myself from my work.	1	2	3	4	5
3.4	I get a break from the demands of work.	1	2	3	4	5

Mastery Experience

1 2 3 4 5
Fully disagree Disagree Neutral Agree Fully agree

Please circle your response in the table below

4. Generally, during time after work...						
4.1	I learn new things.	1	2	3	4	5
4.2	I seek out intellectual challenges.	1	2	3	4	5
4.3	I do things that challenge me.	1	2	3	4	5
4.4	I do something to broaden my horizons.	1	2	3	4	5

Hindrance/ Challenge Demands

1 2 3 4 5
**No Stress bit stressful Somewhat
stressful Very stressful A Great deal of
stress**

Please circle your response in the table below

5. How much stress does the following cause you?						
5.1	The number of projects and or assignments I have.	1	2	3	4	5
5.2	The amount of time I spend at work.	1	2	3	4	5
5.3	The volume of work that must be accomplished in the allotted time.	1	2	3	4	5
5.4	Time pressures I experience.	1	2	3	4	5
5.5	The amount of responsibility that I have.	1	2	3	4	5
5.6	The scope of responsibility my position entails.	1	2	3	4	5
5.7	The degree to which politics rather than performance affects organizational decisions.	1	2	3	4	5
5.8	The inability to clearly understand what is expected of me on the job.	1	2	3	4	5
5.9	The amount of red tape I need to go through to get my job done.	1	2	3	4	5
5.10	The lack of job security I have.	1	2	3	4	5
5.11	The degree to which my career seems "stalled".	1	2	3	4	5

Exhaustion

0 **1** **2** **3** **4** **5** **6**
Never **A few times** **Once a** **A few times** **Once a** **A few times** **Every day**
 a year or **month or** **a month** **week** **a week**
 less **less**

Please circle your response in the table below

6. How often do you experience the following feelings?							
6.1	I feel emotionally drained from my work.	0	1	2	3	4	5 6
6.2	I feel used up at the end of the workday.	0	1	2	3	4	5 6
6.3	I feel tired when I get up in the morning and have to face another day on the job.	0	1	2	3	4	5 6
6.4	Working all day is really a strain for me.	0	1	2	3	4	5 6
6.5	I feel burned out from my work.	0	1	2	3	4	5 6

Work Engagement

The following 9 statements are about how you feel at work. Please read each statement carefully and decide if you ever felt this way about your job. If you have never had this feeling, circle “0” (zero). If you have had this feeling, indicate how often you feel it by circle a number that best describes **how frequently you feel that way**.

Almost never **Rarely** **Sometimes** **Often** **Very often** **Always**
0 **1** **2** **3** **4** **5** **6**
Never **A few times a** **Once a** **A few times a** **Once a** **A few times** **Every day**
 year or less **month or less** **month** **week** **a week**

Please circle your response in the table below

7.1	At my work, I feel bursting with energy.	0	1	2	3	4	5 6
7.2	At my job, I feel strong and vigorous.	0	1	2	3	4	5 6
7.3	When I get up in the morning, I feel like going to work.	0	1	2	3	4	5 6
7.4	I am enthusiastic about my job.	0	1	2	3	4	5 6
7.5	My job inspires me.	0	1	2	3	4	5 6
7.6	I am proud of the work that I do.	0	1	2	3	4	5 6
7.7	I feel happy when I am working intensely.	0	1	2	3	4	5 6
7.8	I get carried away when I am working.	0	1	2	3	4	5 6
7.9	I am immersed in my work.	0	1	2	3	4	5 6

Demographics

8. Gender 1. Male 2. Female

9. Age Please state: _____ (years)

10. Marital status

1. Single 2. Married/ Cohabitation 3. Divorced/separated
4. widowed

11. Years of serving in the organisation: Please state: _____(years)

12. Number of working hours per week Please state: _____(hours)

13. Education: What is your highest grade or academic level completed?

1. Primary education 2. Secondary education 3. Associate degree/
diploma
4. University degree 5. Postgraduate degree or
above

The End

Thank you for completing this questionnaire!

APPENDIX II: SAMPLE OF THE QUESTIONNAIRE (CHINESE)

敬啟者：

本人為嶺南大學社會科學研究生，正進行一項關於工作壓力和工作幸福感的學術研究。此研究的目的是探討如何有效面對工作壓力以減少其對個人健康的影響。現誠意邀請您參與此項研究調查。

完成本份問卷約需時二十分鐘。是次參與純屬自願性質，您可以隨時終止是項行動，有關決定將不會引致任何不良後果。閣下提供的個人資料將被絕對保密。所收集的數據只作研究用途，並將於研究完畢後銷毀。謝謝閣下的參與，您的參與對是次研究非常重要。

嶺南大學社會及社會政策系
指導教授 蕭愛鈴 教授
研究生 蕭楚顏 謹啟

工作資源

1. 從不 2. 甚少 3. 偶爾 4. 有時 5. 經常 6. 頻頻

請根據自己的實際情況作出回答，並在每個問題後圈出相應的數字。

你現時有幾經常做到.....						
1.1. 能自己決定如何工作。	1	2	3	4	5	6
1.2. 在工作中，能以個人的想法和判斷來處事。	1	2	3	4	5	6
1.3. 在工作中，有很大的自決空間。	1	2	3	4	5	6

能量管理策略

1. 從不 2. 甚少 3. 偶爾 4. 有時 5. 經常 6. 頻頻

請根據自己的實際情況作出回答，在每個問題後圈出相應的數字。

在工作中，你有幾經常.....					
2.1 學習新事物	1	2	3	4	5
2.2 在工作中，將注意力放於能帶給自己享受的事情	1	2	3	4	5
2.3 訂立一個新目標	1	2	3	4	5
2.4 做一些事逗同事開心	1	2	3	4	5
2.5 花時間表達對同事的感激	1	2	3	4	5
2.6 尋求反饋意見	1	2	3	4	5
2.7 反思我的工作如何帶來影響	1	2	3	4	5
2.8 思考(我的)工作的意義	1	2	3	4	5

心理抽離

1. 完全不同意 2. 不同意 3. 沒有意見 4. 有點同意 5. 非常同意

請根據自己的實際情況作出回答，在每個問題後圈出相應的數字。

3.1 下班後，我不去想有關工作的事情。	1	2	3	4	5
3.2 下班後，我根本沒有想關於工作的事情。	1	2	3	4	5
3.3 下班後，我從工作中抽離。	1	2	3	4	5
3.4 下班後，我暫時放下工作，休息一下。	1	2	3	4	5

掌控經驗

1. 完全不同意 2. 不同意 3. 沒有意見 4. 有點同意 5. 非常同意

請根據自己的實際情況作出回答，在每個問題後圈出相應的數字。

4.1 我利用下班時間後學習新事物。	1	2	3	4	5
4.2 我利用下班時間後尋求一些對腦袋有挑戰性的事來做。	1	2	3	4	5
4.3 下班後，我做有挑戰性的事。	1	2	3	4	5
4.4 下班後，我會做一些能擴闊眼界的事。	1	2	3	4	5

挑戰型與干擾型壓力

下面列出了一些與您的現職相關的壓力事件，請您就每一事件對自己所造成的壓力大小進行評估。請根據自己在工作中體驗到的實際情況作出回答，並在每一個問題後圈出相應的數字。

1. 沒有造成壓力 2. 已造成很少壓力 3. 已造成一定壓力
4. 已造成大的壓力 5. 已造成很大壓力

在你的現職中，下列的事件對你造成了多大壓力？					
5.1 我所承擔的項目或任務的數量。	1	2	3	4	5
5.2 我的工作時間總數。	1	2	3	4	5
5.3 限定時間內必須完成的工作量。	1	2	3	4	5
5.4 工作的急趕程度。	1	2	3	4	5
5.5 我所承擔的責任的大小。	1	2	3	4	5
5.6 我的職位所包含的職責範圍。	1	2	3	4	5
5.7 學校內，不是基於工作表現，而是通過「辦公室政治」(例如「搞關係」)來影響決策。	1	2	3	4	5
5.8 無法清楚了解學校對自己在工作上的期望。	1	2	3	4	5
5.9 辦事要經煩瑣的程序。	1	2	3	4	5
5.10 工作缺乏安全感(擔心失去工作)。	1	2	3	4	5
5.11 我的職業生涯發展似乎停滯不前。	1	2	3	4	5

工作投入

以下的9個句子是有關您在工作中的感受的陳述。請仔細閱讀，並確定您是否曾在工作中有過這樣的感受。如果您從未有過這樣的感受，請選擇“0”。如果您曾有過這樣的感受，請選擇相應的最能夠描述您的感受的頻繁程度的數位（從1到6）。

0	極少	偶爾	有時	經常	頻繁	總是
從不	一年幾次 或更少	一個月一次 或更少	一個月幾次	一週一次	一周幾次	每天

選擇對你適用的答案，在每個問題後圈出相應的數字。

6.1 在工作中，我感到自己迸發出能量。	0 1 2 3 4 5 6
6.2 工作時，我感到自己強大並且充滿活力。	0 1 2 3 4 5 6
6.3 早上一起床，我就想要去工作。	0 1 2 3 4 5 6
6.4 我對工作富有熱情。	0 1 2 3 4 5 6
6.5 工作激發了我的靈感。	0 1 2 3 4 5 6
6.6 我為自己所從事的工作感到自豪。	0 1 2 3 4 5 6
6.7 當工作緊張的時候，我會感到快樂。	0 1 2 3 4 5 6
6.8 我沉浸於我的工作當中。	0 1 2 3 4 5 6
6.9 我在工作時會達到忘我的境界。	0 1 2 3 4 5 6

個人健康

1. 從不 2. 甚少 3. 偶爾 4. 有時 5. 經常 6. 頻頻

選擇對你適用的答案，在每個問題後圈出相應的數字。

7.1 我的工作把我的精神榨乾了。	1 2 3 4 5 6
7.2 工作一天下來讓我感到精疲力盡。	1 2 3 4 5 6
7.3 一大早起來，想到又要面對一天的工作， 使我感到很疲倦。	1 2 3 4 5 6
7.4 在工作中整天和人來往，使我感到精神緊繃。	1 2 3 4 5 6
7.5 我對我的工作感到倦怠。	1 2 3 4 5 6

背景資料

8. 年齡：_____ 歲

9. 性別：

1. 男 2. 女

10. 婚姻狀況：

1. 未婚 2. 已婚/同居 3. 離異/分居 4. 喪偶

11. 現職在職年期：_____ 年

12. 每周工作時數：_____ 小時

13. 教育程度：

1. 大專 (文憑) 2. 大學或以上
3. 其他, 請列明 _____ 4. 中學

~~全卷完 謝謝您~~

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