# The Job Demands-Resources Model in China: Validation and Extension

QIAO HU



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### The Job Demands-Resources Model in China: Validation and Extension

### Het Job Demands-Resources Model in de China: Validatie en Uitbreiding

(met een samenvatting in het Nederlands)

### Proefschrift

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# Chapter 1

# General Introduction

### 1.1 Introduction

China has been (and still is) transforming from a centralized to a market-based economy since 1978. This transition is combined with globalization and has provided more jobs opportunities and a stark increase of the national income. Ever in the current murky world economy, China's economy has retained an average annual growth rate of more than 9%. China's gross domestic product (GDP) has tripled in past ten years and from 2008 to 2012, despite the world-wide economic crisis, the growth rate was more than 7.8% (see Figure 1.1). In 2012, China's gross domestic product (GDP) was about 8.47 trillion US dollars. According to the OECD, China's GDP will increase with 8.5% in 2013 and with 8.9% in 2014.





Source: National economic and social development statistics bulletin, 2012; National Bureau of Statistics of China

Massive social change has occurred as a result of this economic transition. As a result of this transition, living standards and private consumption have improved markedly and so

have the average level and quality of education, health, and employment for the Chinese population. However, as a result of this transition of the national economy, Chinese organizations have also experienced changes such as downsizing, privatization, restructuring, and merging – phenomena that are known to affect employee health and well-being (Giles, Park, & Zhang, 2005; Hu & Schaufeli, 2011a; Wong, 2006). Changes in the organization and in employment contracts, technological innovations, and high levels of competition – often at a world-wide scale – and the transformation of working life itself put high pressure on employees. Therefore, the recent economic transition also represents the challenge for Chinese government, Chinese organizations and employees to deal with such issues as the increasing fragmentation of the labour market, flexible contracts, increased job insecurity, high work pace, long and irregular working hours, poor control over the job content, low pay, occupational hazards, and - last but not least - job stress. Work-related stress has gradually become an issue of growing concern in China as the country's economic growth continued apace. For example, a recent survey conducted among over 16,000 workers in 80 countries found that China ranked on top of the 80 countries included in this study. Not less than 75% of the Chinese workers reported to feel stressed, with the global average percentage being 48% (China Daily, 2012a). Another survey polled 5,000 white-collar workers and concluded that the majority of young Chinese employees reported found it difficult to cope with the level of stress in their jobs (China Daily, 2011). According this survey, 44.8% of respondents indicated to "often" experience high physical demands at their work, 40% reported that they easily losed their temper at work and 36.5% felt depressed at work.

The concept of job stress was introduced in China at the end of 1980s. A review of Shu, Sun, and Shi (2009) distinguished two stages in the development of the study of job stress in China: in the first stage (from 1988-2000), the average number of papers published annually was only 3.7. These studies on job stress were, in fact, replications of western studies to assess the concept of job related stress. For example, one of the earliest empirical studies was a validity study among Chinese workers (Wang & Wang, 1993) of a western job stress measure -- the Occupational Stress Indicator (OSI, Cooper, Sloan & Williams, 1988). In the second stage (since 2000), the number of empirical studies on job stress increased rapidly with an average annual number of publications amounting to 30 or more. These studies focussed on the antecedents and outcomes of job stress in various professions, mostly using

western measures, such as Mclean's Work Stress Questionnaire (MWSQ), the Job Content Questionnaire (JCQ; Karasek, 1979), and the Effort–Reward Imbalance Questionnaire (ERI; Siegrist & Peter, 1996). However, most studies are still descriptive in nature to these scales and studies that are based on these theoretical job stress models are still lacking. Moreover, so far the Chinese job stress studies are heavily biased towards western studies and ignore the specific (cultural) Chinese dimensions of job stress.

This PhD thesis attempts to contribute to the job stress literature by attempting to answer the following two broad questions:

1. To which degree do the western measures of well-being and job stress models apply to the Chinese context? Note that the focus here is not only on negative aspects of employee well-being (such as burnout and workaholism), but also on a positive employee well-being (that is, work engagement). In addition, the focal job stress model in this PhD is the Job-Demands Resources (JD-R) model (Bakker & Demerouti, 2007; Schaufeli & Taris, 2014) that combines the impact of negative (demands) and positive (resources) job characteristics on employee well-being.

2. How can the JD-R model be extended? This PhD study seeks to refine the JD-R model by focusing on the nature of the interactions between job demands and job resources, both in the more technical (are these interactions additive or joint?) as well as the psychological sense (do employees engage in "mental bookkeeping" of demands and resources?). Specifically, this thesis also seeks to include specific aspects of the Chinese context into to JD-R model, such as the concept of guanxi reciprocity (Chen & Chen, 2004).

Below the indicators of employee well-being that are used in this PhD thesis (i.e., burnout, work engagement and workaholism) are described in greater detail. Next, the JD-R model is outlined, including how it will be extended. The chapter finishes with a brief outline of this PhD thesis.

### 1.2 Burnout

Burnout is a psychological phenomenon of prolonged exhaustion and disinterest that occurs in the work context (Maslach, Schaufeli, & Leiter, 2001). It is an important aspect of employee well-being and well-studied in psychological occupational health research. According to PsychInfo, to date (November, 2013) 6,923 publications on job burnout have

appeared. Research has demonstrated that burnout may result in anxiety, depression, low self-esteem, substance abuse (Maslach et al., 2001; Schaufeli & Enzmann, 1998), decreased performance (Gorji, Vaziri, & Iran, 2011), and health problems (Melamed, Shirom, Toker, Berliner, & Shapira, 2006). It is also seen as contagious and has a negative spill-over effect on people's home lives (Maslach, 2003; Maslach et al., 2001). The most commonly used burnout measure is the Maslach Burnout Inventory (MBI; Maslach, Jackson, & Leiter, 1996). The MBI includes three dimensions that constitute burnout: emotional exhaustion, which refers to feelings of being depleted of one's emotional resources, representing the basic individual stress component of the syndrome; depersonalization, which refers to negative, cynical or excessively detached responses to other people at work, representing the interpersonal component of burnout; and reduced personal accomplishment, which refers to feelings of decline in one's competence and productivity, and to one's lowered sense of efficacy, thus representing the self-evaluation component of burnout (Maslach, 1993). Originally, the MBI was used the measure burnout exclusively among those who do people work of some kind, the so-called human services (Maslach & Jackson, 1981). Later this MBI-Human Services Survey (HSS) was supplemented by the MBI-General Survey (GS) that can be used across all occupations (Schaufeli, Maslach, Leiter, & Jackson, 1996).

The concept of "burnout" appears first in Chinese scholarly journals in the early 2000s. For example, Li and Shi (2003) studied the validity of the MBI-GS and explored the relationship between organizational justice and burnout in Chinese blue collar workers. They also used the MBI-HSS to investigate the relationship between work-family conflict and burnout in health professionals (Li, Shi, Luo *et al.*, 2003). At the same time, four review papers published in the same year described the progress of burnout research in the western countries (Bian & Long, 2003; Li, 2003; Wang & Gan, 2003; Xu & Shi, 2003). Although these review papers recommended to develop local burnout measures, most Chinese burnout measures that were developed later were based on the MBI and at best added some items with local context. In addition, most measures only focused on a particular occupation, such as teachers in kindergarten (Guo, 2008), teachers in primary and secondary school (Xu, Ji, & Chao, 2004), coal miners (Li & Niu, 2009), civil service (Han & Liu, 2009), or lacked sufficient empirical support. Therefore, Chinese researchers have preferred to use the MBI in order to tap burnout. Similar to other countries, the concept of burnout gradually became equivalent to the multi-dimensional way it was assessed by the MBI. However, its

conceptualization and measurement is still vehemently debated (Hu & Dai, 2006). A conceptual controversy exists about whether burnout should be viewed as work-related exhaustion (Cordes & Dougherty, 1993; Shirom, 1989) or that it is a multidimensional construct that goes beyond mere exhaustion (Maslach & Jackson, 1981; Schaufeli, Leiter, & Maslach, 2009a). Another controversy pertains to the measurement of burnout; should the items included in the burnout scales all be positively or negatively phrased, or should the wording of the items be mixed (Demerouti, Bakker, Vardakou & Kantas, 2003)? The first specific objective of the current PhD research is to compare the psychometric qualities and assess the convergent validity of the four most widely-used self-report inventories Maslach Burnout Inventory (MBI), the Burnout Measure (BM; Pines, 1993), the Shirom-Melamed Burnout Measure (SMBM; Shirom & Melamed, 2006), and the Oldenburg Burnout Inventory (OLBI; Demerouti & Nachreiner, 1996; Halbesleben & Demerouti, 2005) in the Chinese context. In addition to a sample of employees (nurses), also burnout among students will be investigated.

The Chinese emphasis on outstanding academic achievement is highly valued in the Confucian tradition. Chinese students have been pushed to study since about 600 A.D., when the *keju*, the imperial civil service exam, was first conducted (Lee, 1996). The modern version of the *keju* is still of eminent importance because through its highly competitive nature, it regulates admission to high schools (*zhongkao*) and universities (*gaokao*) and thus determines the student's career prospects. Many studies have shown that Chinese students are exposed to a highly stressful educational environment (e.g., Chen & Stevenson, 1989; Lau, Nicholls, Thorkildsen, & Patashnick, 2000; Liu & Lu, 2011). Teaching quality is assessed by student's exams scores, which means that students' grades are directly linked to their teacher's salary and reputation. Consequently not only parents but also teachers put students under severe pressure to perform. Hence, although originally being considered a work-related phenomenon, burnout may also exist among Chinese students, where it manifests itself as by feeling exhausted because of study demands, having a cynical and detached attitude towards one's study, and feeling incompetent as a student.

Research question 1: What are the psychometric qualities of the four most often used burnout instruments (MBI, BM, SMBM, and OLBI) in the Chinese context? And in how far do these four instruments) assess a similar burnout construct (convergent validity)?

### 1.3 Work engagement and workaholism

Western psychology has predominantly focused on people with mental illnesses or other psychological problems and how to treat them. For example, deviance, distress, dysfunction and danger (4D's) have been studied by clinicians in diagnosing a psychological disorder. However, from the start of this century, positive psychology emerged to examine human strength and flourishing (Seligman, & Csikszentmihalyi, 2000). Positive psychology argues for restoring the balance between pathology and creativity, and between positive human functioning and negative human functioning by focusing on weaknesses and strengths. While research on negative well-being has been predominant in the past, currently this research is moving from merely treating mental illness towards focusing on positive human functioning and flourishing and making normal life more fulfilling (Bakker & Schaufeli, 2008). The positive psychological movement also extended to Work and Organizational Psychology, where it is called Positive Occupational Scholarship (POS) by some (Dutton, Glynn, & Spreitzer, 2006) and Positive Organizational Behaviour (POB) by others (Wright, 2003). One of the most studied positive concepts is work engagement that emerged in the early 2000s (Schaufeli & Salanova, 2011). Work engagement has also caught the attention in China, not only of the academic community but also of the general public. E.g., Chinese idioms "Jing Gang Ai Ye" (i.e., a man love and loyal to his job), share an overlap of meaning with work engagement (Liu, 1996; Wu, 1998).

Work engagement, a positive type of working hard, represents a positive affective-cognitive state of fulfilment that is characterized by vigor, dedication, and absorption (Salanova, Schaufeli, Llorens, Peiró & Grau, 2001; Schaufeli, Salanova, González-Romá, & Bakker, 2002a). Vigor is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. Dedication refers to being strongly involved in one's work, and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Finally, absorption is characterized by being fully concentrated and happily

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engrossed in one's work, whereby time passes quickly (Schaufeli, Bakker, & Salanova, 2006a). Vigor and dedication are considered direct opposites of exhaustion and cynicism, respectively, the two core symptoms of burnout. The continuum that is spanned by exhaustion and vigor has been labelled "energy", whereas the continuum that is spanned by cynicism and dedication has been labelled "identification" (Gonzalez-Romá, Schaufeli, Bakker, & Llorens, 2006).

Engaged employees work hard. But not all employees who work hard are engaged. Workaholism is considered a negative type of working hard (Schaufeli, Taris & Bakker, 2008a). Workaholics spend a great deal of time in work activities when given the discretion to choose whether to do so; they are excessively hard workers. In addition, workaholics are reluctant to disengage from work and they persistently and frequently think about work when they are not at work. This suggests that workaholics are obsessed with their work; they are compulsive workers (Schaufeli, Taris, & Bakker, 2006b; Scott, Moore, & Miceli, 1997). Engaged employees work hard (vigour), are involved (dedicated), and feel happily engrossed (absorbed) in their work. In this sense, they are similar to workaholics. However, in contrast to workaholics, engaged workers lack the typical compulsive drive. For them work is fun, not an addiction (Schaufeli et al., 2006b). Indeed, comparative empirical research has shown that workaholism is related to negative outcomes such as distress, sleeping problems and poor quality and quantity of social contacts, whereas work engagement is related to positive outcomes such as good health, happiness, good quality social relations and superior performance (Kubota, Shimazu, Kawakami, et al, 2012; Schaufeli, Taris & Van Rhenen, 2008b; Shimazu, Schaufeli, Kubota, & Kawakami, 2012a).

With a very large population in China, the level of welfare provision and protection – including social security, unemployment benefits and pensions – is low compared to western standards, while income differences and living costs increase rapidly (Huang, 2008). Therefore, considerable work effort is required in order to secure a minimal level of prosperity and financial security. For example, a national survey among 1,007 Chinese showed that 70% felt overloaded by their work; only 30% worked 40 hours a week statutorily– the majority worked more (China Daily, 2012b). Compared with the belief that "work is life" in Asian society, Western Europeans give higher priority to the quality of life such as family and leisure (Haase, Steptoe, Sallis, & Wardle, 2004). Western and eastern cultures differ in their appreciation for working hard and for making long hours and

"sacrifices" (Chung, 1992). The second specific aim of this PhD thesis is therefore to investigate mean differences of work engagement and workaholism across western and eastern countries. The objective is to investigate the extent to which employees from different cultures and different countries differ with respect to their levels of work engagement (the 'good' way of working hard) and workaholism (the 'bad' way of working hard).

*Research question 2: Do employees from western and eastern countries differ in mean levels of work engagement and workaholism?* 

#### 1.4 The Job Demands-Resources model

In occupational health psychology, three conceptual models are traditionally used for explaining work-related health, well-being and work outcomes: the Effort–Reward Imbalance model (ERI; Siegrist, 1996), the Job Demand-Control model (JDC; Karasek, 1979; Karasek & Theorell, 1990) and the Job Demands-Resource model (JD-R; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001).

Being a sociological framework, the ERI Model was introduced by Siegrist and Weber (1986) to predict and explain (the onset of) cardiovascular-related outcomes among employees. The ERI model builds on the notion of social exchange rooted in interpersonal exchange, which claims that lack of reciprocity occurs frequently under specific conditions and that failed reciprocity (in terms of high efforts and low rewards) elicits strong negative emotions and sustained stressful experience, with adverse long-term consequences for health (Marmot & Wilkinson, 2006; Siegrist 1996). The efforts included in the ERI model refer to physical load, time pressure, interruptions, responsibility, working overtime, and the rewards are money, esteem and security/career opportunities. The association between effort- reward imbalance and well-being has been tested by creating independent groups either by tertiles or by median splits. A criticism of the ERI model is that efforts and rewards are conceptualized and assessed separately, and employees do not explicitly assess the ratio or balance between the two. As a consequence, it remains unclear whether workers actually perceive the theoretically postulated inequitable effort-reward ratio as being inequitable. Moreover, the

ERI model only focuses on the negative outcomes of job characteristics (i.e., strain) and ignores the motivational function of job characteristics and their potential positive outcomes (e.g., work engagement).

The JDC-model focuses specifically on workers' power and control in the workplace (Johnson, 2008). Job demands represent the psychological stressors in the work environment. Job control refers to employees' control over their tasks and how those tasks are executed. The most common criticism is that the operationalization JDC-model is too simple, because it includes a very limited psychological job demands (i.e. mainly quantitative demands) and protective resources (i.e., only job control). A main assumption of the JDC-model is that the combination of high job demands and low job control produces strain (the strain hypothesis), whereas the combination of high job demands and high control offers possibilities for learning and development (the learning hypothesis). It appears that the empirical support for the main effects of job demands and job control is rather strong, but that the support for the interaction effects is rather weak (Van Vegchel, De Jonge, & Landsbergis, 2005a). In addition, empirical evidence for the JDC-model is largely restricted to the strain hypothesis (De Jonge & Kompier, 1997; Taris, Kompier, Lange, Schaufeli, & Schreurs, 2003a; Van Vegchel *et al.*, 2005a).

As an overall stress model, the JD-R model overcomes the defects of the ERI model and the JDC-model by incorporate a wide range of job characteristics into the analysis of organizations and employees. Furthermore, instead of focusing solely on negative outcome variables (e.g., burnout, ill health) the JD-R model includes both negative and positive indicators and outcomes of employee well-being. The JD-R model proposes that employee well-being is related to a wide range of job characteristics that can be conceptualized as either job demands or job resources (Bakker & Demerouti, 2007; Demerouti *et al.*, 2001; Schaufeli & Taris, 2014). Job demands are negatively valued physical, social, or organizational aspects of the job that require sustained physical or psychological effort, and are therefore associated with certain psychological and/or physiological costs, such as fatigue or distress. High demands trigger an erosion or health impairment process; when employees do not sufficiently recovery from their demands, energetic resources will be depleted, which eventually might result in burnout (Hakanen, Bakker, & Schaufeli, 2006). Conversely, job resources are positively valued physical, social, or organizational aspects of the job that may be functional in achieving work goals, reducing job demands, and/or stimulating personal growth and development via a motivational process (Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014). Job resource gains beget more resources and more positive emotion which motivates employees, and leads to higher levels of work engagement (Salanova, Schaufeli, Xanthopoulou, & Bakker, 2010).

In addition to the health impairment and motivation processes, the JD-R model also assumes two moderating effects, namely that: (1) job resources buffer the potentially negative effects of excessive job demands on employee health and well-being (Bakker & Demerouti, 2007; Bakker, Demerouti, & Schaufeli, 2003), while (2) highly demanding work situations in combination with high levels of job resources result in higher levels of work engagement (Bakker & Demerouti, 2007). This agrees with the logic of the strain and learning hypotheses of Karasek and Theorell's (1990) JDC-model, respectively. Indications have been found for the former moderating effect of job demands and job resources on psychological strain in large-scale studies among teachers in higher education (Bakker, Demerouti, & Euwema, 2005), and home care staff (De Jonge, Le Blanc, Peeters, & Noordam, 2008), as well as in a study using multiple occupations (Bakker, Demerouti, & Verbeke, 2004). However, in most cases the moderating effect received only partial support (e.g., Bakker *et al.*, 2005), and the interaction effect between various job demands and job resources is typically weak.

In the current PhD thesis the JD-R model is the occupational health model of choice because it is broader than both the ERI and the JDC-models and because it includes a negative as well as a positive psychological process in which burnout and engagement play a key role, respectively. Because of its broader scope and being a heuristic model (Schaufeli & Taris, 2014), the JD-R model can – by definition – be extended in order to fit better to the Chinese context. For instance, job demands and job resources such as job insecurity (i.e., downsizing; a demand) and remuneration (a resource) that are typically salient in current day China can be included in the JD-R model. Namely, since in a historical context China has been a long-term feudal society, survival value has been emphasised by most people. Through history, malnutrition and associated diseases were the leading cause of death in China and traditional scarcity produced a society that highly values economical and physical security (Tan, 2009; Zhou, 1983). Western societies, which rank high on self-expression (Inglehart & Oyserman, 2004), tend to emphasize individual autonomy and quality of life, rather than economic and physical security (e.g., remuneration and job security) which plays

a major role in China. So in the current PhD thesis, remuneration and job insecurity are included in the JD-R model to make it more relevant for the Chinese context.

The JD-R model has been applied successfully in various countries, for instance in the Netherlands (Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003a), Australia (Lewig & Dollard, 2003), Italy (Balducci, Fraccaroli, & Schaufeli, 2011), Spain (Llorens, Bakker, Schaufeli, & Salanova, 2006), and Finland (Hakanen, Schaufeli, & Ahola, 2008), and in various occupational groups (e.g., home care professionals, teachers, workers, insurance employees; for an overview see Bakker and Demerouti, 2007). Most studies using the JD-R model have been cross-sectional in nature, with only a few longitudinal exceptions (Barbier, Dardenne, & Hansez, 2012; Boyd, Bakker, Pignata, Winefield *et al.*, 2011). So far, a (longitudinal) test of the JD-R model still stands out in China, both in its original as well as adapted form. Hence, the third specific purpose of the current PhD thesis is to examine the (adapted) JD-R model in China.

Research question 3: To what extent does the (longitudinal) JD-R model apply to the Chinese context? Can the JD-R model be supplemented with specific Chinese job demands (job insecurity) and job resources (remuneration)??

### 1.5 The extension of Job Demands-Resources model

Below two extensions of the JD-R model will be discussed in greater detail, one that is typical for China (*guanxi reciprocity*) and one that is more general and would apply equally well to western countries (the cognitive appraisal of demands and resources). Stress is influenced by cultural and social variables such as values, attitudes, and perceptions. China has a Confucian culture, which significantly differs from western cultures (Hofstede, 1980). The main tenet of Confucian culture is to establish harmony in society through a strong and orderly hierarchy. The Chinese social system has been viewed as 'a kind of family system' (King, 1985, p. 58) in which trust is strictly confined to those with familial attachments (Kao, 1996). Exchange relations refer to a series of repetitive transactions between the same two actors over time, play a crucial role in those attachments (Emerson, 1972). Reciprocal exchange is inherently dyadic, which means it involves interactive transactions between two actors (Lawler, 2002). Each actor may hold the power of allocating some kind(s) of social

resources that may satisfy the need of the other, meanwhile, either petitioner may expect the allocator to distribute the resource under his or her control in a way favorable to the petitioner. Although interpersonal reciprocity acts as social capital in both eastern and western countries, this is even more so the case in China. This country is often portrayed as a "relational society" (Hwang, 1987) because of the crucial importance of interpersonal reciprocity. This is illustrated is by concepts such as "guanxi reciprocity" (i.e., the moral principles regarding interactive behaviors of related parties; Chen & Chen, 2004, p. 308). In contrast to western countries where interpersonal reciprocity is a short-term and symmetrical, guanxi reciprocity has a long-term orientation reciprocity (Hwang, 1987), meaning that the behavior of petitioners is governed by the social norm known as "renging" or "favors" (Hwang, 1987). Providing benefits to somebody in one's guanxi network at a particular time will create a "debt" (i.e., an implicit obligation) to the petitioner, and the petitioner should return the *renging* (favor) or else (s)he will be viewed as untrustworthy. *Guanxi reciprocity* also plays a role in supervisor-subordinate relationships in China. It influences supervisors' decisions on resources allocation and subordinates' promotion prospects (Law, Wong, Wang, & Wang, 2000). Good guanxi acts as a job resource because it fosters the availability of other job resources. Employees who have good guanxi with their supervisors tend to receive more resources and are more likely to be promoted (Law et al., 2000). So including guanxi reciprocity in the JD-R model would make it more applicable to the Chinese context.

Up until now, demands and resources have been construed as independent entities in the JD-R model that might or might not interact, and whose joint contribution to well-being can be established by relating their statistical interaction to employee well-being. The common way to study the interaction is to examine such moderating joint effects using the framework proposed by Baron and Kenny (1986), in which the multiplication of the standardized raw variables is used as an additional predictor of the study outcomes (cf. Aiken & West, 1991). However, multiplication of predictor terms may not be the only way to study the joint effects of job characteristics. For example, several alternative approaches focus on the difference between two sets of job characteristics (i.e., a synergistic joint effect). For instance, the quadrant approach focuses on the difference between high strain groups of employees and low job strain groups, and their relation with employee health and well-being (Karasek & Theorell, 1990). Another alternative is the ratio approach advocated by Siegrist (1996) in his Effort-Reward Imbalance (ERI) model, who studied the ratio of "effort" and "rewards" in

relation to employee health and well-being.

Researchers investigated the joint contribution of job demands and job resources on employee well-being (Bakker et al., 2003a; Hakanen, Bakker, & Demerouti, 2005). However, most studies do not support the idea that job demands and job resources interact statistically, and even the few studies that reported significant interaction effects provide only weak and inconsistent evidence (cf. Taris, 2006). On the one hand one could argue that these small joint effects are of little importance. However, on the other hand, these small effect sizes could suggest that the conceptualization and measurement of these moderating joint effects is suboptimal. Some researchers argue that the JD-R model fails to account for the important distinction among types of events with respect to the way they tend to be appraised by employees (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; Muja & Appelbaum, 2012). For example, if an individual believes that his or her resources are sufficient to meet the demands of the situation, the situation is appraised as a challenge that may lead to future gain (i.e. elevated self-esteem, learning). Conversely, if these resources are judged to be insufficient, the situation is appraised as a threat because that may lead to future loss (i.e. poor self-esteem, strain). Also, the JD-R model specifies what kind of job characteristics lead to particular psychological states and work outcomes. For example, certain job demands can be appraised as "challenges" and "hindrances" (Crawford, LePine, & Rich, 2010), and their associations with outcomes such as performance and well-being might vary. However, the JD-R model does not tell us why this would be so. Thus, part of the associations between job characteristics and employee well-being would be due to the cognitive appraisal of workers' investments in and outcomes gained from their jobs.

Despite the central assumption of the ERI model that employees' well-being depends on the balance between investments in the job and rewards obtained from the job, the separate evaluation in investment and rewards might cause employees to not explicitly assess the ratio or balance between the two. As a consequence, it remains unclear whether workers actually perceive the theoretically postulated inequitable effort-reward ratio as being inequitable. Therefore, instead of following the traditional JD-R model that links job characteristics (i.e., demands and resources) directly to well-being (engagement and burnout), we focus on the mediating role of joint cognitive appraisal (i.e., equity) of demands and resources in the JD-R model. The fourth specific objective of the PhD thesis is thus to study the nature of the interaction between job demands and job resources more closely and to extend the original JD-R with a typical Chinese phenomenon (i.e., *guanxi reciprocity*), and the simultaneous cognitive appraisal of job demands and job resources

Research question 4: What is the nature of the interaction between job demands and job resources, and can the JD-R model be extended with guanxi reciprocity and with the joint cognitive appraisal of job demands and job resources?

### 1.6 Outline of this thesis

Chapters 2 and 3 examine to what extent western burnout measures can be used in China (research question 1). In Chapter 2, the dimensional structure of the most widely used burnout questionnaire – the Maslach Burnout Inventory – is investigated in three samples of Chinese students: high schools students, university students, and nursing students, respectively. Chapter 3 describes the convergent validity of four well-known burnout measures (the Maslach Burnout Inventory-General Survey (MBI-GS), the Burnout Measure (BM), the Shirom-Melamed Burnout Measure (SMBM), and the Oldenburg Burnout Inventory (OLBI) among Chinese nurses.

Chapter 4 investigates the extent to which employees from Western Europe (i.e., Finland, The Netherlands, and Spain) and from Eastern Asia (i.e., China and Japan) differ with respect to levels of work engagement and workaholism (research question 2). The chapter elaborates on the systematic differences in work engagement and workaholism between eastern and western countries that may result from differences in cultural and work values.

Chapter 5 applies the JD-R model into Chinese context (research question 3). This study investigates the additive, synergistic, and moderating effects of job demands and job resources on well-being (burnout and work engagement) and organizational outcomes among Chinese blue collar workers and health professionals.

Chapter 6 explores whether the JD-R model could be supplemented with specific Chinese job demands and job resources (research question 3). The study examines the impact

of job insecurity (past job downsizing and anticipated future job downsizing) and remuneration – via well-being (burnout and work engagement) – on organizational outcomes (organization commitment and turnover intention) of employees from Chinese family-owned business.

Chapter 7 examines the longitudinal relationships between job demands and job resources with employee well-being (i.e., burnout, work engagement; research question 3). This study investigates how different levels of exposure in job demands and job resources induce different levels of well-being across a two-year time span.

Chapter 8 extends the JD-R model with a cognitive evaluation process that simultaneously includes job demands and job resources (research question 4). More particularly, the study proposes that the associations between job characteristics (demands and resources) and employee well-being (burnout and engagement) are mediated through a cognitive evaluation process.

Chapter 9 examines the role that typical Chinese job stressors and job resources play in the JD-R model (research question 4). It examines the role of social resources and task resources in the JD-R model and attempts to integrate the typically Chinese dimension of interpersonal reciprocity – *guanxi reciprocity* – into the JD-R model.

Finally, Chapter 10 draws some overall conclusions from the preceding chapters and addresses the theoretical implications of the research findings. Furthermore, recommendations for future research and practical implications are discussed.

### Chapter 2

### The Convergent Validity of Four Burnout Measures in a

### Chinese Sample:

### A Confirmative Factor-Analytic Approach

### Based on:

Hu., Q. & Schaufeli, W. B. (2011). The convergent validity of four burnout measures in a Chinese sample: A confirmatory factor-analytic approach. *Applied Psychology: An International Review*, 60, 87-111.

### 2.1 Introduction

Although "burnout" was introduced over thirty years ago, its conceptualization and measurement is still vehemently debated as, for instance, as illustrated by a recent special issue of Work & Stress (Cox, Tisserand & Taris, 2005). A conceptual controversy exists about whether burnout should be viewed as work-related exhaustion (Cordes & Doughterty, 1993; Shirom, 1989) or a multidimensional construct that goes beyond mere exhaustion (Maslach & Jackson, 1981; Schaufeli *et al.*, 2009a). Another controversy pertains to the measurement of burnout; should the items that are included in the burnout scales all be positively or negatively phrased, or should the items be mixed (Demerouti *et al.*, 2003)? The major objective of the current article is to systematically compare– for the first time –the four most widely used self-report inventories to shed more light on these two controversies. In other words, we seek to answer the question: to what extent do these instruments assess a similar burnout construct?

Burnout is usually defined as psychological response to chronic work stress that is typically characterized by feelings of exhaustion. The concept was introduced in the mid-1970s, and initially a laundry-list of over 100 symptoms was associated with burnout, ranging from anxiety to lack of zeal (Schaufeli & Enzmann 1998, p 20-30). After a pioneer phase of about five years, empirical research on burnout started to flourish following the introduction of short and easy to use self-report questionnaires, most notably the Maslach Burnout Inventory (MBI – Maslach & Jackson, 1981) and Burnout Measures (BM – Pines, Aronson, & Kafry, 1981). These two questionnaires represent two different schools of thought on burnout. The MBI assumes that burnout is a multidimensional construct that involves three distinct but related aspects: emotional exhaustion, depersonalization (i.e. a callous and cynical attitude towards the people one is working with, such as patients, clients or students), and reduced personal accomplishment. Originally, burnout as measured with the MBI was restricted to human services professions (e.g. teaching, health care, social work, law enforcement) because interpersonal and emotional demands were considered to be its root cause. In contrast, the BM assumes that burnout is a one-dimensional construct exclusively reflecting exhaustion. Although mental, emotional and physical exhaustion are distinguished, an overall sum-score on the BM is used to assess "burnout" because it is easier to interpret and to communicate than a test profile (Pines, 1993). Studies on the factorial validity failed to distinguish more than one burnout (exhaustion) dimension in the BM (Corcoran, 1986; Justice, Gold & Klein, 1981). The study of Schaufeli and Van Dierendonck (1993) revealed that over 50 percent of the variance of the BM-total score is shared with MBI-emotional exhaustion (r = .73, p < .001). Thus, effectively, the BM reduces burnout to – different kinds of – exhaustion. In addition, burnout as measured with the BM is believed to occur not only at work, but also in non-occupational contexts, such as love and marriage and political activism, because it is caused by long-term involvement in *any* emotionally demanding situations.

#### 2.1.1 Burnout as a multi-dimensional construct

In time, the MBI became the most popular instrument with which to assess burnout. It was estimated that by the end of the 1990s, the MBI was used in over 90 percent of the research articles and dissertations on burnout, whereas the BM was the second most widely used instrument with about 5 percent (Schaufeli & Enzmann, 1998, p. 71). So gradually the concept of burnout became equivalent to the multidimensional way it was assessed by the MBI. Meanwhile numerous studies using confirmative factor analysis confirmed the validity of the hypothesized three-factor structure of the MBI (e.g., Golembiewski, Boudreau, Munzenrider & Luo, 1996; Schaufeli & Van Dierendonck, 1993; Schaufeli, Daamen & Van Mierlo, 1994; Li & Shi, 2003; Shirom & Melamed, 2006). However, three criticisms on the MBI remained to be voiced.

1. General instead of specific use. It was questioned that burnout occurs exclusively among those who do "people work" of some kind. By introducing a so-called "General Survey" it was recognized that burnout might also occur outside the human services (Schaufeli *et al.*, 1996a). The MBI-GS can be applied in any occupational context and includes three generic subscales that parallel those of the original human services version: exhaustion, cynicism and reduced professional efficacy. Meanwhile the similarity of the original MBI and the MBI-GS in terms of their three-factor structure has been demonstrated in occupations within and outside the human services (Leiter & Harvie, 1998; Leiter, Harvie & Frizzell, 1998; Leiter & Schaufeli, 1996).

2. Two instead of three dimensions. Four kinds of criticism have been raised, including

lack of professional efficacy as a genuine aspect of burnout. First, from an empirical point of view, most studies show consistently that professional efficacy: (a) correlates relatively poorly with exhaustion and cynicism (Lee & Ashforth, 1996); (b) seems to develop in parallel to exhaustion and cynicism (Leiter, 1992; Taris, Le Blanc, Schaufeli, & Schreurs, 2005a); and (c) is related to job resources in particularly, whereas both other burnout dimensions are related to job demands as well (see Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998). Second, from a theoretical point of view, it has been argued that exhaustion and cynicism - a form of mental distancing or withdrawal -constitute the core of burnout (Schaufeli & Taris, 2005). In contrast, professional efficacy is considered a separate personality factor (Cordes & Dougherty, 1993; Shirom, 2003). In essence, withdrawal or distancing is an adaptive mechanism to cope with job stress and the concomitant feelings of exhaustion. However, in case of burnout, withdrawal has evolved into a habitual maladaptive pattern, which is characterized by a negative attitude towards one's job. Third, clinical experience with burned-out patients suggests that exhaustion and cynicism appear in tandem, whereas lack of professional efficacy is observed much less frequently (Brenninkmeijer & Van Yperen, 2003; Roelofs, Verbraak, Keijsers, de Bruin & Schmidt, 2005). Fourth, it has been suggested from a psychometric point of view that the special role of lacking professional efficacy might be due to an artifact (Schaufeli & Salanova, 2007; Bresó, Salanova & Schaufeli, 2007; Halbesleben & Demerouti, 2005; Demerouti et al., 2003). Thus, all exhaustion and cynicism items are phrased negatively, whereas all professional efficacy items are phrased positively. The positively worded efficacy items are then reversed in order to be indicative of reduced efficacy. Because positive and negative items are likely to cluster in factor analysis (cf. Anastasi, 1988; Cacioppo, Gardner & Berntson, 1997), professional efficacy emerges as a distinct factor.

So taken together, empirical, theoretical, clinical, and psychometric evidence exists for the particular role that professional efficacy plays as the "third dimension" of burnout. For that reason, we will not include professional efficacy as a dimension of burnout in our study.

3. Mixed instead of only negative items. It has been argued from a psychometric point of view that, in order to avoid answering bias, burnout inventories should include both negatively as well as positively phrased items (Demerouti *et al.*, 2003). The exhaustion and cynicism scales of the MBI contain only negatively phrased items, which would deteriorate

the validity of these scales.

In order to overcome these three criticisms an alternative burnout instrument has been proposed: the OLBI (OLdenburg Burnout Inventory; Demerouti & Nachreiner, 1996; Halbesleben & Demerouti, 2005). The OLBI can be used in any occupational context and includes two dimensions: exhaustion and disengagement from work. Moreover, both scales contain positively as well as negatively worded items. Exhaustion is defined as a consequence of intensive physical, affective, and cognitive strain, which corresponds to other definitions of exhaustion (e.g., Pines, 1981; Lee & Ashforth, 1993; Shirom, 1989). Unlike exhaustion as operationalized in the MBI, the OLBI covers not only affective aspects of exhaustion, but also physical and cognitive aspects. Disengagement in the OLBI refers to distancing oneself from one's work and experiencing negative attitudes toward the work object, the work content, or one's work in general (i.e., withdrawal or mental distancing).

Exploratory factor analysis with the OLBI in two independent studies showed that – as expected – the exhaustion items of both scales loaded on one factor, whereas the cynicism and disengagement items loaded on another factor (Demerouti *et al*, 2003; Halbesleben & Demerouti, 2005). The correlations between both method-factors (i.e. the OLBI and MBI) exceeded .70 (p < .001) in the two studies, indicating that the two burnout measures share a great deal of similarity. Moreover, the fit to the data of the two-factor model (with exhaustion and disengagement) was superior to that of the wording model (with positively and negatively phrased items). This result led the test author to conclude that the OLBI can not only be used to assess *burnout*, but also *engagement* (Demerouti & Bakker, 2008).

#### 2.1.2 Burnout as exhaustion

Although the BM was conceived as a context-free, one-dimensional burnout instrument, it appeared to comprise three different but highly correlated factors, dubbed "demoralization", "exhaustion" and "loss of motive". This three-factor structure was observed in a few studies, using German human services professionals (Enzmann & Kleiber, 1989), Dutch nurses (Schaufeli & Van Dierendonck, 1993), Dutch white-collar workers, human services professionals, and nurses (Enzmann, Schaufeli, Janssen, & Rozeman, 1998), and Chinese teachers (Mei & Li, 2006). Quite remarkably, these factors do not correspond with the three originally hypothesized aspects of exhaustion – emotional, physical, and mental (Pines, 1981;

Pines & Aronson, 1988). Moreover, "demoralization" and "exhaustion" are rather highly correlated, whereas "loss of motive" – that is exclusively defined by positively phrased items -- correlates least with both other factors. Moreover, a study on the construct validity of the BM and the MBI showed that the three BM-factors (i.e., demoralization, exhaustion and loss of motive) loaded on the same second-order factor as MBI-exhaustion and two indicators of mental and psychosomatic strain (Schaufeli & Dierendonck, 1993). Also, physical and emotional aspects of exhaustion as assumed by Pines *et al.* (1981) seem to collapse into one factor which reflects fatigue (Enzmann *et al.* 1998). Hence, the authors of this study concluded that the BM should be considered a general index of psychological strain. In sum, the BM has been criticized for its theoretical indistinctiveness (Schaufeli & Dierendonck, 1993) and its imperfect operationalization (Enzmann *et al.*, 1998). Furthermore, the findings of Shirom and Ezrachi (2003) suggest that the BM may inflate or conceal relations with antecedent stress variables.

Based on Hobfoll's (1989) Conservation of Resources (COR) theory, the SMBM (Shirom-Melamed Burnout Measure) was constructed as an alternative burnout instrument that assesses exhaustion - or the dwindling of energetic resources - regardless of its occupational context (Shirom & Melamed, 2006). More particularly, the SMBM includes three subscales – physical fatigue, emotional exhaustion, and cognitive weariness – that load on a second order "burnout" factor (Shirom, Nirel, & Vinokur, 2006). According to COR-theory, burnout reflects the depletion of energetic resources that results from cumulative exposure to chronic work and life stresses (cf. Melamed et al., 2006; Hobfoll & Shirom, 1993, 2000). So contrary to the BM, the SMBM is based on a theoretical notion about the nature and development of burnout. The SMBM was found to be highly correlated (r = .74, p < .001) with the Emotional Exhaustion scale of the MBI (Grossi, Perski, Evengard, Blomkvist, & Orth-Gomer, 2003), and with the BM (r = .74, p < .001) (Soares & Jablonska, 2004). These very substantive correlations suggest that the SMBM, MBI-Emotional Exhaustion, and the BM probably measure a common factor representing emotional and physical exhaustion (cf. Collins, 1999; Lee & Ashforth, 1996; Melamed et al., 2006). A cross-occupational validity study using the SMBM and the MBI revealed that a two-factor structure of the SMBM (physical fatigue and cognitive weariness) and the three-factor structure of the MBI-GS both were invariant across human service occupations and other professionals (Shirom & Melamed, 2006). In this study, the SMBM and MBI-GS were

correlated .74 and .79 in the two groups, respectively, indicating that they share 55 percent and .62 percent of their variance. Hence, the test authors concluded that the SMBM has the potential of revealing more information about the core content of burnout—physical, emotional, and cognitive exhaustion (Cordes & Dougherty, 1993) than the MBI.

#### 2.1.3 The current study

The current study includes the MBI because it is the most widely used questionnaire to assess burnout. In addition, another often used burnout instrument – the OLBI – is included which claims to solve two problems that are inherent to the MBI (i.e. three instead of two dimensions, and mixed instead of only negative items). Finally, two burnout instruments are included that conceptualize burnout exclusively in terms of exhaustion. The BM is second most widely used questionnaire to asses burnout, and the SMBM that differentiates between three dimensions of exhaustion (i.e. physical, emotional, and cognitive). By including these four burnout questionnaires we may contribute to the conceptualization of burnout by addressing validity issues related to the dimensionality of burnout and the role of exhaustion as a core phenomenon (see above). To date, no study on the validity has been conducted that includes all four burnout instruments simultaneously. Despite the almost universal acceptance of the MBI and the BM, and to a somewhat lesser degree the more recent SMBM and the OLBI, a careful evaluation of their convergent validity is still lacking. This is particularly important when translated burnout inventories are applied to non-English-speaking national or cultural settings, such as, for instance, China. Because of the rapid economic development of China, job stress and burnout are becoming major problems for the Chinese workforce, especially – but not exclusively – in human service professions like nursing (Cheng, Zhang & Li, 2008). So there is an urgent need for reliable and valid instruments that may assess burnout in China. Some Chinese studies have confirmed the three-factor structure of the MBI-GS ("emotional exhaustion", "cynicism" and "reduced professional efficacy")(Feng, Luo & Ye, 2004; Jiang, Xu & Zhang, 2004; Li & Shi, 2003) and three-factor structure of the BM ("demoralization", "exhaustion" and "loss of motive") (Mei & Li, 2006). However, validity studies using the OLBI and the SMBM are still lacking in China. The current study was carried out in order to investigate the factorial validity of the Chinese versions of the four most popular burnout instruments, and to investigate how far these instruments assess the same underlying construct (convergent validity). More particularly we will answer the following two research questions:

1. Can the factorial structure of the MBI (exhaustion and cynicism), BM (demoralization, exhaustion and loss of motive), SMBM (physical fatigue, emotional exhaustion, and cognitive weariness) and the OLBI (exhaustion and disengagement) be confirmed?

2. Do the MBI, BM, SMBM and the OLBI assess one underlying burnout construct, or two distinct but related burnout dimensions (i.e. exhaustion and withdrawal)?

#### 2.2 Method

### 2.2.1 Participants and procedure

Given regional economic and cultural differences ,we selected two provinces in China (Zhejiang province -- an economical developed province and Ningxia province -- an economic underdevelopped province). A total of 1000 questionnaires were distributed at random to nurses who worked in different hospital settings, of whom 717 (71.7%) returned the questionnaire. The study sample included 101 nurses from a general hospital, 97 nurses from a maternity hospital, 48 nurses of a traditional Chinese medicine hospital, and 103 nurses of several rural hospitals; all from the Zhejiang province in the eastern China (total n = 349). In addition, 368 nurses from a general hospital of the Ningxia province in western China were included. The questionnaires were distributed by the head-nurse and the survey was accompanied by a letter which explained the nature and the general aim of the study, and emphasized the anonymity of the participants. The biographical details of the sample are displayed in Table 2.1.

Total sample	N	%
Sex		
Female	717	100
Age groups		
20-30	380	53.00
30-40	235	32.78
40-50	84	11.72
Above 50	11	1.53
Marital status		
Unmarried	263	36.68
With spouse	431	60.11
Divorce or widower	14	1.95
Education		
Junior nursing school	178	24.83
Senior nursing school	389	54.25
University	134	18.69
Tenure:		
1-5 Years	296	41.28
5-10 Years	92	12.83
10-20 Years	223	31.10
20-30 Years	84	11.72
Above 30 years	14	1.95
Type of contract:		
Temporary nurse	78	10.88
Contract nurse	152	21.20
Formal nurse	477	66.53

Table 2.1. Sample characteristics (N = 717)

### 2.2.2 Measures

The Chinese version (Li & Shi, 2003) of the Maslach Burnout Inventory — General Survey (MBI-GS) (Schaufeli *et al.*, 1996a) was used. Dropping the third component of the MBI – professional efficacy – five emotional exhaustion items as well as five cynicism items remained. Example items are '*I feel emotionally drained from my work*' (emotional exhaustion); '*I have become less enthusiastic about my work*' (cynicism).

The Burnout Measure (BM; Pines & Aronson, 1988) includes 21 items, among them, four positively worded items and seventeen negatively worded items which are designed to measure physical, emotional, and mental exhaustion. Example item are '*feeling energetic*' (physical exhaustion), '*being emotionally exhausted*' (emotional exhaustion), '*feeling* 

*rejected*' (mental exhaustion). The BM was translated by the first author and the accuracy of the translation was checked by a group of English speaking Chinese PhD-students, who are studying in Europe.

The Shirom-Melamed Burnout Measure (SMBM; Shirom, 1989) includes fourteen items which cover physical fatigue, emotional exhaustion, and cognitive weariness. Part of the items (i.e. the items of emotional exhaustion) were reworded and have been used before as the Chinese Shirom-Melamed Vigor Measure (SMVM) by a Taiwanese PhD student. For instance, the item '*I feel I am* able *to be sensitive to the needs of coworkers and customers*' (emotional robustness) was modified into '*I feel I am* unable *to be sensitive to the needs of coworkers and patients*' (emotional exhaustion). The remaining items of the SMBM were translated by the first author. Example items are '*I feel physically drained*' (physical fatigue) and '*I have difficulty concentrating*' (cognitive weariness). Like with the BM, the accuracy of the translation was checked by the group of Chinese PhD-students.

The Oldenburg Burnout Inventory (OLBI; Demerouti *et al.*, 2003) was translated into Chinese and back-translated into English. Differences between the original version and the back-translation were resolved between the test-author (Evangelia Demerouti) and the first author. In addition, the accuracy of translation was checked by the Chinese PhD students. The OLBI includes two-dimensions (i.e., eight exhaustion items and eight disengagement items) and each dimension consists of four positively worded items and four negatively worded items. Sample items are '*I always find new and interesting aspects in my work*' (disengagement – reversed), '*It happens more and more often that I talk about my work in a negative way*' (disengagement), '*I can tolerate the pressure of my work very well*' (exhaustion – reversed) and '*There are days when I feel tired before I arrive at work*' (exhaustion).

In contrast to the 7-point Likert scale – ranging from 0 ("never") to 6 ("always") – that is used in the three previous measures of burnout, the English version OLBI is originally scored on a 5-point Likert scale. In the current study the answering categories of the OLBI have been adapted to that of the other burnout instruments, because this allowed us to present the items of all four instruments in random order so that answering bias could be avoided. It should be noted that, most items are negatively phrased (49 items), whereas only 12 items (4 BM and 8 OLBI) are positively phrased. In order to avoid inattentive answering or careless responding, the positively and negatively phrased burnout items are grouped together. In the introduction letter we emphasized that positively as well as negatively phrased items have been included in the questionnaire. Within each group of items the order was random.

We used confirmatory factor analysis to test the fit to the data of various models. All analysis was conducted by analyzing the covariance matrix, using the maximum likelihood method in AMOS 5.0 (Arbuckle, 2003). The goodness-of-fit of the model was evaluated using three absolute fit indices (cf. Jöreskog & Sörbom, 1986):  $\chi^2$  goodness-of-fit statistic, Goodness-of-Fit Index (GFI) and Root Mean Square Error of Approximation (RMSEA). Browne and Cudeck (1993b) proposed that RMSEA values lower than .08 suggests adequate fit and values in the range of .08-.10 suggest mediocre fit. Because  $\chi^2$  are sensitive to sample size, meaning that the probability of rejecting a hypothesized model increases with sample size, three relative goodness-of-fit indices were calculated (Bentler, 1990; Hu & Bentler, 1999): the Normed Fit Index (NFI), the Tucker-Lewis Index (TLI), and the Comparative Fit Index (CFI). For these three fit-indices, as a rule of thumb, originally values greater than .90 were considered as indicating a good fit (Bentler, 1990). More recently, Hu and Bentler (1999) suggest RMSEA values close to close to .95 or greater. Therefore, in the current study we consider .90 as critical lower bound values for NFI, TLI and CFI,

In order to detect differences in model fit, a change in the GFI, TLI, NFI, and CFI above .01 was used as a general heuristic (Widaman, 1985).

### 2.3 Results

Data were analyzed in three steps: (1) testing of the factor structure of the four burnout instruments by means of confirmatory factor analysis (CFA); (2) assessment of internal consistency of the subscales of the four burnout instruments (i.e. the MBI-GS, BM, SMBM, OLBI); (3) based on the best fitting model from the previous analysis (step 1), the convergent validity of the four burnout instruments was tested.

### 2.3.1 The MBI

Two factor-analytic models for the MBI were specified: (1) the one-factor model which assumes that all MBI-items load on a general composite burnout factor  $(M_1)$ ; (2) the two-factor model in which exhaustion and cynicism are allowed to be correlated  $(M_2)$ . As

can be seen from Table 2.2, both models have a large  $\chi^2$  in relation to their degrees of freedom. However, this is not unexpected, for Byrne (1994) has pointed out that it is unusual to obtain non-significant  $\chi^2$  values for CFA-models when dealing with large sample sizes. Although M<sub>1</sub> fits reasonably well to the data, the fit of M<sub>2</sub> is superior ( $\Delta \chi^2(1) = 175.31$ , p < .001) with all fit-indices satisfying their respective criteria. Thus, as expected, the hypothesized two-factor model fits the data well. Both factors are highly correlated: r = .76 (p < .001).

Table 2.2. Model fit of the MBI (N = 717)

Model	$\chi^2$	df	р	GFI	RMSEA	TLI	NFI	CFI	IFI
$M_1$ (1 factor)	321.49	35	.000	.90	.11	.91	.92	.93	.93
M <sub>2</sub> (2 factors)	146.18	34	.000	.96	.07	.96	.97	.97	.97
Null-model	4132.33	45	.000	.28	.36				

<u>Note</u>.  $\chi^2$  = chi-square; df = degrees of freedom. p = significance level. GFI = Goodness-of-Fit Index; TLI = Tucker-Lewis Index; NFI = Normed Fit Index; CFI = Comparative Fit Index; IFI = Incremental Fit Index; RMSEA = Root Mean Square Error of Approximation

### 2.3.2 The BM

In order to assess the factorial validity of the BM, four alternative models were tested: (1) the one-factor model (M<sub>3</sub>); (2) the three-factor model as suggested by Pines *et al.* (1981) (M<sub>4</sub>); (3) the two-factor model in which positively worded items and negatively worded items were grouped in two separate scales (M<sub>5</sub>); (4) the three-factor model according to Enzmann and Kleiber (1989) (M<sub>6</sub>). Two items were dropped from M<sub>6</sub> (i.e. *'feeling disillusioned and resentful about people'*— mental exhaustion — and *'being weary'* – physical exhaustion) due to semantic ambiguity (Schaufeli & Dierendonck, 1993; Enzmann *et al.*, 1998). Table 2.3 clearly shows that M<sub>3</sub> and M<sub>4</sub> do *not* satisfy the criteria, but M<sub>5</sub> and M<sub>6</sub> have an acceptable fit, satisfying the lower bound criteria for RMSEA, TLI, NFI and CFI. Since after deleting from M<sub>5</sub> both items that were not included in M<sub>6</sub>, both models are nested so that the  $\chi^2$  different test can be used to test their relative fit (Bentler & Bonnet, 1980). It appears that the fit of M<sub>6</sub> is superior to that of M<sub>5-respecified</sub> ( $\Delta \chi^2$  (3) = 25.69, p < .001). The three latent BM-factors are highly correlated, ranging from r = -.56 (p < .001) to r = .89 (p <

.001).

Model	$\chi^2$	df	р	GFI	RMSEA	TLI	NFI	CFI	IFI
M <sub>3</sub> (1 factor)	2018.46	189	.000	.78	.12	.81	.82	.83	.83
M <sub>3-respecified</sub> (without positive items)	925.27	90	.000	.85	.10	.90	.90	.91	.91
$M_4$ (3 factors, Pines <i>et al.</i> )	1677.07	186	.000	.79	.11	.85	.85	.86	.86
M <sub>4-respecified</sub> (without positive items)	883.91	116	.000	.85	.10	.90	.91	.92	.92
$M_5$ (2 factors, positive - negative)	1167.56	188	.000	.85	.09	.90	.89	.91	.91
M <sub>5-respecified</sub> (without two items)	868.58	151	.000	.87	.08	.91	.91	.92	.92
$M_6$ (3 factors, Enzmann <i>et al.</i> )	842.89	149	.000	.87	.08	.92	.91	.93	.93
Null-model	11095.02	210	.000	.15	.27				

Table 2.3. Model fit of the BM (N = 717)

<u>Note</u>.  $\chi^2$  = chi-square; df = degrees of freedom. p = significance level. GFI = Goodness-of-Fit Index; TLI = Tucker-Lewis Index; NFI = Normed Fit Index; CFI = Comparative Fit Index; IFI = Incremental Fit Index; RMSEA = Root Mean Square Error of Approximation

In order to further explore the role of the positively phrased items of the BM, two additional models were tested: (1) the one-factor model without positive items ( $M_{3-respecified}$ ); (2) The 3-factor model of Pines *et al.* (1981) without positive items ( $M_{4-respecified}$ ). Both models fitted relatively well to the data with all indices except RMSEA meeting their lower bound criteria (RMSEA=0.10, TLI=0.90, NFI≥0.90, CFI≥0.91, IFI≥0.91).

Thus, it seems that the three-factor model as suggested by Enzmann *et al.* (1989) ( $M_6$ ) represents the best underlying structure of the BM. However, removing the positive items from the BM leads to a relatively good fit of the 1-factor model ( $M_{3-respecified}$ ), as well as the original 3-factor model as proposed by the test-authors ( $M_{4-respecified}$ ).

### 2.3.3 The SMBM

Two models were tested: (1) the one-factor model  $(M_7)$ ; (2) the three-factor model in which emotional exhaustion, physical fatigue and cognitive weariness are allowed to be
correlated (M<sub>8</sub>).

Model	$\chi^2$	df	р	GFI	RMSEA	TLI	NFI	CFI	IFI
M <sub>7</sub> (1 factor)	1247.25	77	.000	.75	.15	.77	.80	.81	.81
M <sub>8</sub> (3 factors)	650.16	74	.000	.88	.10	.88	.89	.90	.90
M <sub>8-respecified</sub>	473.06	73	.000	.91	.09	.92	.92	.93	.93
Null-model	6084.22	91	.000	.24	.30				

Table 2.4. Model fit of the SMBM (N = 717)

<u>Note</u>.  $\chi^2$  = chi-square; df = degrees of freedom. p = significance level. GFI = Goodness-of-Fit Index; TLI = Tucker-Lewis Index; NFI = Normed Fit Index; CFI = Comparative Fit Index; IFI = Incremental Fit Index; RMSEA = Root Mean Square Error of Approximation

Inspection of the Modification Indices indicated that allowing two unique variances of single items within a particular subscale (physical fatigue) to correlate ('*I feel physically drained*'— '*I feel tired*') would improve the fit of three-factor model. As can be seen from the Table 2.4, compared with the one-factor model (M<sub>7</sub>) and the original three-factor model (M<sub>8</sub>), the revised model (M<sub>8-respecified</sub>) meets the lower bound criteria for model fit ( $\Delta \chi^2$  (4) = 774.19,  $\Delta \chi^2$  (1) = 177.10, p < .001). The three latent SMBM-factors are highly correlated, ranging from r = .61 (p < .001) to r = .73 (p < .001).

## 2.3.4 The OLBI

Table 2.5 displays results of the CFA of four plausible models for the OLBI: (1) the one-factor model ( $M_9$ ); (2) the two-factor model as proposed by the test-authors, in which emotional exhaustion and disengagement are allowed to be correlated ( $M_{10}$ ); (3) the two-factor wording model (positive - negative wording,  $M_{11}$ ); (4) the four-factor model in which four factors (two negatively worded scales – exhaustion and disengagement, and two positively worded scales – energy and engagement) are allowed to be correlated with each other ( $M_{12}$ ).

Like the one-factor model (M<sub>9</sub>), the hypothesized two-factor model (M<sub>10</sub>) yielded a poor fit. Instead, it appeared that the four-factor model (M<sub>12</sub>) with exhaustion, energy, disengagement, and engagement fitted the data best compared to the other three models ( $\Delta \chi^2$ (6) = 774.57,  $\Delta \chi^2$  (5) = 724.81,  $\Delta \chi^2$  (5) = 140.83, p < .001 for M<sub>9</sub>, M<sub>10</sub> and M<sub>12</sub>). The four latent OLBI-factors are moderately to highly correlated, ranging from r = -.33 (p < .001) to r = .64 (p < .001).

Model	$\chi^2$	df	р	GFI	RMSEA	TLI	NFI	CFI	IFI
$M_9$ (1 factor)	1208.02	104	.000	.75	.11	.73	.75	.76	.76
$M_{10}$ (2 factors,	1158.26	103	.000	.78	.12	.74	.76	.77	.77
hypothesized)									
$M_{11}$ (2 factors, positive -	574.28	103	.000	.90	.08	.88	.88	.90	.90
negative)									
$M_{12}$ (4 factors)	433.45	98	.000	.92	.07	.91	.91	.93	.93
Null-model	4755.67	120	.000	.34	.23				

1 able 2.3. Widdel int of the OLDI $(N = 717)$
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<u>Note</u>.  $\chi^2$  = chi-square; df = degrees of freedom. p = significance level. GFI = Goodness-of-Fit Index; TLI = Tucker-Lewis Index; NFI = Normed Fit Index; CFI = Comparative Fit Index; IFI = Incremental Fit Index; RMSEA = Root Mean Square Error of Approximation.

#### 2.3.5 Internal consistency estimates

The means, standard deviations, internal consistency estimates (Cronbach's  $\alpha$ ), and subscale correlations of all four burnout measures can be found in Table 2.6. The internal consistencies of all scales, except the energy scale of the OLBI were sufficient, and exceeded the critical value of .70 (Cronbach & Bernstein, 1994). Correlations between the scales ranged from -.33 to -.59, and from .50 to .91. The mean correlations are -.48 and .75, respectively.

	Mean	SD	α	1	2	3	4	5	9	7	8	6	10	11
MBI														
1. Exhaustion $(5)^{a}$	11.50	6.74	8											
2.Cynicism (4) OLBI	10.08	6.39	.86	.76***										
3.Exhaustion (4)	10.84	5.11	87.	.84***	.***									
$4.\mathrm{Energy}(4)$	12.99	4.23	<u>.</u> 67	44***	45***	36***								
5.Disengagement (4)	9.43	5.23	.84	.76***	.85***	***I7.	45***							
6.Engagement (4) BM	10.68	4.46	.76	44**	58***	33***	.64***	56***						
7.Exhaustion (6)	12.06	7.65	88.	.85***	.80***	.81***	45***	.82***	47***					
8.Demoralization (9)	18.89	11.92	.94	.85***	.86***	.78***	47***	.86***	53***	.89***				
9.Loss of motive (4) SMBM	12.05	5.06	.84	54***	57***	45***	.73***	57***	.73***	56***	59***			
10. Physical fatigue (6)	13.17	7.85	6.	.87***	.78***	.83***	44***	.81***	47***	.91***	89***	56***		
11.Cognitive weariness (5)	8.56	5.28	.85	.71***	.73***	.58***	41***	***69'	42***	***07.	***	44**	***69.	
12 Emotional exhaustion (3)	4.56	3.16	.75	.61***	.71***	.50***	41***	***99.	45***	.63***	.66***	45***	.61***	.73***

Table 2.6. Descriptives, Cronbach's  $\alpha$ , and intercorrelations of the MBL, OLBI, BM, SMBM (N = 717)

<u>Note:</u> \*\*\* p < .001. <sup>a</sup>The item number of subscales

#### 2.3.6 Convergent validity

Convergent validity was tested progressively by using a series of CFA's. First, the one-factor model ( $M_{13}$ ) was tested in which all twelve subscales were allowed to load on a single, second-order factor that can be conceived as "burnout". Second,  $M_{14}$  was tested that included four second-order correlated latent variables that correspond with the best fitting models of each of the burnout instruments as identified in previous analysis. Third, in model  $M_{15}$  and model  $M_{16}$  all subscales were allowed to load on two correlated second-order factors that consist of exhaustion-withdrawal and positively-negatively phrased factors, respectively. The goodness-of-fit estimates of  $M_{13}$  -  $M_{16}$  are shown in the Table 2.7.

Table 2.7. Convergent validity models of four burnout measures (N = 717)

Model	$\chi^2$	df	р	GFI	RMSEA	RMSEA	TLI	NFI	CFI	IFI
						90% CI				
M <sub>13</sub> (1 factor)	1505.08	54	.000	.70	.19	.1820	.82	.85	.85	.85
M13- respecified 1	677.00	27	.000	.79	.18	.1720	.89	.92	.91	.92
M13- respecified 2	540.46	26	.000	.83	.17	.1518	.91	.93	.94	.94
M <sub>14</sub> (four	2822.15	49	.000,	.68	.28	.2729	.61	.71	.71	.71
instruments)										
M <sub>14-respecified</sub>	2009.69	22	.000	.75	.36	.3437	.60	.75	.75	.75
M <sub>15</sub>	1367.94	53	.000	.73	.19	.1820	.83	.86	.86	.86
(exhaustion -										
withdrawal)										
M <sub>15- respecified 1</sub>	574.87	26	.000	.82	.17	.1618	.91	.93	.93	.93
M <sub>15</sub> - respecified 2	429.92	25	.000	.87	.15	.1416	.93	.95	.95	.95
M <sub>16</sub> (pos -	822.192	53	.000	.80	.14	.1315	.90	.92	.92	.92
neg items)										

<u>Note</u>.  $\chi^2$  = chi-square; df = degrees of freedom. p = significance level. GFI = Goodness-of-Fit Index; TLI = Tucker-Lewis Index; NFI = Normed Fit Index; CFI = Comparative Fit Index; IFI = Incremental Fit Index; RMSEA = Root Mean Square Error of Approximation.

As can be seen from Table 2.7,  $M_{16}$  was the only acceptable fitting model among the four alternative models, suggesting that the measurement model can be divided in terms of positive or negative phrased items. Considering that positive items play a divergent role in burnout measures (see introduction), we dropped the positively phrased items from  $M_{13}$ ,  $M_{14}$ ,  $M_{15}$ . As a result, the fit of the three re-specified models ( $M_{13\text{-respecified 1}}$ ,  $M_{14\text{-respecified 1}}$ ) improved significantly compared to their original versions ( $\Delta \chi^2 (27) = 828.08$ ,  $\Delta \chi^2 (27) = 812.46$ ,  $\Delta \chi^2 (27) = 793.07$ , p < .001), respectively. A subsequent comparison

among the three re-specified models revealed that  $M_{15\text{-respecified 1}}$  was the best fitting model as compared to  $M_{13\text{-respecified 1}}$  and  $M_{14\text{-respecified}}(\Delta\chi^2(1) = 102.13, p < .001; \Delta\chi^2(4) = 1434.82, p < .001, respectively)$ . In addition, based on the Modification Indices,  $M_{13\text{-respecified 1}}$  and  $M_{15\text{-respecified 1}}$  could be further improved by allowing the errors of the subscales SMBM-CW and SMBM-EX to correlate. Re-estimation of  $M_{13\text{-especified 2}}$  and  $M_{15\text{-respecified 2}}$  resulted in a significant improvement of the model fit ( $\Delta\chi^2(1) = 136.54$  and 144.95, p < .001). All parameter estimates of  $M_{15\text{-respecified 2}}$  are significant, so that these findings provide evidence for the underlying two-factor structure (exhaustion-withdrawal) of burnout.



Figure 2.1. The final two-factor model M<sub>15-respecified 2</sub>

<u>Note</u>: MBI-EX = Exhaustion of MBI, MBI-CY=Cynicism of MBI, OLBI-NE-EX = Exhaustion of the negatively worded scales of OLBI, OLBI-NE-DE = Disengagement of the negatively worded scales of OLBI, SMBM-PF = Physical Fatigue of SMBM, SMBM-CW = Cognitive Weariness of SMBM, SMBM-EX = Emotional Exhaustion of SMBM, BM-EX= Emotional Exhaustion of BM, BM-DE=Demoralization of BM, all parameter estimates \*\*\*p<.001

#### 2.4 Discussion

The present study is the first to examine the factorial validity and the convergent validity of the four most widely employed measures of burnout (the MBI, BM, SMBM, OLBI) simultaneously. In addition, it introduces three alternative burnout measures to the MBI in China.

#### 2.4.1 The MBI

The hypothesized two-factor structure of the MBI (exhaustion-cynicism) was clearly confirmed in our sample of Chinese nurses. Both MBI-scales are highly correlated (r = .76; see Table 2.6), which agrees with the notion of burnout as a *syndrome* (Maslach, 1993) – that is, the association or co-occurrence of particular symptoms. By definition, the correlation between both latent factors is even higher: r = .67. Which means that, when measurement unreliability is taken into account, both subscales share about 88% of their variance.

#### 2.4.2 The SMBM

Various researchers (Demerouti *et al.*, 2003; Pines *et al.*, 1981; Shirom, 1989; Shinn, 1982) have suggested that the exhaustion component of burnout should not only include emotional exhaustion – as in the MBI – but other aspects of exhaustion as well, such as cognitive and physical exhaustion. This is done in the SMBM that assesses exhaustion or "burnout" more broadly by including emotional, physical and cognitive exhaustion. As hypothesized by the test author (Shirom, 1989), our results show that these three aspects of exhaustion can be distinguished, albeit that the fit of the 3-factor model improves when the errors of two items are allowed to correlate ('*I feel physically drained*'—'*I feel tired*'). Obviously, this common variance is caused by overlapping item content – both refer to drained physical energy. Moreover, it appeared that the fit of the two-factor overall burnout model with exhaustion and withdrawal (M<sub>15</sub>) improved when the errors of emotional and cognitive exhaustion, as measured by the SMBM, were allowed to be correlated (M<sub>15-respecified</sub> <sub>2</sub>). This illustrates that both aspects of exhaustion share some common variance above and beyond the variance that is explained by the common latent exhaustion factor. So obviously

cognitive and emotional exhaustion are difficult to distinguish.

The test-authors assume that exhaustion, as assessed by the SMBM does not overlap with cynicism or detachment because this is not deemed to be typical for burnout (Shirom & Melamed, 2006). This is true in the sense that, indeed, a two-factor solution with exhaustion and withdrawal (see Figure 2.1) fitted better to the data than a one-factor model. But on the other hand, both factors are so highly correlated (r = .94, see Figure 2.1) that it is difficult to deny that *together* they constitute the burnout syndrome.

Moreover, it is interesting to note that the emotional exhaustion scale of the SMBM includes items such as 'I feel I am not capable of being sympathetic to co-workers and customers' that may reflect cynicism or disengagement. Tellingly, in a recent article, the test authors rephrased the emotional exhaustion subscale into the emotional exhaustion or interpersonal exhaustion subscale (cf. Armon, Shirom, Shapira, & Melamed, 2008). By doing so they implicitly seem to admit the similarity between exhaustion and cynicism.

#### 2.4.3 The BM

The factorial validity of the BM as suggested by Pines *et al.* (1981) is somewhat equivocal. Although the three-factor model ( $M_4$ , with the hypothesized factors 'emotional exhaustion', 'physical exhaustion', and 'mental exhaustion') fitted significantly better to the data than the one-factor model ( $M_3$ ), which complies with the results of Gold *et al.* (1989), Byrne (1991) and Schaufeli *et al.* (1993), the fit of both models ( $M_3$  and  $M_4$ ) is rather poor. It is noteworthy that the fit of  $M_3$  and  $M_4$  improved markedly when the positively framed items were deleted. So, obviously, they measure something different. The three-factor structure ('demoralization', 'exhaustion', and 'loss of motive',  $M_6$ ) that has previously been found in Germany (Enzmann & Kleiber, 1989), the Netherlands (Enzmann *et al.*, 1998; Schaufeli & Van Dierendonck, 1993) and China (Mei & Li, 2006) was clearly replicated in our sample of Chinese nurses. Contrary to  $M_3$  and  $M_4$ , in  $M_6$  the four positive items constitute one factor (dubbed – after reversion – 'loss of motive') and consequently the fit of  $M_6$  is superior to both other models. So it seems that the positively worded items play a divergent role in the BM, which seems the root-cause of the imperfect operationalization of the one-factor model and original three-factor model as suggested by Pines *et al.* (1981).

# 2.4.4 The OLBI

The OLBI was deliberately based on positively and negatively worded items to measure exhaustion and disengagement. The positively worded items are reversed in order to achieve an indicator of exhaustion or disengagement. However, including positively and negatively phrased items may lead to interpretational problems, because positive and negative affective states have been shown to have different antecedents (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). Moreover, research on the structure of affect (Lloret & González-Romá, 2003) demonstrated that a high score on positive affect is not equivalent with a low score on negative affect, and vice versa. In a similar vein, our study showed that the four positively worded BM items do not load on the same factor as the negatively worded items.

Demerouti *et al.* (2003) suggested that individuals do not only respond to the content of the items but are also sensitive to how the content is presented (the positive or the negative framing of the items). Usually in studies with the OLBI (Demerouti & Bakker, 2008; Demerouti *et al.* 2003), positive items are alternated with negative items in order to force respondents to reflect carefully on the item content. Typically, these studies show that a two-factor model with exhaustion and disengagement (and mixed positive and negative items) fits better to the data than an alternative two-factor model with positively and negatively phrased (exhaustion or disengagement) items. In contrast, in our study the positive and negative items are presented separately and we found that a four-factor model (with Exhaustion, Energy, Disengagement, Engagement,  $M_{12}$ ) fitted better to the data than the two-factors models with positively and negatively worded items ( $M_{11}$ ), and with Exhaustion and Disengagement ( $M_{10}$ ), respectively. This suggests that the underlying factor-structure of the OLBI may depend on the framing of the items).

#### 2.4.5 Convergent validity

Of the initially tested four convergent validity models, the two-factor model with positively and negatively worded items (M16) fitted best. The fit of the one-factor model (M13), the four instruments model (M14), and the exhaustion-withdrawal model (M15) was relatively poor. This is consistent with the notion that positively and negatively worded items

might have different functions (see above). It should be noted that using the Bivariate Evaluations and Ambivalence Measures (BEAMs) for measuring positive and negative feelings activated by different attitude stimuli, the study of Cacioppio *et al.* (1997) revealed the two phrased items—antonym pairs (e.g., good-bad, happy-unhappy) which arranged in two forms separately could load highly the same factor – that is, positively worded items demonstrated positive feelings and vice versa. Note especially that instead of loading on burnout, positive items (i.e., professional efficacy) also load on the opposite, positive concept of work engagement (Schaufeli, Martínez, Marqués-Pinto, Salanova & Bakker, 2002b). Reversed positive efficacy scores yield different results than when genuine negatively phrased items are used to measure the same construct (Bresó *et al.*, 2007; Schaufeli & Salanova, 2007). The negatively worded items represented burnout, whereas the positively worded items represented engagement, thus representing two independent yet negatively correlated states of mind (Schaufeli & Bakker, 2010).

Thus, we put our focus on only the negative phrased items while eliminating the positive phrased items. The results of CFAs showed that all re-specified models have an acceptable fit, except the four-instruments model (M<sub>14-respecified</sub>). Moreover, the exhaustion-withdrawal model (M<sub>15-respecified 1</sub>) fits significantly better to the data than the one-factor model (M13-respecified 1), thus confirming that burnout consists of two highly correlated but different dimensions (exhaustion and withdrawal). This agrees with the theoretical notion that exhaustion (or the inability to work) and withdrawal (or the unwillingness to work) constitute two inseparable parts of the burnout experience (Schaufeli & Taris, 2005). Exhaustion refers to the energy aspect of burnout, whereas withdrawal refers to its motivational nature. Empirical research, particularly with the MBI, has consistently substantial correlations found between emotional exhaustion and cynicism (depersonalization), usually with r's >0.50 (Lee & Ashforth, 1996; Maslach *et al.*, 1996, Maslach, Leiter & Schaufeli, 2008).

In sum, our study is important in that it provides further insight in the construct of burnout and the role that those positive items play in burnout measures. The convergent validity results confirmed the assumption that both exhaustion and withdrawal are the core element of burnout – i.e. two related but conceptually distinct aspects. In addition, the separate factorial analysis of the four burnout instruments as well as the simultaneous convergent factorial analysis suggested that positive phrased items should be dropped since

they constitute a separate factor that is considered to be an artifact.

# 2.4.6 Study limitations

The current study has some limitations that should be mentioned. The sample under study is homogeneous (i.e., female) and occupation and nation-specific (i.e., Chinese nurses). Therefore, the findings should be interpreted with caution and further research it needed in order to generalize our findings to other professions and countries.

#### 2.4.7 Practical implications

Our convergent validity analysis showed that burnout is best represented by two underlying, strongly related factors: exhaustion and withdrawal. In addition, confirmative factor analytic analysis of the separate individual burnout questionnaires, as well as simultaneous convergent validity analysis of all questionnaires suggests that positively phrased items should be dropped since they consist a separate factor that is considered to be an artifact. This means that for assessing burnout either the MBI (with exhaustion and cynicism) or the OLBI (with negative exhaustion and negative disengagement) can be used. For assessing exhaustion, the SMBM (with physical fatigue, cognitive weariness and emotional exhaustion) or the BM (with exhaustion and demoralization) can be used.

# Chapter 3

# The Factorial Validity of the Maslach Burnout Inventory-Student Survey in China

Based on:

Hu, Q. & Schaufeli, W.B. (2009). The factorial validity of the Maslach Burnout Inventory-Student survey in China. *Psychological Reports*, 105, 394-408.

# 3.1 Introduction

The term "burnout" was first used to describe a syndrome of mental weariness, specifically observed among human service professionals because they were involved in emotionally demanding contacts with recipients such as clients and patients (Freudenberger, 1974; Maslach, 1982). A brief self-report questionnaire -- the Maslach Burnout Inventory (MBI) -- was developed to assess burnout amongst those who do 'people work of some kind' (Maslach & Jackson, 1986; p. 1). The MBI includes three dimensions that constitute burnout: emotional exhaustion, which refers to feelings of being depleted of one's emotional resources, representing the basic individual stress component of the syndrome; depersonalization, which refers to negative, cynical or excessively detached responses to other people at work, representing the interpersonal component of burnout; and reduced personal accomplishment, which refers to feelings of decline in one's competence and productivity, and to one's lowered sense of efficacy, thus representing the self-evaluation component of burnout (Maslach, 1993).

Soon it became clear, however, that burnout was not restricted to the human services, but could also be found in a wide variety of occupations such as managers (Lee & Ashforth, 1993), the military (Leiter, Clark, & Durup, 1994), and entrepreneurs (Gryskiewicz & Buttner, 1992). Hence, the concept of burnout was extended to other professions and occupational groups (Maslach *et al.*, 2001). The need for an instrument that measures burnout in contexts other than the service professions was met by the introduction of MBI-General Survey (MBI-GS; Schaufeli *et al.*, 1996a). The MBI-GS consists of the three dimensions that parallel those of the original MBI in the sense that they are more generic and do not refer to other people with whom one is working with. That is, the first dimension exhaustion, is measured by items that tap fatigue but do not make direct reference to other people as the source of one's tiredness. The items that measure cynicism reflect indifference or a distant attitude towards work in general, not necessarily with other people. Finally, professional efficacy has a broader focus compared to the corresponding original MBI scale, encompassing both social and non social aspects of occupational accomplishment.

It is likely that burnout also occurs among students, although formally speaking, students are neither employed nor do they hold jobs. However, from a psychological perspective their core activities can be considered 'work'. Namely, they are engaged in

structured, obligatory activities, e.g. attending classes and completing assignments, that are directed towards a specific goal, e.g., passing exams (Schaufeli & Taris, 2005). Education is a very serious thing in China where highly competitive exams regulate admission to high schools and universities and thus determine student's career prospects. In China, teaching quality is assessed by student's exams scores, which means that student's grades of are directly linked to teacher's salary (and reputation). Consequently teachers put students under severe pressure to perform. A survey among 15,000 Chinese high school students revealed that one-fifth had suicide ideation and more than two thirds of the students felt stressed by the high study demands put on them (Institute of Child and Adolescent Health of Peking University, 2007). Hence, although originally being considered a work-related phenomenon, burnout may also exist in (Chinese) students, in which it manifests as feeling exhausted because of study demands, having a cynical and detached attitude towards one's study, and feeling incompetent as a student.

Indeed, during the past decades, various studies on student burnout have been carried out (e.g. Balogun, Helgemoe, Pellegrini, & Hoeberlein, 1996; Chang, Rand & Strunk, 2000; Fimian, Fastenau, Tashner & Cross, 1989; Gold, Bachelor, & Michael, 1989; Meier & Schmeck, 1985; Pines *et al.*, 1981; Yang, 2004; Yang & Cheng, 2005). These studies assessed 'academic burnout' in students, using slightly modified versions of the MBI or the MBI-GS, in which, for instance, 'instructors' was substituted for 'recipients' of one's care or instructions (e.g., Balogun *et al.*, 1996; Gold & Michael, 1985). For instance: "I can easily understand how my instructor (instead of recipients) feels about things". However, a substitution like this is problematic because it might change the meaning of the particular item. Therefore, Schaufeli, *et al.* (2002b) proposed to use the MBI-Student Survey (MBI-SS) to assess burnout in students. Instead of merely substituting 'instructors' for 'recipients', the items of the MBI-(GS) were reformulated in order to fit better to the academic context. More particularly, the exhaustion items of the MBI-SS refer to severe fatigue that is be caused by study demands, the cynicism items refer to the student's mental distance from his studies, and the efficacy items refer to Academic Efficacy.

While the MBI-SS has been shown to have adequate reliability and factorial validity in Dutch, Spanish, and Portuguese students (Schaufeli *et al.*, 2002b), its factorial validity has not yet been established in different types of Chinese students. Previous studies with the original version of the MBI suggested cultural differences between western and eastern

countries, with, for instance, respondents from Japan and Taiwan showing higher burnout than those from North America (Golembiewski *et al.*, 1996). Moreover, the Chinese emphasis on outstanding academic achievement, which is highly valued in the Confucian tradition, calls for investigating the generalizability of the three burnout dimensions as operationalized by the MBI-SS in China.

The present study examined the factorial validity of the MBI-SS in Chinese students. More specifically, it investigated whether the hypothesized three-factor structure of the MBI-SS is invariant across students who were enrolled in different types of academic settings, i.e., high school, university and vocational school (i.e., a nursing school). It was expected that the three-factor structure of the MBI-SS would be replicated and that the factor structure will be invariant across these three Chinese student samples. Factorial invariance is important because this means that factor-loadings and correlations between factors can be similarly interpreted across different samples. In other words, factorial invariance confirms the robustness of the factor structure.

#### 3.2 Method

#### 3.2.1 Participants

A random two-stage cluster sampling technique was used. In the first stage, three equal-sized student groups (n = 121) were randomly selected from: the Guli high school of the Zhejiang province; Grade 2 from Zhejiang Normal University; and the nursing school in Yongkang city of the Zhengjiang province. Table 3.1 presents the sex distribution, age, distribution across years in school, and response rates of the three sub samples and the composite sample (n = 363). This composite sample is denoted as the validation sample.

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Table 3.1.

	Gender	(%)	Age		Study ye:	ars (%)					Response
	Male	Female	Mean	$^{\rm SD}$	$1^{st}$	$2^{\mathrm{nd}}$	3 <sup>rd</sup>	$4^{\rm th}$	5 <sup>th</sup>	$6^{\mathrm{th}}$	- rate (%)
Validation sample $(N = 363)$											
Composite sample (N = 363)	33	67	18.85	1.02	ł	ł	1	;	1	ł	95
High School (N = 121)	56	44	17.02	1.65	3.25	2.73	4.21	4.98	5.32	3.66	100
University $(N = 121)$	41	59	20.79	.81	0.00	100	0.00	0.00	1	1	88
Nursing School (N = 121)	1	66	18.75	1.34	27.27	37.19	35.54	:	:	:	98
Cross-validation sample (N = 1,13	(9)										
High School (N = 380)	59	41	17.16	1.83 .8	15.79	16.05	17.11	16.00	13.90	16.50	94
University $(N = 370)$	49	51	20.68	3	0.00	100	00.0	0.00	00.0	0.00	70
Nursing School (N = 386)	5	98	18.63	1.37	23.06	43.00	33.93	0.00	1	1	88

After one week, in the second stage, another three student groups were randomly selected: 380 students of the Mingzhu high schools in the Zhejiang province; 370 university

students in grade two of the Zhejiang Normal University; and 386 nursing students of the nursing school in Yongkang city of the Zhengjiang province. Table 3.1 also presents the sex distribution, age, distribution across years in school, and response rate of the three subsamples and the composite sample (n = 1,136). This sample is denoted as the cross-validation sample. Thus, the total sample included 533 males (36 percent) and 966 females (64 percent) and their mean age was 19 years (SD=1.27).

#### 3.2.2 Procedures

The survey was accompanied by a letter explaining the nature and the general aim of the study and emphasizing the anonymity of the participants. The questionnaire was filled out during class, under the supervision of a research assistant. Completion time was approximately 20 minutes, and boxes in designated areas in the classroom allowed for the return of the surveys. A total of 1,499 surveys were returned, which corresponds with an overall response rate of 86.2%.

#### 3.2.3 Measures

The Maslach Burnout Inventor –Student Survey (MBI-SS; Schaufeli *et al.*, 2002b). This questionnaire includes three subscales: *Exhaustion* (EX) was measured with 5 items (e.g., "I feel emotionally drained by my studies."), *Cynicism* (CY) was measured with 4 items (e.g., "I have become more cynical about the potential usefulness of my studies."), and *Academic Efficacy* (AE) was measured with 6 items (e.g., "In my opinion, I am a good student."). All items were scored on a 7-point frequency rating scale ranging from 0: never to 6: always. High scores on EX, CY and *low* scores on AE are indicative of burnout (i.e. AE-items are reverse scored, which is denoted by rAE).

At first, the MBI-SS was translated from English into Chinese by three native Chinese speaking masters' degree students in psychology, working independently of each other. Next, semantic differences in translations were discussed and a final common translation was agreed upon. Finally, the questionnaire was checked by a native speaking English teacher who was fluent in Chinese as well.

#### 3.2.4 Data analysis

In order to evaluate the dimensional structure of the MBI-SS, a two-stage approach was adopted. First, using the composite validation sample of 363 students, preliminary single-group analyses were carried out to test the fit of the hypothesized three-factor model. Confirmatory factor analysis (CFA) with maximum likelihood estimation was carried out, using the AMOS 5.0 computer program (Arbuckle, 1997). In the first step, the relative fit of the one-factor model and the hypothesized three-factor correlated model was assessed, and the null model, in which all constructs was assumed to be uncorrelated and measured without error, served as a basis for model comparison. The one-factor model assumes that all items of the three subscales load on one general student burnout factor, whereas the three-factor model assumes three correlated subscales of the MBI-SS, i.e., Emotional Exhaustion, Cynicism and Academic Efficacy. In the second step, the fit of the model was improved, using the so-called Modification Indices to relax originally fixed model parameters. Finally, in the third step, to examine its robustness, the revised model was cross-validated separately in each of the three fresh groups of the cross-validation sample, i.e., high school students, university students, and nursing students.

When the MBI-SS is applied to different groups, issues of measurement equivalence become important. Namely, when a model fits the data of a particular sample, that does not automatically mean that it also fits the data of other samples. Therefore, a multi-group analysis was carried out to test the invariance of the correlations between factors, factor loadings, and correlated errors across the three independent samples. An iterative process was used as recommended by Byrne (2001) to assess the invariance of each estimate separately.

Each model was estimated using maximum likelihood. Since the  $\chi^2$  test statistic depends on sample size, which leads to the rejection of any model in a large enough sample (Browne & Cudeck, 1993a), a number of alternative goodness-of-fit indices was employed to help select the most appropriate model (Bentler, 1990; Jöreskog & Sörbom, 1993; Steiger, 1990). In addition to the  $\chi^2$  statistic, four other fit-indices are reported: the Goodness-of-Fit Index (GFI), the Nonnormed Fit Index (NNFI), the Comparative Fit Index (CFI), and the Root Mean Squared Error of Approximation (RMSEA). For comparing the relative fit of two nested models, the chi-squared difference test ( $\Delta \chi^2$ ) is used. For GFI, NNFI, CFI, a value of about .90 is recommended as an acceptable cutoff (Bentler, 1990; McDonald & March, 1990), and, as a rule of thumb, values smaller than .08 for RMSEA are considered indicative of an acceptable fit (Browne & Cudeck, 1993b).

#### 3.3 Results

#### 3.3.1 Factorial validity

*Step 1: CFA-single group analysis (validation sample).* -- Fit statistics for the three substantive models in the composite validation sample (N = 363), as well as for the null model, are presented in Table 3.2. The three-factor model fitted the data significantly better than one-factor model, suggesting that student burnout can be understood in terms of three empirically related dimensions: Axhaustion, Cynicism, and (reduced) Academic Efficacy. However, the fit of the three-factor model is not very good and can further be improved.

Table 3.2. Model tests, composite validation sample (N = 363)

Model	$\chi^2$	df	GFI	NNFI	CFI	RMSEA
Null Model	2059.85	105	.39	.00	.00	.23
One-factor model	554.42	90	.81	.72	.76	.12
Three-factor model	379.19	87	.87	.82	.85	.10
Three-factor model (revised)	265.20	83	.91	.88	.91	.08

<u>Note</u>. GFI=Goodness-of-Fit Index; NNFI=The Nonnormed Fit Index; CFI=Comparative Fit Index; RMSEA=Root Mean Square Error of Approximation. \*\*\*p<.001

*Step 2: Modification of Step 1 results (validation sample).--* Inspection of the Modification Indices indicated that allowing four unique variances of item scores within particular subscales to correlate (e1-e4, e10-e13, e11-e14, e6-e15) would improve the fit of the three-factor model. As can be seen from the Table 3.2, the revised model meets the criteria for good model fit in the composite sample.

Step 3: Cross-validation. -- Next, in order to cross-validate the revised model, it was separately tested in each independent student group. As shown in the Table 3.3, the revised three-factor model (including the four correlated errors) fits well to the data of all three

samples with values of the fit-indices mostly meeting their respective criteria. The parameter estimates of the revised model in the three independent samples are displayed in Figure 3.1. Although all parameter estimates are significant, Figure 3.1 shows relatively low standardized factor parameter estimates of two exhaustion items (Item 4: "*I feel used up at the end of a day at school*" and Item 13: "*Studying or attending a class is really a strain for me*").

Table 3.3. Test of the revised three-factor model in the three independent cross-validation samples

Model	$\chi^2$	df	GFI	NNFI	CFI	RMSEA
High school students ( $N = 380$ )	210.16	83	.93	.92	.93	.06
University students ( $N = 370$ )	239.73	83	.92	.87	.90	.07
Nursing students ( $N = 386$ )	195.09	83	.94	.87	.89	.06

<u>Note.</u> GFI=Goodness-of-Fit Index; NNFI= The Nonnormed Fit Index; CFI=Comparative Fit Index; RMSEA=Root Mean Square Error of Approximation.



Figure 3.1. Parameter estimates in the high school, university and nursing school samples, respectively.

Note. EX = exhaustion; CY = cynicism; rAE=reduced academic efficacy. All p<.001

# 3.3.2 Descriptive analysis

Table 3.4 shows sex differences and values of Cronbach coefficient alpha of the MBI-SS-scores in the three independent samples. Independent samples t-test revealed that male high school students score significantly lower on emotional exhaustion than female students (t  $_{378} = -2.63$ , p < .01).

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	EX	CY	rAE	EX	CY	rAE	EX	CY	rAE
M/SD (male)	10.60/4.60	6.89/4.47	15.00/5.98	10.23/4.64	9.92/4.25	14.84/4.93	11.00/2,88	8.12/3.91	17.75/6.67
(muc) M/SD (femolo)	11.92/5.08	7.79/4.63	14.88/6.43	10.74/4.58	9.99/3.81	14.51/5.29	11.41/4.52	7.45/4.20	15.82/5.77
(remare) t	-2.63**	-1.91	.19	-1.05	18	.62	25	.45	.93
Sig.	.01	.06	.85	30	.86	.53	.80	.65	.35
EX	.67			69.			.60		
CY	.68**	.80		.62**	.77		.50**	.68	
rAE	.39**	.56**	.77	.28**	.56**	.68	.25**	.52 **	.65

Note. M= Mean; SD= Standard deviation; the t-value indicates sex differences; EX= Exhaustion; CY= Cynicism; rAE=reduced Academic Efficacy; \*\*p< .01. 51

A MANOVA including all three MBI-SS scale scores simultaneously indicated that burnout scores did not differ significantly across the three student groups ( $F_{2,1133}$ =1.51, ns). Furthermore, all corrections between the three scales were substantial. Correlations between Exhaustion and Cynicism ranged from .50 to .68, and *t* corrections between Cynicism and reduced Academic Efficacy ranged from .52 to .56. Corrections between Emotion Exhaustion and reduced Academic Efficacy were somewhat lower and ranged from .25 to .39. The highest correlations were observed with Cynicism, which underscores the predominant role of this burnout dimension.

Values of Cronbach coefficient alpha were not very high, but were acceptable with all values exceeding .60. They range between .60 and .69 for Emotional Exhaustion, between .68 and .80 for Cynicism, and between .65 and .77 for Reduced Academic Efficacy.

# 3.3.3 Invariance of the factor structure

Based on the best-fitting model from the previous analysis, six multi-group models (see Table 3.5) were tested using Multiple-Group analysis that include the three independent cross-validation samples. Those models assume: *all* estimates to be free  $(M_1)$ ; *all* factor loadings, correlations between factors, and correlations between errors to be invariant across the three samples  $(M_2)$ ; only the *factor loadings* to be invariant  $(M_3)$ ; only the *correlations between the errors* to be invariant  $(M_5)$ ; the *factor loadings* and *correlations between the error* to be invariant  $(M_6)$ . A series of comparisons was conducted between the five constrained models  $(M_{2-6})$  on the one hand, and the unconstrained model  $(M_1)$  at the other hand.

Model	$\chi^2$	df	GFI	NNFI	CFI	RMSEA	$\Delta \chi^2$
M <sub>1</sub>	644.98	249	.93	.89	.91	.04	
$M_2$	745.40	287	.92	.89	.90	.04	M <sub>2</sub> -M <sub>1</sub> =100.42***
$M_3$	692.18	273	.92	.89	.91	.04	M <sub>3</sub> -M <sub>1</sub> =47.20**
$M_4$	671.11	255	.93	.89	.91	.04	M <sub>4</sub> -M <sub>1</sub> =26.13***
$M_5$	667.94	257	.93	.89	.91	.04	M <sub>5</sub> -M <sub>1</sub> =22.96**
$M_6$	710.99	281	.92	.89	.91	.04	$M_6-M_1=66.10***$

Table 3.5. Multi-group confirmatory factor analysis for the high school students (N = 380), university students (N = 370) and nursing students (N = 386)

<u>Note.</u> GFI = Goodness-of-Fit Index; NNFI = The Nonnormed Fit Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; For  $M_{1-6}$ : see text. \*\*p<.01, \*\*\*p<.001.

As can be seen from Table 3.5, compared to the fit of the unconstrained model ( $M_1$ ), the fit of *all* constrained models deteriorated significantly, meaning that some kind of invariance exists. The next step was to test the invariance of each factor loading, each factor correlation, and each error correlation separately and independently, using an iterative process as mentioned previously. (see also Schaufeli *et al.*, 2002b). The invariance of each estimate was assessed subsequently by comparing the fit of the model in which that particular estimate was constrained to be equal with the estimate that was *not* constrained. In case the fit deteriorated, the invariance of the next estimate was tested. However, in case the fit did *not* deteriorate – and the estimate. Then the next estimate was tested, and so on. The results of this iterative process showed that: *all* factor loadings were invariant, except Item 1; the factor correlations of both Emotional Exhaustion with Cynicism and Emotional Exhaustion with reversed-scored Academic Efficacy were invariant; and the error correlations of *e1-e4*, *e10-e13* and *e6-e15* were invariant.

## 3.4 Discussion

The present study was designed in an attempt to gain more insight into the factor structure of MBI-Student Survey (MBI-SS) in China. Using independent validation and cross-validation samples, the factorial validity of the hypothesized, three-factor correlated model with Emotional Exhaustion, Cynicism, and reduced Academic Efficacy was shown convincingly. This result agrees with a previous study among Chinese university students (Zhang, Gan & Zhang, 2005). Moreover, it appeared that all factor loadings, except one, as well as two of the three correlations between factors, and three of the four correlated error terms between items were invariant across the three student groups. However, compared to studies from other countries, the internal consistencies of the Chinese MBI-SS scales were somewhat low. Nevertheless, it is concluded that the MBI-SS can be used to assess burnout among Chinese students, albeit that it is recommended to reformulate some items (notably Item 4 and 13; see below). Also a few items could be added to each scale in order to increase the internal consistency.

#### 3.4.1 Factorial validity of the MBI-Student Survey

Using single sample analysis, the current study supported the robustness of the three-factor structure of the MBI-SS in three student samples with different educational backgrounds. In the composite sample, the fit of the three-factor model of the MBI-SS is superior to that of the one-factor model, albeit that the fit of the former model may be further increased by allowing four errors within subscales to correlate. Allowing errors to correlate increases the danger of chance capitalization (MacCallum, Roznowski, & Necowitz, 1992). Therefore, the final model that included the correlated errors was cross-validated in three independent samples. Basically, this revised three-factor model was replicated in these three distinctive, yet related (.25 < r < .68), dimensions (Emotional Exhaustion, Cynicism, and reduced Academic Efficacy).

The fact that two Emotional Exhaustion items (4 and 13) have relative low factor loadings, as displayed in Figure 3.1, might indicate semantic ambivalence. Probably, item 4 (*"I feel used up at the end of a day at school"*) is ambiguous in the Chinese context. Namely, high school students and nursing school students in the study have to sit in their narrow seats from 6:40 a.m. to 8.30 p.m., only interrupted by a few hours for relaxation and meals. Some students may feel used up at the end of a day at school because they put their entire energy in learning, whereas others are just bored and can hardly wait to leave school. Item 4 might

have two meanings, one is that studying at school all day is exhausting, and the other is that the end of a day one is released from the strain of obligatory school activities. Probably, item 13 (*"Studying or attending a class is really a strain for me"*) is ambiguous too because studying and attending classes are two different things that only partially overlap. For example, we interviewed students who feel strained when engaged in study activities, but who do not feel strained when they communicate with their classmates and teachers about non-study related issues. Given the ambiguity of items 4 and 13, we recommend to reformulate item 4 into *"Studying the whole day makes me feel used up"* and 13 into *"Studying is really a strain for me"*.

#### 3.4.2 Internal consistency

Compared to the study of Schaufeli *et al.*, (2002b), values of Cronbach coefficient alpha for the MBI-SS scales in the three independent samples are relatively low and some alpha values do not meet the cutoff criterion of .70. However, the Cronbach coefficient alphas obtained of each scale are above .60, which previously served as a rule of thumb (Nunnally & Berstein, 1994). We nevertheless recommend to formulate some additional items to increase the internal consistence of the MBI-SS scale, for instance: "*I feel that I am studying too hard*" and "*I feel that I am at the end of the rope*" (Emotional Exhaustion); "*My study is a waste of time*" "*I feel disappointed about my study*" (Cynicism); "*I can achieve good grades*" and "*It is easy to understand what is being taught in class*" (Academic Efficacy). Future research should reassess this slightly modified Chinese MBI-SS version.

#### 3.4.3 Sex differences

Female high school students had higher scores of Emotional Exhaustion than male students. This might be explained by the fact that in traditional Chinese culture females are expected to suppress their emotions, whereas for males it is allowed to discharge negative emotions, particularly when under heavy (study) pressure. This is confirmed by a recent survey that revealed that 23.4% of the Chinese female high school students have suicide ideas because of study stress against 17.0% for male students (ICAH, 2007).

# 3.4.5 Invariance of the factor structure of the MBI-SS

The multi-group analysis showed that the dimensionality of the MBI-SS is not entirely invariant across the three groups. All factor loadings were invariance except item 1, "*I feel emotionally drained by my studies*". The same finding was observed in the case of Spanish-Dutch and Portuguese-Dutch comparisons (Schaufeli *et al.*, 2002b). The error correlations e1-e4, e10-e13 and e6-e15 were also equal across three independent samples. This means that these error correlations are not sample specific. In fact, some error correlations were also observed in other samples as well: e1-e4 among South African police officers (Storm & Rothmann, 2003); e11-e14 among three student samples (Schaufeli *et al.*, 2002b) and in a Swedish employee sample (Schutte, Toppinen, Kalimo, & Schaufeli., 2000). Correlated errors reflect common variance between items caused by overlapping item content; for instance, item1 and item 4 both refer to distress and tiredness as caused by one's studies; and item 6 and item 15 both refer to self-confidence. Thus, it seems that instead of sample or country specific these correlated errors are typical for the MBI-SS.

#### 3.4.6 Practical implications

The present study shows acceptable psychometric characteristics of the Chinese version of the MBI-SS and supports the soundness of the factorial structure of the instrument. Hence, the MBI-SS can be used as a suitable instrument for measuring burnout among different types of students in China. However, it is recommended to reformulate two items and perhaps to add one or two items per subscale in order to increase their internal consistency.

# **Chapter 4**

"East is East and West is West and Never the Twain shall Meet": Work Engagement and Workaholism across Eastern and Western Cultures

Based on:

Hu, Q., Schaufeli, W.B., Taris, T.W., Hessen, D.J., Hakanen, J., Salanova, M., & Shimazu, A. (Submitted)."East is east and West is west and never the twain shall meet": Work engagement and workaholism across eastern and western cultures.

#### 4.1 Introduction

Working hard and its potential impact on employee health and organizational accomplishments have attracted a great deal of attention of researchers in occupational health psychology. As a positive type of working hard, work engagement, also called employee engagement, has become a well-established academic subject on which numerous publications have appeared since the turn of the century. For instance, a search in Google Scholar (November, 2013) yields 1,470 hits for papers with "employee engagement" in the title, and an additional 1,650 hits for "work engagement". Workaholism, a negative type of working hard, seems to be somewhat less popular among researchers with 140 hits for papers with "workaholics" in the title, and 428 for "workaholism". This is remarkable because the term "workaholism" was coined by Oates (1971) in the early 1970s, whereas the term "employee engagement" appeared about two decades later on the academic scene (Kahn, 1990).

Another observation is that the vast majority of the studies on work engagement and workaholism have been conducted in western countries; most notably, North America and Western Europe. However, with the expanding global economy, researchers are increasingly interested in work engagement and workaholism in other, non-western countries, such as Japan (Schaufeli, Shimazu, & Taris, 2009b; Schaufeli *et al.*, 2006a; Shimazu, Schaufeli, Miyanaka & Iwata, 2010b), and China (Hu, Schaufeli, & Taris, 2013; Van Beek, Hu, Schaufeli, Taris, & Schreurs, 2012; Fong & Ng, 2012; Zhang & Gan, 2005). Many of the studies that used non-western samples were psychometric in nature and focused, for instance, on the factorial validity of the engagement and workaholism questionnaires (Fong & Ng, 2012; Schaufeli *et al.*, 2006b; Schaufeli, *et al.*, 2009b; Zhang & Gan, 2005), or on their reliability (Shimazu, Miyanaka, & Schaufeli, 2010a) in different cultural contexts. Generally speaking the results of these studies have been quite encouraging. That is, the psychometric features of the questionnaires that tap "good" (i.e. engagement) and "bad" (i.e. workaholism) types of working hard are positive, also in eastern cultures such as Japan and China.

What is lacking, though, is a direct *comparison* of the two types of working hard in western and eastern countries. So far no study has been conducted that compares levels of work engagement and workaholism across these cultures. A direct comparison is interesting because western and eastern cultures differ in their appreciation for working hard and for

making long working hours and self-sacrifices (Chung, 1992). The current study investigates differences between work engagement and workaholism across three European samples (Finland, the Netherlands, and Spain, representing the north, the center, and the south of the continent, respectively) and two Asian samples (China and Japan, representing an emerging and an established economy, respectively). The objective is to investigate the extent to which employees from these five countries and two cultures differ with respect to their levels of work engagement and workaholism.

#### 4.1.1 Culture, values, and work

Hofstede (1980) identified four main dimensions by which national cultures differ, one of which is their collectivism-individualism orientation. Collectivistic cultures, such as China and Japan, emphasize group binding that involves mutual obligations of individual members (Oyserman, Coon, & Kemmelmeier, 2002). Moreover, in collectivistic cultures self-sacrifice and submission of one's interests to the group (e.g., family and organization) are positively valued, along with interdependence, cohesion, and harmony. Organizations in these cultures tend to be considered as an extended family by its employees. As a consequence, the relationship between employee and organization is not limited to the employment contract, but organizations generally expect their employees to go beyond their formal job descriptions (Parkes, Bochner, & Schneider, 2001; Ramamoorthy, Kulkarni, Gupta, & Flood, 2007). In contrast, individualistic cultures, such as in Western Europe, emphasize personal autonomy and self-fulfillment, and the identity of individuals in these cultures is based on one's personal accomplishments. In an individualist culture people see themselves as distinct individuals with unique characteristics. Accordingly, values such as independence, autonomy, and self-esteem are encouraged (Hofstede, 1991; Triandis, McCusker, & Hui, 1990). Labor relations in western countries emphasize quid pro quo relationships between the organization and its members. Organizations tend to expect employees to fulfill their contractual obligations and to perform their job as specified in the job descriptions (Parkes et al., 2001; Ramamoorthy et al., 2007).

Western European countries such as the Netherlands, Spain and Finland are typical individualistic countries, while the countries of Eastern Asia such as China and Japan are typical collectivistic societies (Gouveia & Ros, 2000; Hofstede, 2001). Although it has been

observed that generally countries shift toward individualism when their national economy is growing (Hofstede, 1991), this cultural shift is rather slow and lags behind the economic changes. For example, a meta-analysis revealed that Americans and Australians are similarly high in individualism and low in collectivism compared to Japanese (Oyserman *et al.*, 2002), despite Japan's rapid and profound industrialization that would suggest this difference to be much smaller.

Work as such is valued differently in individualistic and collectivistic cultures. That is, in collectivistic societies, subordinating one's personal goals for the sake of group goals causes employees to have a stronger socially oriented achievement motivation. Hence, it can be assumed that in Eastern Asia working hard is driven by an extrinsic motivation for social approval, namely to fulfill the expectations of the work team and of the organization (Lim & Lay, 2003). In contrast, in individualistic societies in Western Europe, employees place greater emphasis on personal goals and personal achievement. In a similar vein, it can be assumed that employees in these societies work hard because they are driven by individually oriented, autonomous motivation to fulfill their needs for personal growth and development (Deci & Ryan, 2000; Ryan & Deci, 2006). The need to work hard in individualistic societies tends to be more self-centered than that in collectivist societies; whereas in eastern collectivistic societies, working hard is fuelled by group-centered motives (Snir & Harpaz, 2012).

Although there is consensus about the fact that work plays a pivotal role in the life of individuals in all cultures (Brief & Nord, 1990; England & Misumi, 1986), compared with the belief of "work is life" in Asian societies, western Europeans give higher priority to the quality of life, for instance, by valuing leisure (Haase *et al.*, 2004). The reason why quality of life is more valued than economic growth in Western Europe might be that the level of prosperity is rather high so that people do not have to bother about economic survival. This is in line with Snir and Harpaz (2009), who suggest that work investment is heavier (i.e., people are working harder) in societies where survival values are important, as compared to societies where self-expression values are important.

It has been argued that the Protestant work ethic, that emphasizes such values as independence and competition, has been the main driving force behind the economic successes of European countries (Weber, 1959). In a similar vein, it was argued that work ethics derived from Confucian values, such as diligence, industriousness, and thrift, have

been the main underlying reason for the economic successes of Asian countries (Tu, 1989). Although the Protestant work ethic and the Confusion work ethic emphasize the importance of working hard, they are based on a different set of values. The Protestant work ethic advocates individualism by stressing individual identity, self-reliance, and personal success, whereas the Confucian work ethic stresses collectivism by advocating filial piety, respect for hierarchy, and group harmony (Inglehart, 1997). Despite the fact that it seems that the traditional Protestant work ethic, that focuses on diligence, deferment of gratification, and the primacy of work, has weakened in western societies, the expressive nature of work is becoming increasing important (Yankelovich, 1981). That means that in western countries greater emphasis is placed on feelings of enjoyment at work and on interesting work that offers possibilities for personal growth and development (Hofstede, 1980; Weiner & Hutt, 1983).

Confucianism has been the major cultural force in East Asian societies, including China and Japan (Song, 2001). For example, Confucian concepts such as filial piety, obedience, and loyalty are expressed by employees in organizations as subordination, endurance, and devotion, respectively (Tian, 2004). Devoted, hard work and diligence are the core values of Confucianism, and self-sacrifice puts the benefit of the group above that of the individual (Tian, 2004). This manifests itself in working very long hours, even to the point of exhaustion, which is illustrated by the notion of "karoshi", or death from overwork, that emerged as a social issue in Japan (Hebrig & Palumbo, 1994; Horne, 1998). Because of the rapid economic development in China, which is similar to the Japanese economic growth in the decades following the Second World War, it can be expected that traditional Confucian work values may motivate Chinese workers to work excessively hard. In addition, competition on the labor market resulting from the fast growth of the urban population, financial hardship, poor official regulation of overtime work, weak trade unions, and an insufficient social security and pension system all contribute to excessive work behavior of Chinese employees (Westwood & Lok, 2003). In sum, although Japan and China differ in their level of economic development, with China rapidly catching up, both countries share essential social-cultural values and orientations towards work that are rooted in Confucianism. For instance, employees in both countries find it difficult to decline working unpaid overtime and self-sacrifice to their jobs (Chung, 1992).

To put it simply, based on their individualistic orientation western European, employees

look for self-enhancement in their jobs, whereas eastern Asian employees, having a collectivistic orientation, sacrifice themselves to meet organizational standards. When organizational goals fit with their values and beliefs and are therefore conducive to fulfill their basic psychological needs, external organizational standards may be internalized and manifests itself by an inner drive to work hard.

# 4.1.2 Two types of "working hard" – Workaholism and work engagement

Oates (1971) defined "workaholics" as individuals who devote more time and energy to their work than it actually demands. Of course, people may work hard for a variety of reasons such as, money, promotion prospects, to please their boss, or because they have a poor marriage. But in addition to working hard, workaholics are also characterized by working compulsively. That is, they find it difficult to disengage from work, and persistently and frequently think about work, also when they are not at work. In other words, they are obsessed with their work. Accordingly, workaholism includes two core characteristics: working an excessive amount of time and having a compulsive inner drive to work (Schaufeli *et al*, 2006b, 2008a).

Work engagement represents a positive affective-cognitive state of fulfillment that is characterized by vigor, dedication, and absorption (Salanova *et al.*, 2001; Schaufeli *et al.*, 2002a). Vigor is characterized by high levels of energy and mental resilience while working, the willingness to invest effort in one's work, and persistence even in the face of difficulties. Dedication refers to being strongly involved in one's work, and experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge. Finally, absorption is characterized by being fully concentrated and happily engrossed in one's work, whereby time passes quickly (Schaufeli & Salanova, 2011).

It is important to note that workaholism differs from work engagement. Confirmatory factor analysis showed that work engagement and workaholism can be distinguished as two separate constructs (Schaufeli *et al.*, 2008b; Taris, Schaufeli, & Shimazu, 2010). The crucial difference between workaholism and work engagement is that workaholism lacks the positive affective component of work engagement (Salanova, del Libano, Llorens, & Schaufeli, 2013). In contrast, work engagement does not include the compulsive drive of workaholism (Schaufeli *et al.*, 2008b).

In addition to a psychometric distinction, workaholism and work engagement are differentially related with indicators of excessive work, job demands, job resources, social relations, and health and organizational outcomes (Schaufeli et al., 2008b). Workaholism has been linked to a higher level of job demands such as workload, family-work interferences, psychological distress and physical health (Shimazu & negative outcomes such as Schaufeli, 2009), negative reactions of others and impaired social functioning (Schaufeli et al., 2008a), and poor life satisfaction (Shimazu & Schaufeli, 2009). In contrast, work engagement has been linked to higher levels of job resources such as job control (Hu, Schaufeli, & Taris, 2011), social support (Hakanen et al., 2006; Hu et al., 2011), innovative climate (Hakanen *et al.*, 2006) and procedural justice and decision latitude (Boyd *et al.*, 2011; Karatepe, 2011), and to positive outcomes such as organizational commitment (Boyd et al., 2011; Hu et al., 2011), job performance (Halbesleben & Wheeler, 2008; Salanova, Agut, & Peiró, 2005), team performance (Torrente, Salanova, Llorens & Schaufefeli, 2012; Salanova, Llorens, Cifre & Martínez, 2012), and to outcomes such as mental health (Hakanen & Schaufeli, 2012; Shimazu, Schaufeli, Kubota, & Kawakami, 2012a) and lower turnover intention (Hu et al., 2011; for meta-analysis see; Crawford et al., 2010; Halbesleben, 2010).

Perhaps even more importantly, workaholism and engagement differ in terms of the underlying psychological processes involved. For instance, work engagement is primarily characterized by intrinsic motivation, whereas workaholism is primarily characterized by compulsive, extrinsic motivation (Gorgievski, Bakker, & Schaufeli, 2010; Van Beek, Taris, & Schaufeli, 2011). Engaged employees work hard because they enjoy their job and they derive gratification from the work itself; their job is self-rewarding. In contrast, workaholics have internalized high external performance standards from their social environment and they work hard to comply with these standards, even though it is not necessary. Status, peer admiration, and supervisor approval might drive workaholics to work hard (Taris *et al.*, 2010). Clinical observations confirm that workaholics depend upon their work for their self-worth; if they do not fulfill their high standards, destructive self-criticism and negative feelings will result (Robinson, 2001).

Another study found that engaged workers decide to stop work when they don't enjoy working any longer or when they believe that they have done enough (van Wijhe, Peeters & Schaufeli, 2010). As a consequence they replenish their mental resources by detaching themselves from work and enjoying their respite (Kühnel, Sonnentag & Westman, 2009). In

contrast, workaholics feel guilty when they are not working, and they may go as far as to actively create additional work for themselves, for instance, by taking on extra work or by refusing to delegate work (van Wijhe *et al.*, 2010). As a consequence, workaholics have insufficient opportunities to recover from their excessive work behavior (Schaufeli *et al.*, 2009b), so that they run the risk of getting emotionally and cognitively exhausted (Taris, Schaufeli, & Verhoeven, 2005b).

In sum: workaholics are "pushed" to their work, whereas engaged employees are "pulled" to their work (Taris *et al.*, 2010). Moreover, workaholism and work engagement are two distinct concepts that can be measured with different questionnaires. And last but not least, it seems that different psychological processes play a role in work engagement and workaholism.

#### 4.1.3 The current study

The aim of the current study is to investigate the extent to which employees from Western Europe (i.e., Finland, The Netherlands, and Spain) and from Eastern Asia (i.e., China and Japan) differ with respect to levels of work engagement and workaholism. We expect to find systematic differences, notably between the western and the eastern countries. Not only because the cultural orientation of European countries is more individualistic and that of the Asian countries is more collectivistic, but also because the differences in work ethic are rooted in Protestant-Christian and Confucian values, respectively. In Europe work is associated with self-enhancement and personal development, whereas in Asia work is associated with enhancement of the group and with self-sacrifice. Based on this reasoning we expect that: (1) compared to eastern countries (China and Japan), employees in western countries (Netherlands, Spain, and Finland) have higher levels of work engagement (Hypothesis 1); (2) compared to western countries (Netherlands, Spain, and Finland) have higher levels of work engagement (Hypothesis 2).

Studies that compare cross-cultural differences in mean levels of either work engagement or workaholism are virtually absent. A notable exception is the study of Shimazu, *et al.* (2010a) that showed that mean levels of work engagement are much lower in Japan than in the Netherlands. According to the authors, this is caused by the pervasive

tendency in Japan to suppress the expression of positive affect in order not to disrupt the social harmony; namely by expressing positive emotions (such as work engagement) the employee places himself in a superior position compared to the group (Iwata, Roberts, & Kawakami, 1995; Shimazu *et al.*, 2010a).

The current study uses the Utrecht Work Engagement Scale (UWES, Schaufeli et al, 2002a, 2006a) and the Dutch Work Addiction Scale (DUWAS, Schaufeli et al., 2009b) which are well validated instruments to measure work engagement and workaholism, respectively. The factorial validity and reliability of both measures has been confirmed in many countries. For example, for work engagement in China (Fong & Ng, 2012; Zhang & Gan, 2005); Japan (Shimazu, Schaufeli, & Kosugi et al., 2008); Spain (Salanova et al., 2000; Schaufeli et al., 2006a), Finland (Hakanen, 2002), and the Netherlands (Schaufeli & Bakker, 2004); and for workaholism in China (Van Beek et al., 2012); Spain (Del Libano, Llorens, Salanova, & Schaufeli, 2012), Finland (Hakanen, Rodriguez-Sánchez, & Perhoniemi, 2012), Japan (Taris et al., 2010) and the Netherlands (Schaufeli, Van Wijhe, Peeters & Taris, 2011). It seems from these studies that the different language versions of the UWES and the DUWAS are sound, at least as far as their factorial validity and reliability are concerned. Virtually no studies on the factorial validity of the UWES or DUWAS have been carried out across national cultures, except a within-country study of ethnic groups with different language and cultural heritages in South Africa (Storm & Rothmann, 2003). This study documented the equivalence of UWES across these groups so that it can be used as an unbiased instrument to measure work engagement in the multicultural South African context.

In order to study differences in levels of workaholism and work engagement across countries, the factorial invariance of the measurement instruments that are being used (UWES and DUWAS) should be demonstrated first, before testing both hypotheses.

#### 4.2 Method

# 4.2.1 Participants

Data were collected by occupational health researchers from five countries in the larger framework of work and well-being surveys during the period from 2009 until 2011. The Dutch sample consisted of teachers (N=445), white collar workers (N=1,995), blue collar
workers (N=407), health professionals (N=3,290), public administration (N=2,154), and others (N=1,871). The total number is 10,162(54.6% male and 45.4% female, mean age = 38.25, SD = 10.38). The Spain sample consisted of teachers (N=529), white collar workers (N=1,303), blue collar workers (N=204), health professionals (N=79), public administration (N=163), and others (N=1,203). The total number is 3,481 (48.4% male and 50.6% female, mean age = 37.24, SD = 10.46). ). The Finnish sample consisted of health professionals (N=2,773) and public administration (N=699). The total number is 3,472 (31.7% male and 68.3% female, mean age = 49.16, SD = 9.72). The Chinese sample consisted of teachers (N=389), white collar workers (N=69), health professionals (N=1,290), public administration (N=884), and others (N=345). The total number is 2,977 (34.1% male and 65.9% female, mean age = 32.87, SD = 9.00). The Japanese sample consisted of white collar workers (N=1,590), blue collar workers (N=543), health professionals (N=79), and others (N=308). The total number is 2,520 (49.9% male and 51.1% female, mean age = 44.43, SD = 12.87). For each country the data were pooled.

### 4.2.2 Measures

*Work Engagement* was assessed with the Utrecht Work Engagement Scale (UWES-9; Schaufeli *et al.*, 2006a). The UWES-9 taps three underlying dimensions, which are measured with three items each: vigor (e.g., "At my work, I feel bursting with energy", dedication (e.g., "My job inspires me"), and absorption (e.g., "I get carried away when I am working"). All items are scored on a 7-point rating scale ranging from 0 ("never") to 6 ("daily"). High scores on all three dimensions indicate high levels of work engagement.

*Workaholism* was measured with the 10-item DUWAS (Dutch WorkAholism Scale; Schaufeli *et al.*, 2009b) that includes two scales of 5 items each: Working Excessively and Working Compulsively. Example items are: "I seem to be in a hurry and racing against the clock" (working excessively) and "I feel that there's something inside me that drives me to work hard" (working compulsively). All items are scored on a 4-point rating scale, ranging from 1 ("never") to 4 ("always"). High scores on both dimensions indicate high levels of workaholics.

### 4.2.3 Statistical analysis

A multiple group second-order confirmatory factor model was fitted to the data using Mplus (Muthén & Muthén, 2012). The first-order factors represented Working excessively (WE), Working compulsively (WC), Vigor (VI), Dedication (DE), and Absorption (AB). The second-order factors represented Workaholism (WA) and Engagement (EN). In the model, the first-order factors WE and WC were regressed on the second-order factor WA, and the first-order factors VI, DE, and AB were regressed on the second-order factor EN. In addition, the second order-factors WA and EN were assumed to be correlated. Since rating scales were used for all items, the factor indicators of the first-order factors were treated as ordered categorical and weighted least squares adjusted for means and variances (WLSMV) was used to estimate all model parameters.

Data were analyzed in two steps: (1) estimation of differences in the latent means of WA and EN between eastern and western cultures; (2) estimation of differences in the latent means of WA and EN across all five countries. First, the invariance across eastern and western cultures (or five countries) of the measurement model including work engagement and workaholism was evaluated. Next, both hypotheses were tested; that is, levels of work engagement and workaholism were compared.

Strong measurement invariance was assumed for all indicators (Meredith, 1993) to estimate differences in the latent means of WA and EN. Thus, for each of the indicators, the factor loadings, factor covariances and the threshold parameters were assumed to be identical for eastern and western cultures (*or* for five countries). Furthermore, it was assumed that the parameters for the regressions of the first-order factors on the second-order factors, as well as the covariance between the second-order factors, were identical. In addition, to identify the model, the means and variances of all first- and second-order factors were set to zero and one, respectively, for the western culture (or for the Netherlands). The group of western countries (*or* the Netherlands) therefore served as a reference group, mean estimates for latent variables in non-reference groups are given in comparison to the zero latent variable means for the reference group.

### 4.3 Results

Table 4.1 displays the means, standard deviations, inter-correlations, and internal consistencies (Cronbach's  $\alpha$ ) of the three dimensions of work engagement and the two dimensions of workaholism. All values of Cronbach's  $\alpha$  meet the criterion for sufficient internal consistency (i.e., .70; Nunnally & Bernstein, 1994).

### 4.3.1 Analysis for eastern and western cultures

*Measurement invariance.* The absolute model fit of the measurement invariance model yielded a chi-square value of 23,871.61 with 373 degrees of freedom (p < .001). Based on this result the model should be rejected. However, with these large sample sizes, the significance may be due to small deviations from the hypothesized model. Therefore, in this case, the root mean square error of approximation (RMSEA) is a better index for the goodness of fit. For the present model the value of the RMSEA is .075 (the 90 percent C.I. is .074 - .075). Since the value of the RMSEA is less than .08, the fit of the model can be considered reasonable to good. In addition, the value of the CFI is .96 and the value of the TLI is .96. The unstandardized estimates, the corresponding standard errors ( $\sigma$ M), and the standardized estimates of all parameters that are assumed to be constant across eastern countries and western countries, are given in Figure 4.1. In conclusion: the measurement model (Figure 4.1) is invariant across both cultures. Hence, we can proceed with the next step: testing both hypotheses about differences in mean values of work engagement and workaholism across western and eastern cultures.

		MC	191	<u>19</u>					.74
		WE	2.02	72				80	.64 <b>*</b>
		AB	2.66	1.38			ଞ	<b>*</b> @	<b>.</b> 8
	20)	BE	3.08	1.28		81	.84 <b>"</b>	.15	.16 <b>*</b>
Japan	(N=2,5	IΛ	2.61	1.27	91	<b>.</b> 58	<b>*6</b> Ľ	<b>*</b> 90	.01
		MC	2.71	33					.75
		WE	2.75	53				84	51 <b>"</b>
		AB	2.59	1.42			83	07	.27
	<u>(</u> 2	出	2.75	135		98	<b>.</b> 08	.14	
Chirta	(N=2,9'	ΙÅ	2.82	131	62.	<b>.</b> 81	.78	<b>11</b>	
		MC	1.85	09					82
		WE	2.21	10				.78	.23
		AB	4.39	1.34			Ľ.	.17*	<b>*</b> 60
	6	DE	4.85	1.14		36	.63	02	•.14 <b>*</b>
Finland	(N=3,47	ΙΛ	4.64	1.16	84	<b>.</b> %	.55 <b>"</b>	14	-25"
		WC	2.01	02.					.76
		WE	2.48	.74				.78	.63
		AB	4.00	1.60			.85	.21	.18 <b>*</b>
	(15	BE	4.30	1.36		87	<b>*</b> 65	.12**	.12
Spain	(N=3,4	ΙA	4.07	1.36	<u>8</u>	.75"	<b>.</b> 8	.02	.01
		MC	2.07	.63					61.
		WE	2.53	65				.74	<b>*</b> 69
		AB	3.57	1.19			9Ľ.	.20 <b>*</b>	<b>*</b> 80
star	23)	出	4.16	1.18		<u>86</u>	.75*	.13 <b>*</b>	•.10
Netherla	(N=10,16	ΙΛ	3.85	1.11	ß	<b>"</b> #	.л <b>"</b>	.II.	<b>.</b> 60 <sup>-</sup>
			M	8	IΛ	ЪЕ	AB	WE	MC

Table 4.1. Means (M), standard deviations (SD), internal consistencies (Cronbach's a on the diagonal), and correlations between the study

variables of the five countries

Note: \*\*p<01; VI=vigor, DE=dedication, AB=absorption, WE=working excessively, WC=working compulsively



Figure 4.1. Measurement invariance model across eastern countries (N  $_{(EAST)} = 5,497$ ) and western countries (N  $_{(WEST)} = 17,115$ )

<u>Note:</u> the order of parameters is the unstandardized estimates, the corresponding standard errors (in brackets) and the standardized estimates. p\*\*\*<.001 for all paths; VI=vigor, DE=dedication, AB=absorption, WE=working excessively, WC=working compulsively

*Latent mean differences.* Results reveal that the latent mean of WA for eastern countries is higher than the latent mean of WA for western countries ( $\Delta_{\text{Mean}}$ =.07,  $\sigma$ M =.02, p<.01; Hypothesis 1 confirmed), and the latent mean of EN for western countries is higher than the latent mean of EN for eastern countries ( $\Delta_{\text{Mean}}$ =-1.13,  $\sigma$ M =.02, p<.001; Hypothesis 2 confirmed).

### 4.3.2 Analysis for separate countries

*Measurement invariance*. The measurement invariance model across five countries showed an acceptable fit for the value of the RMSEA is .087 (the 90 percent C.I. is .086 - .088), the value of the CFI is .94 and the value of the TLI is .95. The unstandardized estimates, the corresponding standard errors ( $\sigma$ M) and the standardized estimates of all parameters that are assumed to be constant across countries are given in Figure 4.2.



Figure 4.2. Measurement invariance model across five countries ( N  $_{(Netherlands)} = 10,162$ , N  $_{(Spain)} = 3,481$ , N $_{(Finland)} = 3,472$ , N $_{(China)} = 2,977$ , and N(Japan) =2,520). Note: the order of parameters is the unstandardized estimates, the corresponding standard errors (in brackets) and the standardized estimates. p\*\*\*<.001 for all paths; VI=vigor, DE=dedication, AB=absorption, WE=working excessively, WC=working compulsively.

In conclusion: the measurement model as depicted in Figure 4.2 is invariant across all

five countries. Hence, we can proceed with the next step: testing both hypotheses about differences in mean values of work engagement and workaholism across countries.

*Latent mean differences.* In Figure 4.3, the unstandardized estimates of the latent means are plotted in the xy-plane, where the x-axis represents EN and the y-axis represents WA.



Figure 4.3: The distribution of mean levels of work engagement (WE ) and workaholism (WA) of all five countries.

Note: Ne=The Netherlands, Sp=Spain, Fi=Finland, Ch=China, Ja-=Japan

As can be seen from Figure 4.3, compared to all European countries, levels of engagement for both Asian countries are low. However, the picture for workaholism is not so clear. Here the difference between both Asian countries is very large, with China scoring highest and Japan scoring lowest. So it seems that, in contrast to work engagement, for

workaholism no clear-cut difference between European and Asian countries exists.

Finally, it was tested whether the absolute differences in latent means of WA and EN between countries significantly deviated from zero. Both the unstandardized estimates and the standardized estimates of the absolute differences in the latent means of WA and EN between countries, and the test-results are given in Table 4.2.

	Netherlands	Spain	China	Japan	Finland
Netherlands		.36 (.000)	1.06 (.000)	1.01 (.000)	1.02 (.000)
		.28	.88	.90	.76
Spain	.10 (.001)		1.42 (.000)	1.37 (.000)	.66 (.000)
	.07		1.15	1.17	.48
China	.74 (.000)	.85 (.000)		.05 (.160)	2.08 (.000)
	.69	.75		.02	1.63
Japan	.89 (.000)	.79 (.000)	1.63 (.000)		2.03 (.000)
	.58	.52	1.27		1.65
Finland	.60 (.000)	.50 (.000)	1.34 (.000)	.29 (.000)	
	.48	.42	1.17	.10	

Table 4.2. Absolute latent mean differences and p-values of all five countries

<u>Note:</u> Lower diagonal: absolute latent mean differences and p-values for workaholism. Upper diagonal: absolute latent mean differences and p-values for engagement. The order of parameters is the unstandardized estimates, the corresponding standard errors (in brackets) and the standardized estimates.

Except for the difference in levels of work engagement for China and Japan, all other differences are significant. This means that Hypothesis 1, stating that compared to eastern countries (China and Japan), employees in western countries (Netherlands, Spain, and Finland) have higher levels of work engagement, is confirmed. In contrast, Hypothesis 2 stating that compared to western countries (Netherlands, Spain, and Finland), employees in eastern countries (China and Japan) have higher levels of workaholism is not supported by the data. This is remarkable because it seemed from the previous comparison between the pooled data from eastern and western countries that Hypotheses 2 was confirmed. However, a closer look revealed that levels of workaholism are the highest in China and the lowest in Japan, with the three European countries in between.

### 4.4 Discussion

Different geographical environments and social and historical developments have led to different deep-lying cultural differences among groups. Our study examines one such difference – individualism vs collectivism –as a possible antecedent of various forms of well-being. The present study is the first to compare the mean levels of two kinds of working hard – workaholism and work engagement – across five countries from two different cultures (i.e., individualist Western Europe and collectivist eastern Asia). It appeared that the measurement model that included three scales (vigor, dedication, and absorption) that load on a latent engagement factor, and two scales (working excessively and working compulsively) that load on a correlated latent workaholism factor was invariant across cultures as well as countries (The Netherlands, Spain, Finland, China, and Japan). This result, which is a prerequisite for comparing cross-cultural and cross-national differences in levels of workaholism and work engagement, supports the factorial validity of the measures of engagement (UWES) and workaholism (DUWAS).

Although "culture" in a generalized, abstract way has primarily been associated with the distinction between easten and western contexts, specific countries within these cultures also differ in their histories, religions, and political and economic traditions. These differences may map in meaningful and specific ways onto cognition, affect, and behaviors of individuals, and could affect well-being as well. The comparison of levels of engagement and workaholism took place across industrialized Japan and emerging China, both with a collectivist orientation, and three industrialized western European countries, all with an individualistic orientation - the Netherlands, Spain, and Finland. Our results provide clear support for our first hypothesis that levels of engagement are higher in western countries than in eastern countries. This result was observed when pooled data of the two eastern and three western countries were analyzed, as well as when the data of the five countries were analyzed separately. For workaholism the results are less clear cut. Although the second hypotheses that the levels of workaholism are higher in eastern countries than in western countries, was confirmed when pooled data were analyzed, this result was not corroborated for the separate countries. Instead, it appeared that Chinese employees have the highest levels of workaholism of all countries, and that – unexpectedly – the Japanese have the lowest levels of workaholism. The latter observation runs counter to the popular belief of hard working Japanese employees who run the risk of death by overwork ("karoshi"). This difference might be explained by social and economic variations within cultural contexts. For example, as an emerging economic world power, the Chinese seeks to improve his life and also the material well-being of a group around him—family, community, and nation. Working hard is treated as a duty to maximizing economic and political gain. Whereas in Japan – that has been a major economic power since the seventies – the need of security and economic stability has been fulfilled and are preconditioned. The negative sides of working hard have received more attention.

### 4.4.1 Western countries: The Netherlands, Spain and Finland

There is some variation between western countries with respect to work engagement and workaholism (see Figure 4.3). For instance, our study reveals that the Finnish sample shows higher levels of work engagement than the Dutch ( $\Delta_{mean}$ =1.02, p<.001) and the Spanish samples ( $\Delta_{mean}$ =.66, p<.001). In addition, Finnish employees show lower levels of workaholism than their Dutch ( $\Delta_{\text{mean}}$  = -.60, p<.001) and the Spanish ( $\Delta_{\text{mean}}$  = -.50, p<.001) colleagues. Taken together this means the Finns are motivated to work hard in a "good" way (work engagement) and not in a "bad" way (workaholism). A burning ambition for high-pay or prestigious positions seems uncommon in Finland due to the more relaxed social attitude towards working. This attitude also fosters the adaptation of the work situation to one's personal preferences (e.g. flexible work schedules), which might result in higher work engagement levels. A recent Finnish work-life survey (2007) indicated that employees are satisfied with leadership (65%) and interpersonal relationships among coworkers (86%), and that the level of satisfaction has risen over the past years (Kauppinen, Mattila-Holappa, Perkiö-Mäkelä, Saalo, Toikkanen, Tuomivaara et al., 2012). In addition, a European comparison showed that after Sweden Finnish employees reported highest levels of working at very high speed (Parent-Thirion, Vermeylen, van Houten, Lyly-Yrjänäinen, Biletta, & Cabrita, 2012). Quantitative workload such as time pressure is a so-called challenge stressor which is known to be positively associated with work engagement (Van den Broeck, De Cuyper, De Witte, & Vansteenkiste, 2010). Taken together, it can be speculated that compared to both other European countries in our study, the external economic and social pressure to work hard is less in Finland so that the risk of workaholism is relatively low. At the same time, Finns do challenging work and are quite satisfied with their leaders and colleagues, which are known to be drivers of engagement (Halbesleben, 2010).

The mean level of work engagement of Spain is higher than that of the Netherlands  $(\Delta_{\text{mean}}=.36, p<.001)$  while the mean level of workaholism is lower ( $\Delta_{\text{mean}}=.10, p<.01$ ). The fact that these relatively small differences are significant is most likely caused by the very large sample sizes and should therefore not be over-interpreted (Lin, Lucas, & Shmueli, 2013). Moreover, because these differences are smaller than those between Finland and both other European countries, and because we can only speculate about the nature of these relative small differences we will refrain from providing any highly speculative "explanations". In other words, because we studied large samples, we adopt a conservative approach when it comes to interpreting differences between countries.

## 4.4.2 Eastern countries -- China and Japan

In both eastern countries – China and Japan – work has a highly significant meaning as a vehicle through which individuals fulfill their social obligations. Work is instrumental, it is a way of facilitating upward social mobility, gaining economic security, and achieving social status and prestige. Success in one's career is considered a main source of happiness, prosperity, and pride, not only to the individual, but also to his or her family (Chiu & Kosinski, 1995). The fact is that, compared to Chinese employees, Japanese have lower mean scores on workaholism might illustrate the impact of economic development and cultural values. Before the 1970s, guaranteed lifetime employment, which is based on cultural values of loyalty and social harmony (Matanle & Matsui, 2011; Morishima, 1996) was an expectation rather than a rule in Japan. When management would demand it, Japanese employees would work long hours at the cost of their private, social lives. In doing so, they demonstrate loyalty and commitment to the company, which paid back in terms of promotion, prestige and trust. However, it also led to "karoshi" (Hebrig & Palumbo, 1994) which surfaced in Japan in the 1990s.

Since about three decades, the long-term economic doldrums and the decreased competitiveness in international markets have directly influenced the employment situation in Japan. To control fluctuating demands for labor and increase the flexibility of the workforce, there has been a shift from permanent jobs to contractors, leased employees, and temporary workers. In addition, reward criteria based on seniority are being increasingly replaced by performance based criteria that depend on individual or team contribution. These changes have eroded Japan's well-known psychological contract – lifetime employment, steady advancement, and seniority-based pay increases. The resulting mistrust and weakening of institutional identification by Japanese employees might result in a weak endorsement of obligation norms with respect to work. In accordance with this reasoning, the OECD revealed that in Japan work hours annually decreased from 2,031 in 1990 to 1,728 in 2011 (Average annual hours actually worked per worker, 2013). So taken together, because of the economic crisis and the concomitant erosion of the typical Japanese psychological contract between employer and employee, a strong work ethic is no longer the path leading to a better standard of living. The idea that effort in a competitive economy can lead to success is seriously questioned, and skepticism about the benefits of working hard may weaken the employees' work ethic. So it seems that Japanese workers invest less heavily in their work, which might result in a lower level of workaholism, especially compared to China with its emerging economy.

In addition, some researchers have suggested that cross-cultural comparisons based on Likert ratings may have been compromised by the potential effects of variability in cultural orientations on response styles (Johnson, Kulesa, Llc, Cho, & Shavitt, 2005; Shulruf, Hattie & Dixon, 2011). Studies revealed that the Japanese culture (that emphasizes values like modesty) might be responsible for differences between cultures in their overall scale scores (Iwata *et al.*, 1995; Iwata *et al.*, 1994; Shimazu *et al.*, 2010a). If this is correct, the findings in our study that Japanese scored lower on workaholism could be due to the tendency of Japanese to prefer moderate and less extreme responses.

In contrast, with a very large population in China, the level of welfare provision and protection – including social security, unemployment benefits and pensions – is comparatively low, while income differences and living cost increase rapidly (Huang, 2008). In order to securing a minimal level of prosperity and financial security considerable work effort is required. For example, a national survey among 1,007 Chinese (Chen, 2012) showed that 70 percent felt overloaded by their work; only 30 percent worked 40 hours a week statutorily – the majority worked more (Chen, 2012).

In addition, Chinese organizations have experienced downsizing, privatization, restructuring, and merging with increasing frequency in the course of the transition of the

national economy. Changes in organization and employment contracts, technological innovation constantly put competitive pressures on employees. A sharp rise in anxiety was observed among people who never before experienced unemployment and intensifying competition, which constitutes a threat to their sense of security and social status (Tang, 2013). This is comparable to what has happened in the 1990s in Japan. As noted in the introduction, Chinese culture values hard work in and for itself and currently this is reinforced by organizational changes, financial needs and job insecurity. It is likely that as a result workaholic tendencies are fostered in today's China.

### 4.4.3 Strengths and weaknesses

The most important strengths of our study is that we used well-validated measurement instruments (UWES and DUWAS) and that we used a comprehensive measurement model to test differences in levels of workaholism and work engagement. That is, a latent variable approach was applied, whereby not simple differences between scale scores (using analysis of variance) were calculated, but a comprehensive, overall model was fitted that includes the complex, hierarchical nature of both related concepts. It appeared that the model meets the criteria for configural and metric invariance across both cultures and across all five countries. Hence, the comparison of work engagement and workaholism scale across the five countries could be undertaken with confidence.

One weakness of our study is that we used regions (Western Europe and Eastern Asia) and countries as overarching cultural entities, and that we assumed that differences in individualism and collectivism would hold for all groups or individuals within a country and would be relatively independent of specific situations. This might neglect sources of variation within national cultural contexts. Researchers have suggested that the variability of individualism and collectivism should not only be studied at the national or regional levels, since it is *individual* endorsements of cultural values that matter (Oyserman *et al.*, 2002). Although individualism and collectivism are likely affected by social class and individual variability (Kagitcibasi, 1994; Triandis *et al.*, 1990), the common proposition is that individualism is mainly a western attribute, whereas collectivism is mostly a non-western feature (Green, Deschamps, & Páez, 2005). This assumption has led to a common approach of grouping regions and countries in cross-cultural research. For example, a review of

meta-analysis that focused on differences in individualism and collectivism grouped countries into eight regional blocks that were contrasted with Americans (Oyserman et al., 2002). In line with the assumption of the overarching culture, they found Americans are indistinguishable on individualism and collectivism from other English-speaking countries, while eastern Asians were simultaneously lower in individualism and higher in collectivism than were Americans. A typology study of individualism and collectivism in 20 countries showed nations that grouped together are geographically close (Green et al., 2005). When the grouping of nations was not geographically determined, the proximity could be interpreted in terms of the economic context of the countries (Green *et al.*, 2005). Despite this, as noted by Hui and Triandis (1986), cultures which are labeled collectivistic or individualistic are simply cultures in which the majority of individuals have the corresponding collectivistic or individualistic individual difference. Failure to consider within-country variation leads easily to an overgeneralization of personality attributes, because nations are made up of individuals with very diverse backgrounds and positions in the social structure. Future research should therefore preferably focus on the effect of individual endorsement of cultural values on work engagement and workaholism. In the current study differences in cultural and work values were assumed rather than empirically assessed. Future research could also include cultural values such as Schwartz's cultural value types (1992, 1999) and/or specific work values (e.g. Meaning of Work questionnaire; MOW, 1987) to investigate how value systems relate to different types of work hard.

A second weakness of our study is that we did not used representative (stratified) random national samples for each country except for Japanese the sample, that is representative for occupation, age, gender and resident area (for details, see Shimazu, Kawakami. 2012b). However. Sonnentag, Kubota & to some extent the non-representativeness is counterbalanced by the size and the heterogeneity of the four remaining national samples (with N's ranging from 2,977 in China till 10,162 in the Netherlands). The national samples were composed of various studies that were carried out among employees from a whole range of occupations and industries. A direct comparison of the levels of workaholism of the same occupational group (i.e. nurses) in the Japanese and Chinese samples (n=1446 and n=1542, respectively) yields similar results as those shown in Figure 4.3. Chinese nurses show significantly higher levels on working excessively (t  $_{(2,939)}$  = 10.22) as well as working compulsively (t  $_{(2.944)}$  =32.86). Hence, it is unlikely that differences

in workaholism between Japan and China are due to differences in the composition on the national samples. Nevertheless, it cannot be completely ruled out that the results of our study could (partly) be affected by systematic differences in national samples. It should be stressed, however, that the demographic and occupational differences of workaholism (Taris, van Beek & Schaufeli, 2012) and work engagement (Smulders, 2006) are usually quite small. Despite this claim, future research should preferably include national (stratified) random samples that are representative for gender, age and occupation. Future research could also include cultural values such as Schwartz's cultural value types (1992, 1999) and/or specific work values (e.g. Meaning of Work questionnaire; MOW, 1987) to investigate how value systems relate to different types of work hard. In the current study differences in cultural and work values were assumed rather than empirically assessed.

# 4.4.4 Final note

Our study revealed systematic differences in work engagement and workaholism between eastern and western countries that may be explained by differences in cultural and work values. This implies that, when investigating any of the two types of working hard across different countries, cross-cultural and/or cross-national differences should be taken into account. Furthermore, our study documents that levels of workaholism and work engagement not only depend on job characteristics (job demands and job resources) and personal characteristics (personal resources and vulnerability factors) as has been shown in previous studies, but also on the cultural environment. The fact that culture matters – also for workaholism and work engagement.

# **Chapter 5**

# The Job Demands-Resources Model:

# An Analysis of Additive and Joint Effects of Demands

# and Resources

# Based on:

Hu, Q., Schaufeli, W.B. & Taris, T.W. (2011). The Job Demands-ResourcesmModel: An analysis of additive and joint effects of demands and resources. *Journal of Vocational Behavior*, 79, 181-190.

### 5.1 Introduction

At the heart of occupational health psychology lies the assumption that job characteristics such as job demands and job control affect worker health and well-being. In practice, such effects usually take the form of main effects of these job characteristics on the criterion variables (e.g., Bakker & Demerouti, 2007). However, from a theoretical perspective it is frequently assumed that job characteristics also *jointly* affect the outcome variables. For example, Karasek and Theorell's (1990) job demands-control(-support) model proposes that the adverse effects of high demands are buffered by high levels of job control and social support, thus decreasing the adverse effects of high demands on worker health and well-being. Similarly, the more general Job Demands-Resources model (Demerouti *et al.*, 2001) proposes that the combination of high levels of resources and high demands increases the "motivational potential" of jobs, and hence leads to work engagement (Bakker & Demerouti, 2007). Thus, it is not uncommon in occupational health psychology to examine the effects of job characteristics on health in terms of main effects as well as the joint effects with other work characteristics.

Unfortunately, the magnitude of such moderating joint effects is usually small (Taris, 2006). On the one hand one could argue that these small joint effects are of little importance. However, on the other hand, these small effect sizes could suggest that the conceptualization and measurement of these moderating joint effects is suboptimal. That is, the magnitude of these effects may be underestimated. Psychologists usually examine such moderating joint effects using the framework proposed by Baron and Kenny (1986), in which the multiplication of the standardized raw variables is used as an additional predictor of the study outcomes (cf. Aiken & West, 1991). However, multiplication of predictor terms may not be the only way to study the joint effects of job characteristics. For example, several alternative approaches focus on the difference between two sets of job characteristics (i.e., a synergistic joint effect). For instance, the quadrant approach focuses on the difference between high strain groups of employees and low job strain groups, and their relation with employee health and well-being (Karasek & Theorell, 1990). Another alternative is the ratio approach advocated by Siegrist (1996) in his Effort-Reward Imbalance (ERI) model, who studied the ratio of "effort" and "rewards" in relation to employee health and well-being. At present it is unclear which of these approaches to measuring the joint effects of work

characteristics is optimal (i.e., the multiplicative, quadrant or ratio approach). The present study addresses this issue using the Job Demands-Resources (JD-R) model as a theoretical framework and by including two independent Chinese samples.

### 5.1.1 The Job-Demands Resources model

The JD-R model proposes that employee well-being is related to a wide range of workplace characteristics that can be conceptualized as either job demands (i.e., the physical, social, or organizational aspects of the job that require sustained physical or psychological effort) or job resources (i.e., those aspects of the job that may reduce job demands, are instrumental to achieve work goals, or promote personal growth, learning and development) (Bakker & Demerouti, 2007). Excess job demands and lacking job resources exert an energy-draining effect on employees through a stress process, while high levels of job resources are related to positive work outcomes through a motivational process.

There has been considerable empirical support for the stress and motivational processes. For example, working in a demanding job and having few job resources is associated with burnout (Llorens *et al.*, 2006), company registered sickness absence (Schaufeli, Bakker & Van Rhenen, 2009c), perceived ill-health (Hakanen *et al.*, 2006), and health complaints (Korunka, Kubicek & Schaufeli, 2009). Further, the motivational process links job resources via work engagement with organizational commitment (Llorens *et al.*, 2006), low turnover intention (Schaufeli, & Bakker, 2004), and extra-role performance (Bakker *et al.*, 2004).

In addition to these two additive processes, the JD-R model also assumes two moderating effects, namely that: (1) job resources buffer the potentially negative effects of excessive job demands on employee health and well-being, while (2) highly demanding work situations in combination with high levels of job resources result in higher levels of work engagement (Bakker & Demerouti, 2007). This agrees with the strain and learning hypotheses of Karasek and Theorell's (1990) JDC-model, respectively. Indications have been found for the former moderating effect of job demands and job resources on psychological strain in large-scale studies among teachers in higher education (Bakker *et al.*, 2005), and home care staff (De Jonge *et al.*, 2008), as well as in a study using multiple occupations (Bakker *et al.*, 2004). However, in most cases the moderating effect received only partial support (e.g., Bakker *et al.* 2005), and the interaction effect between various job

demands and job resources is typically weak.

Unlike the JDC-model, the JD-R model does not predict an interaction between *specific* job demands and *specific* job resources. Rather, an interaction is assumed between an overall, composite indicator of job demands and a similar indicator of job resources. This assumption was supported in a study of Bakker *et al.* (2003a) that used a general indicator for job demands and job resources and found that job resources buffered the impact of job demands on exhaustion, a key dimension of burnout. In the present study, we test the moderating joint effects of job demands and job resources not only with respect to negative work-related outcomes (i.e., burnout), but also with respect to positive work-related outcomes (i.e., work engagement) by using general, composite indicators for job demands and job resources.

### 5.1.2 Additive, moderating and synergistic effects

Past investigations on the relation between job demands and job resources using the JD-R model were restricted to additive and moderating joint effects. Kasl (1996) suggested that investigators should go beyond testing models to explore possible alternatives "even if these are not formally part of the model or even part of some broader formulation" (p.49). We followed this lead by examining synergistic joint effects; that is, we assume that both high demands and low resources are associated with an increased health risk and that a combination of both increases the risk beyond the mere additive effects (Kasl, 1996; Van Vegchel et al., 2005a). In other words, the combined risk of high demands and low resources for burnout is higher than the separate risks of high demands and low resources. A growing number of studies on the JDC-model and the ERI-model use such synergistic joint effects (i.e., the quadrant approach and ratio approach, respectively; Van Vegchel *et al.*, 2005a; Siegrist, Starke, Chandola, Godin, Marmot, Niedhammer & Peter, 2004), predicting among others psychiatric disorder (Stansfeld, North, White & Marmot, 1995), stress (Calnan, Wadsworth, May, & Smith, 2004), and sickness absenteeism (Griep, Rotenberg, Chor, Toivanen, & Landsbergis, 2010). Furthermore, a combination of the ratio approach and the quadrant approach appears to improve the estimated risk of psychiatric disorder, compared to both approaches separately (e.g., Ota, Masue, Yasuda, Tsutsuni, Mino, & Ohara, 2005; Siegrist, 2002).

Although Siegrist (1996) and Theorell and Karasek (1996) only included a limited number of specific work characteristics in their models (i.e., job demands, job control, effort and reward) their work is relevant for other models, such as the JD-R model. More specifically, van Vegchel et al. (2005a) suggest that an additive effect (i.e., discrepancy form, in which each predictor variable has a linear association with strain, also see Edwards & Cooper, 1990) implies that job resources represent a standard by which job demands are compared. The moderating effect (i.e., the multiplicative form, in which the combined effect of two predictor variables accounts for an additional proportion of the variance of an outcome variable, beyond their separate main effects) implies that job resources influence the strength of the relation between job demands and strain. Finally, the synergistic form shares characteristics of both additive and interactive forms, in that job resources operate as a standard by which job demands are compared and that influence the strength of the relation between job resources and strain. That is, high demands in proportion to low resources are associated with strain. Thus, the additive, moderating and synergistic combinations of job demands and job resources are theoretically and mathematically distinct, and are therefore not interchangeable (Edwards & Cooper, 1990).

The ratio approach and the quadrant approach are typically used in studies on the ERI-model (Siegrist, 2002) and the JDC-model (Landsbergis & Theorell, 2000), respectively. Some researchers claimed that synergistic joint effects are superior compared to additive effects of job demands and job resources (Kasl, 1996). For example, Siegrist (2002) maintained that the effect of the ERI-ratio on employee health and well-being is larger than the separate main effects of effort and reward. Viewed from this perspective, it is important to explore the synergistic joint effect of job demands and job resources on employee well-being.

# 5.1.3 Study hypotheses

The current study aimed (1) to test the JD-R model independently in two different samples, using organizational commitment and turnover intention as organizational outcomes; (2) to examine and compare the additive, moderating, and synergistic effects of job demands and job resources on burnout and work engagement. Based on the notions discussed above, five substantive hypotheses were tested:

Hypothesis 1: Job demands are negatively related to organizational outcomes through their impact on burnout (stress process). That is, burnout mediates the relation between job demands and organizational outcomes.

Hypothesis 2: Job resources are positively related to organizational outcomes through their impact on work engagement (motivational process). That is, engagement mediates the relation between job resources and organizational outcomes.

Hypothesis 3: Job resources buffer the effect of job demands on burnout (moderating effect). More specifically, the relation between job demands and burnout is stronger for employees with few job resources.

Hypothesis 4: Job resources buffer the effect of job demands on work engagement (moderating effect). More specifically, the relation between job demands and work engagement is weaker for employees with many job resources.

Hypothesis 5: The joint effect of high job demands and poor job resources predicts higher burnout and lower work engagement (synergistic effect), irrespective of whether the ratio between demands and resources (ratio approach) or the difference between groups (quadrant approach) is used.

### 5.2 Method

### 5.2.1 Sample and procedure

The present study employed data from two samples. Sample 1 comprised 625 blue collar workers of three mechanic factories in China; 348 (56%) were male and 275 (44%) female. Their mean age was 31.81 years (SD = 9.16); 8.3% had completed primary education, 84.3% had a secondary education, and 6.5% had a college or university education. Questionnaires were distributed by the human resources departments and the survey was accompanied by a letter explaining the general aim of the study, and that emphasized the participants' privacy. The response rate was 73%.

Sample 2 consisted of 761 health professionals from four Chinese hospitals, 545 nurses and 216 doctors; 670 were female (88%) and 91 male (12%). Their mean age was 30.80 years (SD = 8.42); 25.4% had a secondary education, 42.9% had a college education, and

31.7% had a university education. Questionnaires were handed out by hospital administrators and a similar accompanying letter as in Sample 1 was included. The response rate was 75%.

## 5.2.2 Measures

The measures used in the present study had all been included in previous research in Europe, where they showed sufficient reliability and construct validity (e.g., Schaufeli *et al.*, 2009c). Table 5.1 presents the internal consistencies of the scales (Cronbach's  $\alpha$ ).

Job demands were assessed by the Chinese version of the Questionnaire on the Experience and Evaluation of Work (QEEW, cf. Van Veldhoven, De Jonge, Broersen, Kompier, & Meijman, 2002, Zheng, Hu, Xu & He, 2010) with a 5-point response scale ranging from 1 ("never") to 5 ("always"). Higher scores indicated higher levels of job demands. The demands included in the present study were: *workload* (5 items), for example, "Do you have too much work to do?"; *emotional demands* (3 items), for example, "Are you confronted at your work with situations or events that affect you personally?"; *physical effort* (7 items), for example, "At your work, do you have to lift or move heavy loads?"; and *interpersonal conflict* (4 items), for example, "How often do you get into arguments with others at work?".

Job resources at work were also assessed by subscales of the Chinese version of the QEEW (Zheng *et al.*, 2010), using the same 5-point answering format. Five job resources were included: *job control* (3 items), for example, "Do you have freedom in carrying out your work activities?"; *colleague support* (3 items), for example, "Can you count on your colleagues when you come across difficulties in your work?"; *supervisory coaching* (4 items), for example, "My supervisor knows how to effectively coordinate the tasks and activities of our team"; *learning opportunities* (4 items), for example, "I can develop myself sufficiently within my company"; and *task clarity* (5 items), for example, "Do you know exactly what areas you are responsible for and which areas are not your responsibility?".

Burnout was assessed with the exhaustion and cynicism subscales of the Chinese version (Hu & Schaufeli, 2011a) of the Maslach Burnout Inventory—General Survey (MBI-GS; Schaufeli *et al.*, 1996a). *Exhaustion* was assessed with five items (e.g., "I feel used up at the end of the workday") and *cynicism* with four items (e.g., "I have become less enthusiastic about my work"). All items were scored on a 7-point frequency rating scale

ranging from 0 ("never") to 6 ("daily"). High scores on the exhaustion and cynicism subscales are indicative of burnout.

Work Engagement was assessed with the Chinese version (Zheng, *et al*, 2010) of the Utrecht Work Engagement Scale (UWES-9; Schaufeli *et al.*, 2006a). The UWES-9 taps three underlying dimensions, which are all measured with three items: *vigor* (e.g., "At my work, I feel bursting with energy", *dedication* (e.g., "My job inspires me"), and *absorption* (e.g., "I get carried away when I am working"). All items are scored on a 7-point rating scale ranging from ( "never") to , 6 ( "daily"). High scores on all three dimensions indicate high levels of work engagement.

Organizational outcomes were assessed by two scales: organizational commitment and turnover intention, using the Chinese version of the QEEW (Zheng, *et al*, 2010). Organization commitment was assessed by 5 items (e.g., "I feel like 'a member of the family' at my company/hospital") and turnover intention by 4 items (e.g., "I think about changing my job" - reversed). Both scales were scored on a 5-point rating scale ranging from (1) "never" to (5) "always".

#### **5.2.3** Data analysis

Table 5.1 provides the means, coefficient alphas, and correlation coefficients of the study variables. As this table shows, the internal stability of all scales was acceptable, with virtually all alphas exceeding the threshold value of .70. The hypotheses were tested using Structural Equation Modeling techniques as implemented in the AMOS (Arbuckle, 2003) computer program. We performed multi-group analysis to assess the invariance of the estimated parameters across both samples (Byrne, 2001). Maximum likelihood estimation was used and the input for each analysis was the covariance matrix. To test the hypotheses, several nested models were compared by means of the  $\chi^2$  difference test. In addition, absolute and relative indices were computed to assess the goodness- of-fit of the models. The absolute goodness of fit indices was: (1) the  $\chi^2$  goodness of fit statistic; (2) the Root Mean Square Error of Approximation (RMSEA); and (3) the Goodness of Fit Index (GFI). Non-significant values of  $\chi^2$  indicate that the hypothesized model fits the data. RMSEA values of .08 and lower indicate an acceptable fit and values of .10 and higher should lead to model rejection (Byrne, 2001). As recommended by Marsh, Balla, and Hau (1996), the following relative

goodness of fit indices were computed: (1) Normed Fit Index (NFI); (2) Incremental Fit Index (IFI); and (3) Comparative Fit Index (CFI); (4) Tucker-Lewis Index (TLI). As a rule of thumb, values of .90 or higher indicate good fit for all three relative fit indices (Byrne, 2001).

Table 5.1 Means (M), standard deviations (SD), internal consistencies (Cronbach's a on the diagonal), and correlations between the study variables for blue collar workers (n=625, lower diagonal) and health professionals (n=761, upper diagonal).

	Bibe-coll	Ĩ	Health																	
	Workers		profession	tials																
	М	g	W	C,																
					1	2		4	5	9	1	~	9	10	11	12	13	14	IJ	16
1. work over bad	2.53	85	3.29	81	.75/82	ß	65	35	- 04	80	- 03	-02	.02	49	36	-06	.13	- 01	Π·	60 -
2. emotional demands	193	83	3.12	8	. <del>4</del> 3	301.78	ۍ د	<del>.</del> 48	- 01	10	- 08	- 03	- D6	.45	33	-01	- 12	- D6	· 11 ·	- 12
3. physical effort	2.36	6	2.83	<u>۶</u>	<del>1</del>	<b>8</b>	82/88	9£	Π·	99. 193	-18	12	.05	22	45	6I	. 22	-21	- 22	- 18
4. interpersonal conflicts	1.52	ور	2.04	72	62	44	62	58/67.	-10	01	- 14	<u>60</u> -	II-	35	33 SE	01.	Ω	II	-11	6I ·
5. job control	2.17	97	2.30	¥,	8	01	Ω	.02	21.189.	27	<del>.</del> 43	32	14	۰1 <i>1</i>	61	20	23	77	24	20
6. colleague support	2.40	11	2.86	8	SL.	J16	-04	8	(F)	66/82	36	34	73	II.	61	29	62	23	.26	20
<ol> <li>deve lopmental opp.</li> </ol>	2.13	96	234	8	.DS	Σũ	-20	-02	22	35	73/81	50	24	8	Ę.	36	۶.	89	43	.17
8. task clarity	2.98	92	3.14	8	90.	11	60'-	60	89	24	14.	73/80	36	-21	0E	99	33	(F	37	Π
9. supervisor coach	3.29	1.13	333	1.03	-18	+I	-21	-12	73	21	8F	38	87/94	60 <sup>.</sup>	-21	16	.18	14	33	Ω
10. Exhaustion	2.02	123	3.10	138	Я	36	33	27	- 04	03	·υ	- D6	-23	.80/87	62	-21	ξ.	-26	.3	-25
11. Cynirism	1.45	125	2.30	1.47	.17	83	26	77	- 04	10. -	•.14	:13	-26	89	39/88	8F.	641	ξ.	.45	-36
12. Vigor	3.09	1.52	2.70	139	10	-01	01 <sup>.</sup> .	60 <u>-</u>	Ω	01	83	27	61:	ŧĽ.	- 73	75/82	82	74	64	21
13. Dedication	3.03	1.52	2.85	139	- 10	- 04	٠IJ	-16	61.	IJ	31	31	27	.20	-78	75	76/85	ш	26	27
14. Absorption	2.74	1.33	233	1.48	10	01	.t	П÷	22	60	31	29	23	•14	-21	89	75	75/84	51	26
15 organ. commitment	3.21	36	2.93	61	10	S0	٠IJ	-14	21	.16	31	27	.26	- 24	34	34	47	48	81/87	23
16. turnover intention	3.13	34	3.00	81	0[ <sup>-</sup>	el	24	24	.02	04	.13	90	21	35	65.	20	24	22	33	73/.69

<sup>&</sup>lt;u>Note</u>: correlations of at least .08 (for the blue collar workers) and .07 (for the health professionals) are significant at p < .05.

### 5.3 Results

Additive effects. Firstly, the two processes (i.e., the stress process and the motivational process; Hypotheses 1 and 2, respectively) as proposed by the JD-R model were investigated. The basic JD-R model  $(M_1)$  was tested including two indirect paths from job demands to organizational outcomes via burnout, and from job resources to organizational outcomes via work engagement. Basically, this model assumes full mediation through burnout (Hypothesis 1) and work engagement (Hypothesis 2), respectively. In addition, as postulated by the JD-R model, job demands and job resources, as well as burnout and engagement were allowed to correlate. The results presented in Table 5.2 show that the fit across both samples was not acceptable, with NFI and TLI slightly below their criterion value of .90. Next, we tested the partial mediating role of burnout and work engagement by adding to  $M_1$  two direct paths connecting job demands and job resources to organizational outcomes, respectively ( $M_{1-\text{alternative}}$ ). The fit to the data of  $M_{1-\text{alternative}}$  was superior to that of  $M_1$  ( $\Delta \chi^2$  (4) = 52.37, p <.001), but the direct path from job demands to organizational outcomes was neither significant for blue collar workers ( $\gamma = .03$ , ns) nor for health professionals ( $\gamma = .10$ , ns). Deleting this path (M<sub>1- modified</sub>) did not result in a significant deterioration of the fit between model and data ( $\Delta \chi^2$  (2) =1.62, ns). Still, the fit of M<sub>1-modified</sub>, which included a direct path from job resources to organizational outcomes, was not acceptable because values for NFI and TLI were still slightly below .90.

Therefore, in the next step we tested an alternative model that included two additional *cross-links;* that is, paths from job resources to burnout and from job demands to engagement (M<sub>2</sub>). The former was included in the original JD-R model, whereas the latter was added more recently (Bakker & Demerouti, 2007). As Table 5.2 shows, the fit to the data of M<sub>2</sub> is superior to that of M<sub>1-modified</sub> ( $\Delta \chi^2$  (4) = 135.16, *p*<.001), with all fit indices of M<sub>2</sub> meeting their corresponding criteria.

As two different samples were involved, equivalence of  $M_2$  across samples was tested of (a) the factor loadings, (b) regression weights, and (c) both the factor loadings and regression weights of  $M_2$ . Results revealed that the three constrained models had a good fit to the data (see Table 5.2). However, chi-square difference tests showed the model that allowed all parameters to vary across samples ( $M_{2-unconstrained}$ ) to fit significantly better to the data than the three constrained models, although the differences were only small in terms of the change of absolute and relative indices. Chen (2007) proposed that changes of less than .01 (for CFI) and less than .015 (for RMSEA) are practically unimportant for tests of measurement weight invariance and measurement residual invariance, respectively. Because the change of fit indices is negligible (these range from -.004 to .001 in the three constrained models as compared with the unconstrained model  $M_2$ ), it implies that relations among the variables are invariant across two samples.

Table 5.2 Fit indices of the additive models (Multi-group analysis)

Model	$\chi^2$	df	CFI	NFI	TLI	GFI	RMSEA	$\Delta \chi^2$
Null	8769.00	240				.44	.16	
$M_1$	1003.20	196	.91	.89	.89	.92	.06	
M <sub>1</sub> -alternative	950.83	192	.91	.89	.89	.92	.05	52.37(4)***
M <sub>1</sub> -modified	952.45	194	.91	.89	.89	.92	.05	1.62(2) ns
M <sub>2</sub> (unconstrained model)	817.29	190	.93	.91	.91	.93	.05	135.16(4)***
Equal factor loadings	846.16	201	.92	.91	.91	.93	.05	28.87(11)**
Equal regression weights	845.85	197	.92	.91	.91	.93	.05	28.56(7)***
Equal factor loadings and	875.59	208	.92	.91	.91	.93	.05	58.29(18)***
regression weights								

<u>Note.</u>  $\chi^2$  = chi-square; df = degrees of freedom. CFI = Comparative Fit Index; NFI = Normed Fit Index; TLI = Tucker-Lewis Index; GFI = Goodness-of-Fit Index; RMSEA = Root Mean Square Error of Approximation. \*\* p<.01, \*\*\* p<.001.



Figure 5.1. Standardized path coefficients of the final model (M<sub>2</sub>) in blue collar workers (n=625) and health professionals (n=761; <sup>\*</sup>p<.05, \*\*p<.01, \*\*\*p<.001)

The parameter estimates for  $M_2$  are shown in Figure 5.1. All relations in the model are significant and in the expected direction, except for the association between job demands and job resources (r = .04, *ns*) in Sample 1. As expected, the paths from job demands to burnout were positive and significant ( $\gamma = .58$  and .62, *p*<.001), whereas those from burnout to organizational outcomes were negative and significant ( $\gamma = -.41$  and - .31, *p*<.001). The indirect effects of job demands on organizational outcomes were smaller than the direct effects, but significant ( $\gamma = .28$  and -.27, *p*<.001). Further, the paths from job resources to work engagement ( $\gamma = .47$  and .53, *p*<.001) and from engagement to organizational outcomes were positive and significant ( $\gamma = .48$  and .53, *p*<.001, respectively).

Thus, the higher the perceived job demands, the higher the employee's level of burnout, the stronger their turnover intention, and the lower their organizational commitment (Hypothesis 1 supported). On the other hand, the more job resources, the higher the employee's level of work engagement, the lower their turnover intention, and the stronger their organization commitment. Unexpectedly, job resources had a direct positive relation with organizational outcomes, indicating that work engagement only partially mediated the relation between job resources and organizational outcomes (Hypothesis 2 partially supported). In addition, fewer job resources were related to more burnout ( $\gamma = -.18$  and -.37, p < .001), whereas job demands were weakly negatively related to work engagement ( $\gamma = -.09$ , p < .05 and  $\gamma = -.15$ , p < .001).

*Moderation effects.* To test Hypotheses 3 and 4, a moderated structural equation modeling (MSEM) analysis was performed. We tested a model that included three exogenous latent variables: job demands, job resources, and their interaction. For reasons of parsimony we limited the number of indicators for job demands and job resources to two by using a parcel analysis (Floyd & Widaman, 1995). That is, first two separate principal components factor analysis for the four job demands and the five job resources were conducted in the samples of blue collar workers and health professionals, respectively. A varimax rotation revealed a similar result in both samples. More specifically, two job demands (i.e., workload and physical effort) converged into one demand component, whereas emotional demands and interpersonal conflicts converged into a second demand component. Moreover, three job resources (i.e., job control, colleague support, and learning and development opportunity) converged into a second component. Thus, instead of including four

job demands and five job resources, two parcels consisting of composite scores of various scales which constituted a particular component were included as indicators of the latent job demands and job resources factors.

First, the additive effect of the parceling job demands and parceling job resources on burnout and work engagement revealed a good fit in multigroup analysis ( $\chi^2 = 408.29$ , GFI=.95, RMSEA=.06, NFI=.94, TLI=.92, CFI=.95). Next, a MSEM model was conducted. To prevent multi-collinearity in MSEM, the indicators were mean-centered (cf. Aiken & West, 1991; Jaccard, Turrisi & Wan, 1990). The four indicators of the latent interaction factor were the multiplicative product of the factor scores of the two job demands indicators and the two job resources indicators.

A significant joint effect, as assumed by Hypotheses 3 and 4, exists if the coefficient of the path from the latent interaction factor to burnout or work engagement is statistically significant. The result of the multigroup MSEM analysis showed that the model as depicted in Figure 5.2 did not fit the data well,  $\chi^2 = 1243.22$ , GFI = .91, RMSEA = .07, NFI = .86, TLI = .84, and CFI = .88. Only the path- coefficient linking the interaction term to burnout was significant to ( $\gamma = -.08$ , p<.05) among health professionals (see Figure 5.2). Thus, whereas Hypothesis 3 was confirmed in health professionals, Hypothesis 4 was rejected in both samples. Apparently, job resources modify the negative effect of job demands on burnout only in health professionals but not in blue collar workers.



Figure 5.2. Standardized path coefficients of the MSEM-analysis in blue collar workers (n=625) and health professionals (n=761); <sup>\*</sup>p<.05, \*\*\*p<.001.

To further examine the nature of the significant interaction effect, a graphical representation was produced by using the procedure of simple slope analysis (Aiken & West, 1991). Subgroups were created of those who scored one standard deviation below (n = 128) and above (n = 126) the mean on the composite measure of job resources. Figure 5.3 shows the interaction between demands and resources with regards to two burnout indicators (i.e., exhaustion and cynicism) in health professionals. As expected, high job demands coincided with high levels of burnout, but only when job resources were low.



Figure 5.3. The interaction effect of job resources on and job demands on burnout among health professionals (n=761)

Synergistic effects. The ERI ratio was computed for every respondent following the formula  $e/(r \times c)$  where e is the sum score of the job demands, r is the sum-score of the job resources and c corrects for different numbers of items in the nominator and denominator (Siegrist *et al.*, 2004). As there are 19 job demands items and 19 job resources items in our study c was 1. Next, we constructed tertiles of ERI-ratios to identify a high-risk group in terms of the upper tertile, whereby the lowest tertile indicated the most favorable work condition (e.g., Calnan *et al.*, 2004). In order to distinguish the odds ratios that result from logistic regression, we dubbed the ERI ratios method in our study "DR ratios".

The quadrant approach was modeled by assigning employees who scored above the median on job demands as well as below the median on job resources to the *high* job strain group. Employees who simultaneously scored below the median on job demands and above the median on job resources were assigned to the *non*- job strain group. The remaining employees were assigned to the *intermediate* job strain group. Logistic regression analysis was performed; the associations were estimated by means of an adjusted odds ratio.

	Burnout				Engag	gement		
	Blue co	llar workers	Health p	rofessionals	Blue	collar workers	Health	ı professionals
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
DR ratios								
Low demands and high resources	1.0		1.0		1.0		1.0	
Intermediate demands and resources	12.27	2.97-50.73	2.40	1.34-4.32	.28	.1746	.37	.2553
High demands and low resources	27.90	6.34-122.71	14.76	8.06-27.01	.19	.0946	.12	.0722
Quadrant Approach								
Low demands and high resources	1.0		1.0		1.0		1.0	
Intermediate demands an resources	3.69	2.01-6.77	3.60	1.98-6.54	.44	.2966	.40	.2858
High demands and low resources	7.23	3.84-13.59	12.41	6.73-22.88	.32	.1954	.16	.0927

Note: ORs above 1.0 indicate positive effects, and ORs below 1.0 indicate negative effects. All *ps*<01.

Taking the low demands-high resources group for a reference, Table 5.3 shows the synergistic effects of job demands and job resources on burnout and work engagement by using DR ratios as well as the quadrant approach. The associations between job strain (i.e., low job demands and high job resources) on the one hand, and burnout and engagement on the other hand were significant in blue collar workers as well as in health professionals (i.e., ORs varied from 2.40 to 27.90 for burnout and from .12 to .44 for work engagement). Moreover, these associations were consistently in the expected direction (i.e., high job demands and low job resources were associated with more burnout and lower work engagement, Hypothesis 5 confirmed).

Interestingly, DR ratios were superior in predicting burnout and work engagement as compared to the quadrant approach. For the high risk group (i.e., the group with high demands and low resources) the risk of burnout for health professionals was higher than for blue collar workers according to the quadrant approach (ORs were 12.41 vs. 7.23), while the high risk of burnout for health professionals was lower than for blue collar workers according to the 27.90). In contrast with burnout, the *reversed* effect of the high risk group on low work engagement for health professionals was higher than that of workers, irrespective of using DR ratios or the quadrant approach (ORs were .12 vs. .19 and .16 vs. .32).

In the next step we controlled for the additive effects of job demands and job resources in the prediction of burnout and engagement by using DR ratios and the quadrant approach. The results of the hierarchical logistic regression analysis (cf. Table 5.4) showed that the odds ratios decreased dramatically. The associations between job strain (i.e., high job demands and low job resources) on the one hand, and burnout and engagement on the other hand, were non-significant in blue collar workers as well as in health professionals when the quadrant approach was used, while the associations between high DR ratio groups (i.e., high job demands and low job resources) on the one hand, and burnout and engagement were weak *or* non-significant in both workers and health professionals. Further analysis revealed that 83.4% of the high strain health professionals shared the joint distribution with those with high DR ratios, while 78.0% low job strain health professionals shared the joint distribution with those with low DR ratios; 91.9% high job strain workers shared the joint distribution with the workers with high DR ratios, while 85.9% low job strain workers shared the joint distribution with those with low DR ratios.

		Burnout				Engageme	nt		
		Blue collar v	vorkers	Health proi	fessionals	Blue colla	r workers	Health profession	als
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Step 1									
Job demands		3.88***	2.63-5.73	5.53***	3.75-8.17	.65*	.4494	.60**	.4285
Job resources		.65*	.4496	.44***	.4496	$2.14^{***}$	1.48-3.09	3.80***	2.66-5.45
Step 2 DR ratios									
Low demands and	high	1.0		1.0		1.0		1.0	
resources									
Interm ediate		8.44**	1.72-41.46	7.07***	2.94- 16 07	.35*	.1492	.19***	.0843
Hish demands and	low	6.42*	1.49-27.67	1.50	75-2.98	38**	2168	43**	26-71
resources								1	
Step 2 Quadrant Appro	ach								
Low demands and	high	1.0		1.0		1.0		1.0	
resources									
Intermediate		!	;	00.	00.	1	;	.04*	.00-1.00
High demands and resources	l low	1.45	.96-2.20	00.	00.	.79	.54-1.16	.19*	.04-9.7

Note: ORs above 1.0 indicate positive effects, and ORs below 1.0 indicate negative effects. \*p<.05, \*\*p<.01, \*\*\*p<.001.
#### 5.4 Discussion

The present study evaluated the Job Demands – Resources (JD-R) model by – for the first time - incorporating additive, moderating and synergistic effects into the model. First, the results confirmed, for the first time in China, the stress and motivational processes as assumed by the JD-R model (Bakker & Demerouti, 2007). Consistent with Hypothesis 1, burnout fully mediated the relation between job demands and organizational outcomes, for both blue collar workers and health professionals. Moreover, job resources were negatively associated with burnout. This means that high job demands and lacking job resources exhaust employees' energy resources and may therefore lead to burnout, which in turn, may foster turnover intentions and poor organizational commitment. Similarly and in support of Hypothesis 2, work engagement mediated the relation between job resources and organizational outcomes in both samples. Yet, this mediation effect, that is compatible with the motivational process of the JD-R model, is only partial in nature. That is, in both samples also a significant direct, positive effect of job resources on organizational outcomes was observed. This agrees with previous findings. For example, job resources were positively and significantly related to organizational commitment in Dutch and Spanish white collar employees (Llorens et al. 2006) and Chinese blue collar workers (Hu, Schaufeli, & Taris, 2011). Our study found that job demands were negatively associated with work engagement, although this effect was rather weak compared to that of job resources. In fact, Llorens et al (2006) also found that job demands were negatively related with work engagement. Apparently, in our samples demands were not perceived as a challenge but rather as burdensome.

The joint additive effects of job demands and job resources on burnout and work engagement agree with the strain hypothesis of the JDC-model (Theorell & Karasek, 1996). That is, jobs characterized by chronically high imposed demands and insufficient job resources may induce strain (burnout) and reduce well-being (engagement). Unfortunately, the JDC-model uses a rather restricted definition of job demands and job resources that only includes quantitative job demands (e.g., work overload and time pressure), and two job resources (i.e., job control and social support). Our study shows that a much broader range of job stressors and job resources leads to effects that are in line with predictions from the JDC-model. Another focus in our study is whether job resources interact with job demands in influencing the stress and motivational processes. Specifically, the combination of high job demands and lack of resources was related to burnout (Hypothesis 3). However, the combination of high job demands and low job resources that produced high burnout levels was very weak ( $\gamma = -.08$ , *p*<.05). In our study, the combination of high job demands and low job resources produced the highest level of burnout, but only in health professionals. As health care professionals are usually very dedicated to their work and highly intrinsically motivated, a combination of high demands and lacking resources is obviously more psychologically detrimental than in blue collar workers, who usually are less dedicated and more externally motivated (cf. Dickerson, Brewer, Kovner, & Way, 2007).

A more general explanation why Hypothesis 3 was not unequivocally supported is that our job demands and job resources did not match very well. It has been suggested that only when *specific* demands match with *specific* resources from the *same domain*, they may produce a joint effect on a *specific* strain from that *same domain* (Daniels & De Jonge, 2010). However, the present study included composite demands and resources, which might have obscured the differential impact of specific components from various domains (Van Den Tooren & De Jonge, 2008).

Furthermore, there may not be a simple interactive effect formula for the joint effects of job demands and job resources on well-being. For example, the interactive effect of cognitive job demands and cognitive job resources to learning motivation was non-significant in the informatics (Van de Ven, Vlerick, & De Jonge, 2008). Similarly, a study of De Jonge *et al.* (2008) found that the interactive effect of emotional demands (i.e., being confronted with dying or aggressive patients) and emotional job resources on emotional exhaustion was non-significant in health care workers. Indeed, in a review paper about the interactive effect of job demands and job resources, Taris (2006) showed that only 9 out of 90 tests performed provide support for this interaction effect. That means that we should look for new methods to explore the relation between special domain-oriented job demands and special domain-oriented job resources. It follows that in future research, on the one hand the impact of specific, field-oriented demands and resources on outcomes should be investigated, while on the other hand new methodologies on the relation between job demands and job resources should be explored.

Neither the DR ratios nor the quadrant approach supported synergistic effects of job

demands and job resources on burnout and work engagement in this study. It is important to note that the predictive power of DR ratios was superior to that of the quadrant approach. Employees experiencing high job demands and low job resources showed higher risks of burnout and reduced work engagement than those in more favorable work conditions. However, after controlling for the additive effects of job demands and job resources, the predictive power of both approaches decreased sharply. Apparently, the synergistic effect on burnout and engagement adds little explanatory power beyond that of the additive effect of job demands and job resources. This is in accordance with Preckel, Meinel and Kudielka (2007) who showed that the ERI ratio does not provide more information than the separate use of effort and reward.

#### 5.4.1 Strengths and weaknesses

The strengths of our study are related to the fact that we used a comprehensive methodology not commonly used in occupational psychology (i.e., additive effects, mediated effects as well as synergistic effects). In addition, this is the first study to apply these various types of joint effects in the context of the JD-R model. Furthermore, we observed basically the same results in the two different occupational groups (i.e. blue collar production workers and highly qualified health care professionals) for the additive effects, moderating effects, and synergistic effects. Finally, whereas previous research on the JD-R model used exclusively European samples (from the Netherlands, Spain, Greece, Finland, and Austria), our study applied the model for the first time outside Europe in China, underlining the model's potential in cross-cultural settings.

Some limitations of the study need to be addressed. The first one is its cross-sectional design, which means that no causal inferences can be made. However, other longitudinal studies suggested causal relations as specified by the JD-R model (e.g., Salanova *et al.*, 2010). Another limitation was that the study relied solely on self-report measures, thus, our measures may have been subject to subjective bias on the part of samples. This may be resolved in further studies by including objective measures, such as actual turnover and sickness absence.

### 5.4.2 Final note

Our results unequivocally support the additive effects of job demands and job resources on burnout and work engagement. However, evidence for moderating and synergistic effects of job demands and job resources on burnout and work engagement was hardly found in this study.

# Chapter 6 Job Insecurity and Remuneration in Chinese Family-Owned Business Workers

Based on:

Hu., Q. & Schaufeli, W. B. (2011). Job insecurity and renumeration in Chinese family-owned business workers. *Career Development International*, *16*, 6-19.

#### 6.1 Introduction

China's reform policy created opportunities for private business to thrive in the past three decades. Among private businesses, most are actually family owned and family operated businesses. For example, in Zhejiang province where private businesses are the most wide-spread in China, it is estimated that more than 90% of private businesses are family owned (Hu, 2003). These family-owned businesses are typically controlled by a small group of related parties and managed by owner-managers. Because of high cost consciousness, most family business rely upon family members' commitment, and employ a small number of permanent staff. Poor strategic planning, informal execution and low level management, as well as lacking of an explicit incentive system and a vague corporate culture, discourage the involvement, commitment, and dedication of workers.

Rapid increases in productivity and upgrade of products make family business to continuously search for new production technologies and low cost workers. Because of the massive migration in China from agricultural regions to industrial centers, unemployment and underemployment rates are alarmingly high, with conservative estimates in the hundreds of millions (Giles et al., 2005; Wang, 2003). A survey among three hundred workers of family-owned businesses in Zhejiang province revealed that about 36% had changed their workplace once, about 64% had changed twice, and about 32% had changed three times or more in their past work experience (Hu, 2004). China Central Television (CCTV) reported 30% over turnover in many private business (http://vsearch.cctv.com/plgs play-CCTV1 20080219 2806406.html), in some businesses the turnover rate is even near to 80% (Wong, 2006). According to a recent survey conducted Chinese among 4,000 employees in four cities by Marketing Research (http://www.comr.com.cn/), 90% of employees had the experience of turnover, whereas 34% of employees was dissatisfied with their current job and had the intention to leave their job. The survey also found that the main reasons for turnover are dissatisfaction with the salary, unsatisfactory work schedules, poor work environments, as well as lacking professional development opportunities. The recent suicide of twelve employees of the FOXCONN Company, which ranks 109 among the FORTUNE (2009) top-500 companies, dramatically illustrates that high workload, excessive overwork, and poor remuneration seriously deteriorate employee health and well-being.

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Job insecurity is a subjectively experienced stressor and concerns feelings of insecurity about the future. Downsizing can be seen as a factor that increases job insecurity and that corrodes employees' psychological contract (Millward & Brewerton, 2002). Studies on downsizing found that it is consistently associated with lower levels of job related well-being. For example, compared to those in secure jobs those who suffer from job insecurity report more psychosomatic symptoms and depression (Kinnunen & Nätti, 1994; De Witte, 1999), job dissatisfaction (Reisel, Probst, Chia, Maloles, König. 2010), reduced work efforts (Brockner, 1988), less organization commitment and trust in management, and deteriorating industrial relations and organizational identification (Feather & Rauter, 2004). Downsizing also strengthens intentions to leave the company (Iverson & Pullman, 2000). These negative effects of job insecurity threaten the organization's survival (Schaufeli et al., 2009a). For instance, after downsizing took place, deleterious effects on the remaining worker's productivity was observed (Brockner, 1988) and survivors had a tendency to seek alternative employment (Noer, 1993). A study among Finnish workers revealed that past downsizing or anticipated downsizing was associated with elevated levels of inequity, which, in turn, were associated with psychological strain, cynicism, and sickness absence (Kalimo, Taris & Schaufeli, 2003).

Furthermore, the negative mood that is experienced after downsizing might influence employee's estimation of the likelihood of future downsizing. If the downsizing results in short-term financial and organizational benefits for the company, this will encourage executives to reduce the workforce in future because it is seen as good business practice (Gandolfi, 2006). It is likely that expected future downsizing has a negative effect on employees because lacking of trust leads survivors to discount the information that they are given by management because they believe that it has been manipulated (O'Neill & Lenn, 1995). If manager do not focus on mitigating the decline of survivors' trust that typically incurs during downsizing, then survivors tend to withdraw psychologically and behaviorally from work (Brockner, 1988). As a result, morale, involvement, job performance, and loyalty suffer. Thus, job insecurity (downsizing) results in increased social and psychological costs and causes social instability (Mckee-Ryan & Kinicki, 2002).

According to Thaler and Rosen (1976), the labor market offers a unique natural-experimental setting for observing the probability of pay and compensation trade-off. Workers are willing to accept additional risks, such as a high workload and extra work time,

if they can obtain a salary or fringe benefit compensation affording them the same expected utility level. Much like workers, family-business owners may manage salary or fringe benefit compensation for which they are willing to pay workers a wage premium. This premium is bound by the family business capacity to meet the cost of providing additional workplace security while maintaining the same profit maximizing level. Individuals make their choices based on estimates of how well the expected results of a given behavior are going to match up with or eventually lead to desired results (Chen, Chang, and Yeh, 2004; Vroom, 1964). Seen from the perspective of resource loss, job insecurity is an important stressor due to the fact that it disturbs the balance between investments and outcomes (Kalimo *et al.*, 2003; Wells, Hobfoll, & Lavin, 1997). As a result a lack of reciprocity is experienced, which, in its turn leads to negative work-related emotions and might eventually cause burnout (Schaufeli, 2006).

The aim of current study is to examine the effects of past job insecurity (i.e., past job downsizing), future job insecurity (i.e., anticipated job downsizing), and current remuneration on organization outcomes, through employee well-being (i.e., burnout and work engagement). Burnout and work engagement are psychological reactions to long-term environmental conditions (Maslach et al., 2001). According to the Job Demands-Resources (JD-R) model (Bakker & Demerouti, 2007; Demerouti et al., 2001) these two psychological states mediate the relationships between job characteristics (i.e. job demands and job resources) and organizational outcomes (e.g., turnover-intention and organizational commitment). More specifically the JD-R assumes two processes: (1) a stress process in which job demands (i.e., the physical, social, or organizational aspects of the job that require sustained physical or psychological effort) lead to poor organizational outcomes, via burnout; (2) a motivational process in which job resources (i.e., those aspects of the job that may reduce job demands, are instrumental to achieve work goals, fulfill basic psychological needs, or promote personal growth, learning and development) lead to good organizational outcomes, via work engagement. In other words, the stress process posits that burnout mediates the relationship between job demands and organization outcomes; whereas the motivational process posits that work engagement mediates the relationship between job resources and organizational outcomes. In addition it is also assume that lacking job resources have a positive impact on burnout. Meanwhile, the JD-R model has been successfully applied in various countries such as the Netherlands (Schaufeli & Bakker, 2004;

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Schaufeli *et al.*, 2009c; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007), Spain (Llorens *et al.*, 2006; Llorente, Salanova, Martínez & Schaufeli, 2008), Austria (Korunka *et al.*, 2009), Finland (Hakanen *et al.*, 2008), and China (Hu, Schaufeli & Taris, 2011) and to various occupational groups such as nurses (Jourdain & Chenevert, 2010), dentists (Hakanen *et al.*, 2008), home care employees (Bakker *et al.*, 2003a), teachers (Demerouti *et al.*, 2001), blue and white collar workers (Korunka *et al.*, 2009), telecom managers (Schaufeli *et al.*, 2009c), and insurance employees (Schaufeli, & Bakker, 2004).

In the current study job insecurity and remuneration are – for the first time – included in the JD-R model as a job stressor and a job resource, respectively. As a potential stressor future job insecurity in the form of anticipated downsizing drains the employee's energy and is thus associated with certain psychological costs, such as job dissatisfaction, distress and burnout (Dekker & Schaufeli, 1995; Reisel *et al.*, 2010; for a meta-analysis see: Sverke, Hellgren, & Näswall, 2002). Current remuneration, on the other hand, is a job resource that fulfills basic human needs, such as food, clothing and shelter. Indirectly, it also promotes personal growth and development, for instance, when employees buy a computer which gives them access to all kinds of information on the internet. A recent study confirmed the positive impact of remuneration on employee well-being (Brown, Gardner, Oswald, & Qian, 2008).

More specifically, we formulate the following three hypotheses:

- 1. Burnout mediates the negative relationship between anticipated downsizing and organization outcomes (H1);
- 2. Work engagement mediates the positive relationship between current remuneration and organization outcomes (H2);
- 3. Anticipated downsizing, mediates the positive relationship of past downsizing and burnout (H3).

Our research model that is based on the JD-R model and that includes these three hypotheses is displayed in Figure 6.1.

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Figure 6.1. The hypothesized model.

#### 6.2 Method

#### 6.2.1 Sample and procedure

Data was collected from 585 workers in three family-owned mechanic factories of Zhejiang province; 330 (56.4%) were male and 255 (43.6%) female. Their mean age was 31.82 years (SD=9.21). 46.5% of workers were born in the 1980s and 35.7% of workers were born in the 1970s, and less than 4% were born before 1960s. More than 30% of workers were single. The mean tenure was 3.17 years (SD=2.81); 35.6% have been in their current workplace for less than one year, 19.5% have been there for 2 years, and 14.4% have been there for 3 years, only less than 3% of the workers have been employed 10 years or more in the same company. The mean weekly working hours was 57.11 (SD=11.07), only 34 % worked less than 50 hours, more than 64% worked over 55 hour, and more than 29% worked over 60 hours. Of the workers in the sample, 8.4% had only completed primary education, 85% had a secondary education, 4.8% had a college education, and 1.8% had a university education. The response rate was 73%.

#### 6.2.2 Measures

Burnout was assessed with the Chinese version (Hu & Schaufeli, 2011b) of the Maslach Burnout Inventory—General Survey (MBI-GS; Schaufeli *et al.*, 1996a). The present study only includes the exhaustion and cynicism dimensions, because they constitute the core of burnout (Green, Walkey, & Taylor, 1991; Schaufeli & Taris, 2005): Exhaustion (five items; e.g., "I feel used up at the end of the workday") and Cynicism (four items; e.g., "I have become less enthusiastic about my work"). All items are scored on a 7-point frequency rating scale ranging from 0 ("never") to 6 ("every day"). High scores on the Exhaustion and Cynicism subscales are indicative of burnout. The values of Cronbach's  $\alpha$  are .80 and .79, respectively.

Work Engagement was assessed with the Utrecht Work Engagement Scale-9 (UWES-9; Schaufeli *et al.*, 2006a): The short version of the UWES reflects three dimensions, which are measured with three items each: Vigor (e.g., "At my work, I feel bursting with energy", Dedication (e.g., "My job inspires me"), and Absorption (e.g., "I get carried away when I am working"). Work engagement items are scored on a 7-point rating scale (0 – "never", 6 – "every day"). High scores on all three dimensions indicate high work engagement. The values of Cronbach's  $\alpha$  are .76, .76, and .75, respectively.

Organizational outcomes were assessed by two scales: organizational commitment and turnover intention which were assessed by Chinese translation of the Questionnaire on the Experience and Evaluation of Work (QEEW; Van Veldhoven, & Meijman, 1994; Veldhoven, Van Jonge, Broersen, Kompier, & Meijman, 2002). Organization commitment includes 5 items (e.g., "I feel like "a member of the family" at my company"), and turnover intention 4 items (e.g., "Sometimes I think about changing my job"). All items are scored on a 5-point rating scale ranging from (1) "never" to (5) "always". Reversed scores on turnover intention represent low turnover intention. The values of Cronbach's  $\alpha$  are .81 and .74, respectively.

Past downsizing was assessed by eight dichotomized items (1 - "Yes", 2 - "No") (Kalimo *et al.*, 2003). The participants were asked to indicate whether their organization had been involved in any of eight types of downsizing-related reorganizations during the past 12 months. The sum-score of the eight items was used as a measure of past job insecurity.

In order to assess anticipated downsizing (5 items; Kalimo et al., 2003), participants

indicated for five types of downsizing to which degree they felt that these would occur during the next 12 months. A 4-point rating scale was used ranging from (1) "certainly not" to (4) "certainly". The sum score of the five items assessed future job insecurity. The value of Cronbach's  $\alpha$  is .70.

Current remuneration (4 items), was scored on a 4-point rating scale ranging from (1) "certainly disagree" to (4) "certainly agree". The items are "Do you think that your company pays good salaries?"; "Can you live comfortably on your pay?"; "Do you think you are paid enough for the work that you do?" and "Do you think that you are fairly paid in comparison with other people in your department?" The value of Cronbach's  $\alpha$  is .80.

#### 6.2.3 Data analysis

All hypotheses were tested simultaneously by evaluating the fit to the date of our research model (see Figure 6.1), using structural equation modeling (SEM; Jöreskog & Sörbom, 1986). We used maximum likelihood estimation methods and the input for each analysis was the covariance matrix of the subscales. Absolute and relative indices were used to assess the goodness of fit of the models. The calculated absolute goodness of fit indices was (cf. Jöreskog & Sörbom, 1986): (1) the  $\chi^2$  goodness of fit statistic; (2) the Root Mean Square Error of Approximation (RMSEA); and (3) the Goodness of Fit Index (GFI). Non-significant values of  $\chi^2$  indicate that the hypothesized model fits the data. RMSEA values .08 indicate an acceptable fit (Browne & Cudeck, 1993b). As recommended by Marsh *et al.* (1996), the following relative goodness of fit indices were computed as well: (1) Normed Fit Index (NFI); (2) Incremental Fit Index (IFI); and (3) Comparative Fit Index (CFI). As a rule of thumb, values of .90 and higher for all three relative fit indices are considered as indicating a good fit (Hoyle, 1995).

#### 6.3 Results

#### 6.3.1 Preliminary analysis

Table 6.1 provides the means, standard deviations, and correlation coefficients of the study variables. The results show that all scales were reliable which higher than the criterion

value of .70 (Nunnally & Bernstein, 1994). The majority of correlations between demographic variables and the study variables were non-significant, except the number of weekly work hours, which has weak but significantly correlated with emotional exhaustion (r = .24, p<.01), cynicism (r = .12, p<.01), organization commitment (r = .09, p<.05), and current remuneration (r = .10, p<.05). So, obviously, working many hours is positively related to burnout, commitment, and pay.

	M	B		5	~	4	2	9	٢	0	6	10	=	12
1. Age	31.82	9.21												
2. Gender	<u>1</u>	.50	8											
3. Tenure	3.17	2.81	-01	- 08										
4. Working hours	57.11	11.07	*11. '	.10*	15**									
5. EX	2.00	1.23	- 4	-06	03	.24**								
6. CY	5.67	4.96	5	<b>*</b> 60'-	03	.12**	<b>**</b> 89'							
7. VI	9.26	4.59	4	8	10.	01	- 14**	23**						
8. DE	9.11	4.58	-02	02	10	10 <sup>.</sup>	- 18**	26**	.76**					
9. AB	8.21	4.60	02	ଞ	10	10.	- 12**	20**	<b>**</b> 89'	74**				
10. Organization commitment	3.21	LL.	 03	10 <sup>.</sup>	23	*60	- 24**	34**	34**	47**	47**			
11. Low turnover intention	2.86	.75	ą	8	04	03	36**	-,40**	.20**	.23**	.23**	.32**		
12. Past downsizing	1.31	.27	<b>*</b> 60	8	01	02	.11*	.12**	10,	10 <sup>.</sup>	001	07	- 15**	
13. Anticipated downsizing	1.99	54	<u>6</u>	02	100	02	.17**	.23**	8	- 11**	لا	17**	- 22**	.28
14. Current remuneration	57.11	11.07	-06	ষ্	04	.10*	- 29**	27**	.12**	.18**	.15**	.28**	.21**	.1.

Table 6.1. Descriptive statistics for all research variables

CHAPTER 6

<u>Note:</u> \*p< 0.05; \*\*p< 0.01

The rates of past downsizing are given in Table 6.2. Approximately 397 (67.9%) of the workers experienced any downsizing event in the past 12 months. The most frequently mentioned reasons for downsizing were "Personnel had been dismissed" and "Temporary contracts had been cut". "Personnel had been laid off" ranked lowest, but still 61.2% of the workers had been confronted with it.

Table 6.2. Reasons for job downsizing in the last twelve months

The	e Type of Past Downsizing	Rate (%)
1.	Personnel had been dismissed	73.3
2.	Temporary contracts had been cut	73.2
3.	Replacements had not been hired	70.9
4.	Vacant jobs had not been filled	69.9
5.	Personnel had been forced to work part time instead of full time	69.6
6.	Personnel had been replaced in units	62.7
7.	Personnel had been working less hours	62.2
8.	Personnel had been laid off	61.2
	Mean Rate (%)	67.9

#### 6.3.2 Model testing

First our research model (M1; see Figure 6.1) was tested that assumes full mediation of burnout and work engagement. More specifically we tested simultaneously: (1) the stress process: anticipated downsizing  $\rightarrow$  burnout  $\rightarrow$  organization outcomes, and (2) the motivational process: current remuneration  $\rightarrow$  work engagement  $\rightarrow$  organization outcomes. The results (see Table 6.3) show that the model needs further improvement because TLI and RMSEA did not meet their criterion of .90 and .08, respectively. So next, and based on the so-called Modification Indices, we tested the partial mediated role of well-being (i.e., burnout and work engagement) by adding to M<sub>1</sub> two direct paths connecting anticipated downsizing and current remuneration to organization outcomes, respectively (M<sub>2</sub>). As can be seen from Table 6.3, compared to the fit of M<sub>1</sub>, the fit of the partial mediation model M<sub>2</sub> improved significantly ( $\Delta \chi^2$  (2) = 31.92, p <.001). Next, a cross-link from current remuneration to burnout (M<sub>3</sub>) was added. Results showed that M<sub>3</sub> had a significantly better fit to the data than M<sub>2</sub> ( $\Delta \chi^2$  (1) = 47.38, p <.001). Moreover, all path- coefficients of M<sub>3</sub> were significant. Taken together, this means that H1 and H2 that assumed the mediating role of

burnout and work engagement, respectively, are partially supported because instead of the expected full mediation, only partial mediation was observed. More specifically, it appeared that the indirect effect of current remuneration on organizational outcomes ( $\beta_{indirect} = .23$ ) is stronger than its direct effect ( $\beta_{direct} = .20$ ). In contrast, the indirect effect of anticipated downsizing on organizational outcomes ( $\beta_{indirect} = -.09$ ) is less strong than its direct effect ( $\beta_{direct} = .20$ ).

Model	$\chi^2$	df	GFI	NFI	TLI	CFI	RMS	
							EA	
M <sub>1</sub>	170.93	24	.94	.91	.88	.92	.10	
$M_2$	139.01	22	.95	.93	.90	.94	.10	
M3	91.63	21	.97	.95	.94	.96	.08	
$M_{4-constrained}$	106.30	29	.97	.95	.94	.96	.07	
$M_{4-unconstrained}$	104.92	28	.97	.95	.94	.96	.07	
M <sub>5</sub>	106.30	29	.97	.95	.94	.96	.07	

Table 6.3. Goodness-of- fit indices of the models

<u>Note.</u>  $\chi^2$  = chi-square; df = degrees of freedom. p = significance level. GFI = Goodness-of-Fit Index; TLI = Tucker-Lewis Index; NFI = Normed Fit Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation.

Finally, to test the mediating role of anticipated downsizing in the relationship between past downsizing and burnout (H3), we compared the fit of the hypothesized model under two conditions: (1) when the direct path from past downsizing to burnout was constrained to zero ( $M_{4-constrained}$ ), and (2) when the direct path was not constrained ( $M_{4-unconstrained}$ ). As can be inferred from Table 6.3, the Chi-square difference test between  $M_{4-constrained}$  and  $M_{4-unconstrained}$ revealed a non-significant difference ( $\Delta \chi^2$  (1) = 1.38, ns). Moreover, the path from past downsizing to burnout was non-significant ( $\gamma$  = .05, n.s.). These results testify that anticipated downsizing fully mediates the relationship between past downsizing and burnout, so that H3 is supported. The path coefficients of the final model  $M_5$  are shown in Figure 6.2.



Figure 6.2. The path coefficients in final model in workers (n=585), \*p<.05, \*\*p<.01, \*\*\*p<.001.

#### 6.4 Discussion

The current study examined the indirect relationship of job insecurity and current remuneration on organization outcomes through employee well-being, using the JD-R model framework (Bakker & Demerouti, 2007). Our study confirmed the hypothesized research model which assumes two process (1) a stress process linking job demands (i.e., downsizing) and lacking job resources (poor remuneration) with organization outcomes (i.e., turnover intentions and organizational commitment), via burnout, and (2) a motivational process linking current remuneration to organization outcomes via work engagement (see Figure 6.1). Although both mediating relationships that are predicted by these two processes of the JD-R model were found, two additional direct effects of downsizing and remuneration on organizational outcomes were also observed. This means that instead fully mediating,

employee well-being plays only a partially mediating role. For remuneration, the direct and indirect effects (via work engagement) on organizational outcomes are about equally strong. For anticipated downsizing, however, the direct effect is somewhat stronger than the indirect effect (via burnout).

Basically, age, gender and tenure do not seem to be significant factors for family-owned workers in relation to well-being and organizational outcomes. This could be partly due to the low tenure of workers in our sample; they only worked for an average of 3.17 years in their current organization. As can be seen from Table 6.1, age, gender and tenure are not related to the duration of their current job.

In our study over half of the workers were born after the 1970s (82.2%), most of whom have higher education (i.e., secondary education) and have less family-related financial burdens (only one child). Most of them are migrant workers – the so-called "floating people" - who work as contract workers, change jobs more frequently, and return to their hometowns at periodic intervals such as Chinese New Year. However, unlike their predecessors who flooded into cities to make money and seldom considered settling down, these modern migrant workers are more involved in urban life and developed a strong desire for a better quality of life. According to a survey from the China Council for the Promotion of International Trade (2010) most family-owned businesses in labor-intensive sectors generated profit margins lower than 3 percent. This means that these businesses are under great financial pressure and are therefore reluctant to raise wages and fringe benefits for their employees. On the other hand, low salaries, high workloads and long work hours do not appeal to employees so that they change their jobs frequently in search for less stressful and better paid jobs. Seen from this perspective it is not surprising the past downsizing had a weak positive correlation with age, and that working hours had positive correlation with emotional exhaustion, cynicism, and organization commitment.

Past job downsizing only had a significant correlation with burnout and low turnover intention, while anticipated job downsizing had a stronger significant correlation with all studied variables, except work engagement. Hence, the latter has a stronger psychological impact than the former, which agrees with a study carried out among Australian railway workers (Dekker & Schaufeli, 1995). Yet, anticipated downsizing was positively related to past downsizing, which means that employees who have gone through downsizing before, are more likely to experience future job insecurity. And what is more, in its turn, future job

insecurity is positively associated with burnout. Most importantly, rather than having a direct impact on burnout, the experience of past downsizing has an indirect effect through the anticipation of future downsizing. In other words, employees who have gone through downsizing before are likely to have lost confidence in management (Feather & Rauter, 2004) and therefore fear for future downsizing, which leads to major stress that eventually might result in unwell being (burnout), turnover intention, and poor organizational commitment.

Generally speaking, different people respond to different incentives in the workplace, depending upon the salience of individual needs (Chiang & Birtch, 2005). For some, the key to being satisfied with their job lies in attractive remuneration, while for others, it is job security. Previous surveys in OECD countries found job security to be one of the most important criteria for employees (Clark, 2005, 2007). These surveys suggest that only one-fifth to a quarter of the employees consider high income important and that having a high income is not as important as considerations such as job security and interesting work. Those studies in OECD countries have found current remuneration to be less important than the results in this study suggest is the case in China. This might be because when family business workers are continuously confronted with job uncertainty, remuneration becomes more important as a way of compensating uncertainty. Through remuneration other basic needs can be satisfied, after all.

#### 6.4.1 Study limitations and future recommendations

Our study has several limitations. First, the concept of job insecurity is measured by self-constructed past and anticipated downsizing scale, which lacking the clear construct validity. Future research should develop and validate alternative measures of job insecurity. Second, due to the cross-sectional design of the study no conclusions regarding causality can be drawn. Beside the proposed causal relationship, the reverse causality (i.e. people experiencing low organization commitment and high turnover intention are more prone to negative evaluate anticipated job insecurity and current remuneration), is also plausible. Third, our study relied solely on self-report measures, which may increase the problem of common method variance. This may be resolved in further studies by including more objective measures, e.g., of salary indicators, actual turnover and performance indicators.

#### 6.4.2 Conclusions

The current study examined the effects of job insecurity (i.e., downsizing) and current remuneration on organization outcomes of workers in Chinese family-owned business using a questionnaire survey. To date, studies using the JD-R model focused on other work characteristics but overlooked the potential role of job insecurity and current remuneration. Our study demonstrated the importance of anticipated and past downsizing and current remuneration for employee well-being and organization outcomes.

## **Chapter 7**

How are Changes in Exposure to Job Demands and Job Resources Related to Burnout and Engagement?

A Longitudinal Study among Chinese Nurses and Police Officers

Based on:

Hu, Q., Schaufeli, W.B., & Taris, T.W. (Submitted). How are changes in exposure to job demands and job resources related to burnout and engagement? A longitudinal study among Chinese nurses and police officers.

#### 7.1 Introduction

As a comprehensive and parsimonious stress model, the Job Demands-Resources (JD-R) model (Demerouti et al., 2001) has been successfully applied in numerous occupational groups such as Chinese nurses and blue collar workers (Hu et al., 2011), Dutch home care professionals (Bakker et al., 2003a), Australian call-center workers (Lewig & Dollard, 2003), Italian white collar employees (Balducci et al., 2011), and Dutch medical residents (Bakker, ten Brummelhuis, Prins, & der Heijden, 2011). At the core of the JD-R model lie two assumptions. First, it is assumed that the presence of job resources (defined as positively valued physical, social, or organizational aspects of the job that foster personal growth, learning, and development, and have motivational qualities) increase work engagement and decrease burnout through a motivational process (Schaufeli & Taris, 2014; Schaufeli & Bakker, 2004; Demerouti et al., 2001). Job resources (such as job control and learning opportunities) may satisfy individuals' basic psychological needs for competence, autonomy and relatedness (Van Den Broeck, Vansteenkiste, De Witte, Lens, 2008). In turn, this will motivate employees and lead to higher levels of engagement and subsequent performance (Schaufeli & Taris, 2014). Hobfoll (1989) proposed that people will invest their resources in an attempt to build more resources: that is, the more resources employees have, the more they will invest in the hope of obtaining greater returns. In the work context, this reasoning would imply that employees spiral into a "gain" process, whereby those possessing higher resources beget more resources and more positive emotions and work outcomes (Salanova et al., 2010).

Second, high job demands (defined as negatively valued physical, social, or organizational aspects of the job that require sustained physical or psychological effort, and that are associated with certain psychological and/or physiological costs) increase burnout through a health impairment process (Demerouti *et al.*, 2001; Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014). If recovery from job demands (such as high workload or high levels of interpersonal conflict) is inadequate or insufficient, individuals' psychological energetic resources are thwarted. These psychological energetic resources are closely linked with individuals' basic need satisfaction and their well-being and performance. Since the health impairment process frustrates these psychological needs, lack of resources will be associated with individuals' malfunctioning (cf. Ryan & Deci, 2000). Further, similar to the

gain process discussed above (Salanova *et al.*, 2010), it may be assumed that lack of energetic resources will cause employees to enter a "loss" process, leading to deleterious outcomes such as burnout and ill health (Hakanen *et al.*, 2006).

Most dynamic studies to the JD-R model explore the mutual relationships between job demands (resources) and mental health using longitudinal designs. For example, Castanheira and Chambel (2010) showed that salespeople's job demands (quantitative demands and emotional dissonance) predicted exhaustion, which negatively impacted extra-role performance both concurrently and longitudinally (after six months). Similarly, a three-wave longitudinal study by Lizano and Barak (2012) found that high levels of job stress and work-family conflict predicted an increase in burnout (exhaustion and depersonalization) over a six and a twelve-month interval. Hakanen *et al.* (2008) found that high job resources were associated with high future work engagement which in turn predicted organizational commitment, whereas high job demands predicted high levels of burnout over time, which in turn predicted future depression. Finally, Boyd *et al.* (2011) found that low job resources (workplace autonomy and procedural fairness) predicted high psychological strain and low organizational commitment two years later.

These longitudinal results are promising because they support the motivational and health impairment processes of the JD-R model. However, two unsolved problems remain. Firstly, an assumption of the JD-R model is that having to meet high demands results in high levels of burnout. This implies that changes in these demands will translate into corresponding changes in outcomes: higher demands should be associated with higher levels of burnout. However, *absence* of change could also affect burnout. For example, it is plausible that chronic exposure to high demands should also lead to burnout, in that this would lead to a continuous depletion of one's energetic resources and, hence, to increasingly higher levels of mental strain (cf. effort-recovery model, Meijman & Mulder, 1998). Conversely, chronic low demands should not drain these resources, and in this sense it is unlikely that experiencing chronically low demands will result in burnout. Similarly, changes in resources will translate into corresponding changes in work engagement. For example, steady exposure to high job resources should be associated with high (and perhaps even increasing) levels of work engagement, in that the motivational potential of resources will initiate, maintain and even boost people's initiative and engagement (cf. Hobfoll, 1989).

Conversely, chronic exposure to insufficient job resources may hamper individuals' energy and dedication.

So far, the motivational and health impairment processes have been studied using correlational techniques, that is, the predictions of the JD-R model have been predominantly tested using structural equation modeling (among others, Boyd et al., 2011; Demerouti & Bakker, 2011; Hakanen et al., 2008; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2009). However, this approach may not be optimally suited to test the temporal dynamics of the JD-R model. Correlation techniques are based upon changes in the relative rank-order of the participants (normative stability: cf. Taris, 2000; Mortimer, Finch & Kumka, 1982), and changes in this order may or may not coincide with across-time changes in the actual *level* of scores of participants. For example, even if an employee experiences a decrease in job demands, this worker could compare unfavorably to others if these others would experience an even larger decrease of their job demands. Depending on the number of employees whose across-time development diverges from the overall group pattern, the correlation between a pretest and a follow-up measure of the same variable (e.g., job demands) could be positive (if the rank order of employees remains more or less the same), negative (if the rank order of employees is reversed, as is the case for the familiar regression-to-the-mean effect), or zero (if the rank order of employees changes randomly). Moreover, there would not necessarily be any correspondence between the sign of this correlation and the difference of the pre- and posttest means, since normative stability is both conceptually and empirically independent from stability or change with respect to means (level stability; cf. Mortimer et al., 1982; Taris, 2000).

Furthermore, if the JD-R model is correct in assuming that a gain spiral of resources exists and that these resources relate to engagement, (changes in) resources and (changes in) work engagement would covary across time. This implies that high-resource employees will become (more) engaged, which makes that they are able to mobilize even more resources, leading to even higher levels of engagement, and so on. However, this assumption would seem difficult to test using correlational techniques. Since the across-time correlations among engagement and resources would depend on the number of employees whose development diverges from the overall trend for the group, the *direction of these lagged effects* would not necessarily be informative regarding the *actual changes in the level* of the employees' scores on work engagement. Since these *actual changes* are the proof of the

pudding of the JD-R model (high levels of resources lead to positive changes in the level of work engagement), correlation-based analysis tell us actually little about the dynamic processes proposed by the JD-R model. Instead, we need techniques that focus on across-time change in the *levels* of the outcomes under study. The same reasoning applies to the loss circle in the JD-R model; here, too, can correlation-based techniques tell us little about the actual changes in terms of means of the outcomes (e.g. burnout).

The above issues call for longitudinal research on the associations among demands, resources and well-being outcomes, focusing on the development of these outcomes as a function of job demands and job resources by using level-focused methods rather than correlational techniques. It would seem particularly rewarding to focus on specific exposure groups (e.g., exposure to chronic high (or low) demands (resources) vs. experiencing across-time changes in demands (resources)). Such research could shed more light on the contextual mechanisms (e.g., across-time changes in demands and resources) that could account for well-being outcomes. The current study sought to enhance our understanding of these issues by applying the JD-R model to investigate employee well-being (burnout and work engagement). Our aim is to provide a detailed picture of the relations between varying levels of work characteristics and changes in various aspects of well-being (i.e., burnout and engagement). Based on the reasoning discussed above, we hypothesize that:

Hypothesis 1. Continuous exposure to high job demands leads to an increase in burnout (1a) and a decrease in work engagement (1b).

Hypothesis 2. Continuous exposure to high job resources leads to a decrease in burnout (2a) and an increase in work engagement (2b).

Hypothesis 3. Continuous exposure to low job demands leads to a decrease in burnout (3a) and an increase in work engagement (3b).

Hypothesis 4. Continuous exposure to low job resources leads to an increase in burnout (4a) and a decrease in work engagement (4b).

Hypothesis 5. Increased exposure to job demands leads to an increase in burnout (5a) and a decrease in work engagement (5b).

Hypothesis 6. Increased exposure to job resources leads to a decrease in burnout (6a) and an increase in work engagement (6b).

Hypothesis 7. Decreased exposure to job demands leads to a decrease in burnout (7a) and an increase in work engagement (7b).

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Hypothesis 8. Decreased exposure to job resources leads to an increase in burnout (8a) and a decrease in work engagement (8b).

#### 7.2 Method

#### 7.2.1 Participants

The data were collected from a general hospital in Jinhua and a police department of Yongkang, both located in the urbanized eastern part of China, about 200 kms south of Shanghai. Questionnaires were handed out by administrators in the hospital and by the human resource officer of the police department. The survey was accompanied by a letter explaining the general aim of the study, and emphasizing the participants' privacy. At the first wave of the study (T1), 234 nurses (78% response) and 466 police officers (93% response) were included. At the second wave 1 year later (T2), 172 nurses (74% response) and 273 police officers (59% response) returned the questionnaires. The mean age of the nurses was 31.81 years (SD=9.16), and all of them were female. The mean age of the police officers was 35.96 years (SD=9.18), and this sample included 239 male and 37 female officers.

#### 7.2.2 Measures

*Job demands* were assessed by the Chinese version (Zheng *et al.*, 2010; Hu *et al.*, 2011) of the Questionnaire on the Experience and Evaluation of Work (QEEW, Van Veldhoven *et al.*, 2002). The four demands included in the present study were:

- workload (5 items, coefficient alphas were .82 at T<sub>1</sub> and .83 at T<sub>2</sub> among nurses and .87 at T<sub>1</sub> and .85 at T<sub>2</sub> among police officers), for example, "Do you have too much work to do?";
- (2) emotional demands (3 items, coefficient alphas were .84 at T<sub>1</sub> and .82 at T<sub>2</sub> among nurses, and .88 at T<sub>1</sub> and .87 at T<sub>2</sub> among police officers), for example, "Are you confronted at your work with situations or events that affect you personally?";
- (3) interpersonal conflict (4 items, coefficient alphas were .82 at T<sub>1</sub> and .83 at T<sub>2</sub> among nurses and .91 at T<sub>1</sub> and .92 at T<sub>2</sub> among police officers), for example, "How often do you get into arguments with others at work?"; and

(4) work-family interference (7 items, coefficient alphas were .95 at T<sub>1</sub> and .95 at T<sub>2</sub> among nurses, and .96 at T<sub>1</sub> and .96 at T<sub>2</sub> among police officers.), for example, "You have so much to do for work that you cannot meet your household or care tasks at home?".

For all demands a 5-point response scale was used, ranging from 1 ("never") to 5 ("always"). Thus, higher scores indicated higher levels of job demands. Scores on the four job demands scales were collapsed into one composite factor score (for details see the Results Section).

*Job resources* were also assessed by subscales of the Chinese version of the QEEW), using the same 5-point answering format. Four job resources were included:

- *job control* (3 items, coefficient alphas were .73 at T<sub>1</sub> and .68 at T<sub>2</sub> (nurses) and .83 at T<sub>1</sub> and .80 at T<sub>2</sub> (police officers), for example, "Do you have freedom in carrying out your work activities?";
- (2) *learning opportunities* (4 items, coefficient alphas were .83 at T<sub>1</sub> and .88 at T<sub>2</sub> among nurses, and .90 at T<sub>1</sub> and .86 at T<sub>2</sub> among police officers), for example, "I can develop myself sufficiently within my company";
- (3) participation in decision making (7 items, coefficient alphas were .85 at T<sub>1</sub> and .87 at T<sub>2</sub> among nurses and .89 at T<sub>1</sub> and .92 at T<sub>2</sub> among police officers), for example, "Can you participate in decisions affecting issues related to your work ?"; and
- (4) *feedback* (3 items, coefficient alphas were .85 at  $T_1$  and .85 at  $T_2$  among nurses and .88 at  $T_1$  and .88 at  $T_2$  among police officers), for example, "Does your work provide you with direct feedback on how well you are doing your work?".

Again, scores on the job resources scales were collapsed into one composite factor score (see the Results Section).

*Burnout* was assessed with the exhaustion and cynicism subscales of the Chinese version (Hu & Schaufeli, 2011a) of the Maslach Burnout Inventory—General Survey (MBI-GS; Schaufeli *et al.*, 1996a). Exhaustion was assessed with five items (e.g., "I feel used up at the end of the workday"), and cynicism with four items (e.g., "I have become less enthusiastic about my work"). All items were scored on a 7-point frequency rating scale ranging from 0 ("never") to 6 ("daily"). High scores on the exhaustion and cynicism subscales are indicative of burnout. Theoretical reasoning (Schaufeli & Taris, 2005) as well as empirical research (Green *et al.*, 1991) has identified exhaustion and cynicism as the core of burnout. Therefore, in the current study, we used a sum score of exhaustion and cynicism to represent burnout. Coefficient alphas for burnout were .93 at  $T_1$  and .95 at  $T_2$  among

nurses, and .95 at T<sub>1</sub> and .95 at T<sub>2</sub> among police officers.

*Work Engagement* was assessed with the Chinese version (Zheng *et al.*, 2010) of the Utrecht Work Engagement Scale (UWES-9; Schaufeli *et al.*, 2006a). The UWES-9 taps three underlying dimensions, which are all measured with three items: vigor (e.g., "At my work, I feel bursting with energy"), dedication (e.g., "My job inspires me"), and absorption (e.g., "I get carried away when I am working"). All items are scored on a 7-point rating scale ranging from 0 ("never") to 6 ("daily"). High scores on all three dimensions indicate high levels of work engagement. As recommended by Schaufeli and Bakker (2010), a sum score was used to represents work engagement. Coefficient alphas of work engagement were .93 (.91) at  $T_1$  ( $T_2$ ) among nurses, and .95 (.95) at  $T_1$  ( $T_2$ ) among police officers.

#### 7.2.3 Statistical analysis

The IBM SPSS 20 computer program was used for analyzing the data. A principal component analysis with varimax rotation that included all eight job demands and job resources was carried out among nurses and police officers at  $T_1$ , for each occupational group separately. The results are displayed in Table 7.1.

	Nu	rses	Police	officers
	Component 1	Component 2	Component 1	Component 2
Workload (T <sub>1</sub> )	.78		.85	
Emotional demands $(T_1)$	.84		.83	
Interpersonal Conflict (T <sub>1</sub> )	.76		.53	
Work-Family Interference (T <sub>1</sub> )	.83		.87	
Participate in decision $(T_1)$		.78		.89
Development opportunity $(T_1)$		.79		.84
Feedback $(T_1)$		.75		.55
Control (T <sub>1</sub> )		.69		.70
Explained variance	32.40%	28.53%	32.82%	29.24%

Table 7.1. Factor loadings of various job demands and job resources, for nurses and police officers

Note: Only factor loadings of .30 and over are displayed.

Based on the loadings of the items on the first two factors, composite scores for job

demands and job resources were computed. The variables measuring job demands and job resources at each of the two waves of the study were dichotomized using a median split procedure on the basis of the factor scores. Comparison of the participants' scores on the  $T_1$  and  $T_2$  measures of a particular concept (i.e., either job demands or job resources) yielded for each of these two concepts four subgroups that differed in their levels of exposure to job demands (job resources) over time: (1) a *High Exposure group* (H-H) that included those reporting high job demands (job resources) at both points in time; (2) a *Low Exposure group* (L-L) that included participants who reported low demands (job resources) at both points in time; (3) an *Increasing Exposure group* (L-H) that included those with low demands (job resources) at  $T_1$  and high demands (job resources) at  $T_2$ ; and (4) a *Decreasing exposure group* (H-L) that included those with high demands (job resources) at  $T_1$  and low demands (job resources) at  $T_2$ . Table 7.2a and Table 7.2b present the means of the studied variables among different exposure groups to job demands or job resources, as well as the  $T_1$ - $T_2$  changes of the studied variables among nurses and police officers.

كالمنافط		Den	nands					Res	ources				
Variables	Groups	AT	TI		T2		ΔM	1	T		T2		714
		٨٦	М	SD	М	SD		77	М	SD	М	SD	
Job	H-H	58	.87	.57	.93	.53	.06	46	.10	.83	90.	.91	04
Demands	H-L	31	.57	.48	47	.39		35	02	98.	01	1.11	.01
							$1.04^{***}$						
	L-H	24	63	.47	.63	.49	$1.26^{***}$	38	.07	1.08	05	1.02	12
	L-L	59	90	.70	93	69.	03	53	13	1.10	01	1.00	.12
Job	H-H	58	00.	.94	.03	1.06	.03	46	1.02	.68	1.02	.60	00.
Resources	H-L	31	.07	68.	04	.86	11	35	.59	.50	74	.59	-1.33***
	L-H	24	28	.95	56	1.10	28	38	61	.56	59	.49	$1.20^{***}$
	L-L	59	.07	1.12	.22	80.	.15	53	83	.61	82	.59	.01
Burnout	H-H	58	7.39	2.59	9.09	2.34	$1.70^{***}$	46	5.66	2.71	6.41	2.87	.75
	H-L	31	6.35	2.69	6.87	2.27	.52	35	5.50	2.56	7.98	3.18	2.48***
	L-H	24	5.85	2.49	9.01	2.56	$3.19^{***}$	38	6.21	2.51	6.98	2.37	77.
	L-L	59	4.64	1.84	5.61	2.62	**∠6.	53	6.62	2.56	8.45	2.77	1.83 * * *
Work	H-H	58	5.68	3.31	5.57	3.47	11	46	8.39	3.72	7.93	3.41	46
Engagement	H-L	31	6.83	3.51	6.04	3.34	79	35	7.20	3.17	4.64	2.70	-2.56***
	L-H	24	7.11	2.51	5.31	2.55	-1.80	38	6.24	3.04	7.11	3.36	.87
	L-L	59	8.41	2.94	7.16	3.04	-1.25	53	6.28	2.82	4.96	2.31	-1.32**

<u>Note:</u> \*\*p<.01, \*\*\*p<.001

Table 7.2b. Means (M), standard deviations (SD) of the studied variables in four exposure groups to job demands (resources) among police	officers
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Studied			Dema	nds	Dema	spu			Resour	seo.	Resour	seo.	
Variables	Groups	<u>v</u>	11 		T2		ΔM		T1		T2		$\Delta M$
			М	SD	М	SD			М	SD	М	SD	
Job	H-H	66	90	.59	.83	.60	07	83	12	.95	13	90	01
Demands	H-L	36	.55	.53	70	.47	-1.25***	44	10	1.07	.04	1.09	.14
	H-H	36	57	.41	.82	.67	$1.39^{***}$	45	.32	1.04	03	.74	35*
	L-L	102	87	.65	85	.56	.02	101	00.	98.	.11	1.13	.11
Job	H-H	66	20	1.07	01	1.13	.19	83	.94	.67	.74	.54	20**
Resources	H-L	36	12	68.	.30	1.15	.42*	44	TT.	59	58	.60	-1.35***
	H-1	36	.04	1.09	31	76.	-35	45	84	.53	.96	77.	$1.80^{***}$
	L-L	102	.22	.90	.02	77.	20*	101	73	.48	79	.65	06
Burnout	H-H	66	7.30	2.72	6.57	3.10	73	83	5.00	2.25	5.15	2.33	.15
	H-L	36	5.63	2.17	4.93	2.27	70	44	4.95	2.22	6.57	3.01	$1.62^{**}$
	H-1	36	4.84	2.53	7.01	2.95	$2.17^{**}$	45	7.37	3.41	3.75	1.94	-3.62***
	L-L	102	4.30	1.93	4.45	2.09	.15	101	5.68	2.53	6.43	3.00	.75**
Work	H-H	66	9.55	4.87	9.46	4.79	-09	83	9.93	2.85	10.20	3.48	.27
Engagement	H-L	36	7.85	3.14	8.82	3.41	.97	44	9.44	2.92	7.77	3.16	-1.67**
	П-Н	36	8.99	4.24	7.43	3.60	-1.56	45	10.84	5.34	12.33	3.83	$1.49^{**}$
	L-L	102	8.72	2.93	8.76	3.14	.04	101	7.07	3.68	6.65	3.02	42

Note: \*\**p*<.01, \*\*\**p*<.001

#### 7.3 Results

We examine whether there is a difference in burnout and engagement depending on the exposure to job demands and job resources. The data were analyzed using a 2 (Time: time 1 vs. time 2)  $\times$  4 (Group: H-H, H-L, L-H and L-L exposure groups) repeated measures ANOVA with Time as a within-participants factor and Group as a between-participants factor. The analyses were conducted for nurses and police officers separately. Special attention was given to the Time  $\times$  Group interaction effect due to its direct relevance to our hypotheses.

Table 7.3. Result of repeated measures ANOVA: Comparison of Burnout and Work Engagement among Exposure to Demands Groups and Exposure to Resources Groups among nurses and police officers

	Exposure to	Demands		Exposure to	Resources	
	F	F (Time)	$F$ (Groups $\times$	F	F (Time)	$F$ (Groups $\times$
	(Groups)		Time)	(Groups)		Time)
Nurses (N=17	2)					
Burnout	25.16***	49.50***	5.11**	3.53*	46.21***	3.67*
Engagement	6.68***	12.48**	1.85	8.70***	.11.97**	7.45***
Police Officer	rs (N=273)					
Burnout	33.62***	.88	6.64***	3.35*	1.92	26.31***
Engagement	1.88	.41	2.95*	31.79***	.13	6.13***

Note: \*p<.05, \*\*p<.01, \*\*\*p<.001

#### 7.3.1 Exposure to job demands (nurses)

Table 7.3 displays a significant Time × Group interaction effect for burnout, suggesting that the four exposure groups differed in terms of their levels of burnout across T<sub>1</sub> and T<sub>2</sub>. No interaction effect was observed for exposure to demands and work engagement, suggesting that differential exposure to job demands is not related to levels of engagement across time. A paired *t*-test revealed that burnout levels of the H-H exposure group ( $t_{(57)} = -4.45$ , p < .001), the L-H exposure group ( $t_{(23)} = -5.26$ , p < .001), and the L-L exposure group ( $t_{(58)} = -3.23$ , p < .001) increased significantly from T<sub>1</sub> to T<sub>2</sub> (see Figure 7.1). Thus, Hypotheses 1a/5a were confirmed, but Hypothesis 3a was not confirmed.



Figure 7.1. Change in burnout for four exposures to job demands groups across time among nurses

#### 7.3.2 Exposure to job resources (nurses)

Significant Time × Groups interaction effects for burnout and work engagement suggest that the four exposure groups differed in their levels of burnout and work engagement across T<sub>1</sub> and T<sub>2</sub>. Paired t-tests revealed that the burnout level of the L-L exposure group ( $t_{(53)} = -5.01$ , p<.001) and the H-L exposure group ( $t_{(34)} = -4.72$ , p<.001) increased significantly from T<sub>1</sub> to T<sub>2</sub> (see Figure 7.2a; Hypotheses 4a and 8a confirmed). A paired *t*-test revealed that work engagement in the L-L exposure group ( $t_{(52)} = 3.48$ , p<.01) and in the H-L exposure group ( $t_{(34)} = 4.69$ , p<.001) decreased significantly from T<sub>1</sub> to T<sub>2</sub> (cf. Figure 7.2b; Hypotheses 4b/8b confirmed).



Figure 7.2a. Change in burnout for four exposures to job resources groups across time among nurses



Figure 7.2b. Change in work engagement for four exposures to job resources groups across time among nurses

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#### 7.3.3 Exposure to job demands (police officers)

Table 7.3 displayed significant Time  $\times$  Group interactive effects for burnout and work engagement, suggesting that the four exposure groups differed in the level of burnout and work engagement across  $T_1$  and  $T_2$ . Paired t-tests revealed that the level of burnout in the L-H exposure group increased significantly from T<sub>1</sub> to T<sub>2</sub>,  $t_{(35)} = -3.78$ , p<.01 (see Figure 7.3a; Hypothesis 5a confirmed), and that no significant change in work engagement was found for the exposure groups.


# 7.3.4 Exposure to job resources (police officers)

Significant Time × Group interaction effects for burnout and work engagement showed that the four exposure groups differed in the development of burnout and work engagement across  $T_1$  and  $T_2$ . Successive paired *t*-tests revealed that the levels of burnout of the H-L exposure group ( $t_{(43)} = -3.58$ , p < .01) and the L-L exposure group ( $t_{(100)} = -2.75$ , p < .01) increased significantly from  $T_1$  to  $T_2$  (see Figure 7.4a; Hypotheses 4a/8a confirmed). The burnout level of the L-H exposure group decreased significantly from  $T_1$  to  $T_2$ ,  $t_{(44)} = 5.43$ , p < .001 (Hypothesis 6a confirmed). Further, paired t-tests revealed that the engagement level of the L-H exposure group increased significantly from  $T_1$  to  $T_2$  ( $t_{(44)} = -3.12$ , p < .01) whereas that of the H-L exposure group decreased from  $T_1$  to  $T_2$ ,  $t_{(43)} = 3.54$ , p < .01 (see Figure 7.4b, Hypotheses 6b/8b confirmed).





Figure 7.4b. Change in work engagement for four exposures to job resources groups across time among police officers

#### 7.4 Discussion

One main assumption of the JD-R model is that changes in the characteristics of work environment result in corresponding changes in employee well-being. In the past, researchers have often relied on correlational techniques to show that job demands and job resources predict well-being both in cross-sectional and longitudinal. Although the findings of this research were often in line with the assumptions of the JD-R model (e.g., Bakker *et al.*, 2003a; Boyd *et al.*, 2011; Demerouti *et al.*, 2001; Hakanen *et al.*, 2006, 2008; Salanova *et al.*, 2010), usually this research did not take into account that for the notion of gain and loss cycles to be confirmed, it is the *level* of (the changes in) resources, demands, engagement and burnout that matters, rather than the *strength of the associations* among these concepts. Moreover, even the absence of change in the independent variables could result in changes in the presumed outcome variables. To obtain more insight in these ideas, the present study examined the actual changes of means in the level of employees' well-being among various exposure groups that were created on the basis of stability or change in job demands or job resources. Below we discuss the most interesting findings of this study.

# 7.4.1 Exposure to change

Generally, we expected that positive (negative) changes in terms of job demands and job resources would be associated with correspondingly higher (lower) levels of burnout and lower (higher) levels work engagement (Hypotheses 5-8). The study shows that these hypotheses received moderate support. In our study, increased exposure to job demands (from low to high demands) was associated with a significant increase in burnout, while increased exposure to resources (from low to high resources) was associated with a significant increase in work engagement and a significant decrease in burnout among police officers. Further, decreased exposure to job resources (from high to low resources) was associated with a significant decrease in work engagement, both among nurses and police officers. These results are in line with assumptions of the JD-R model that increasing job demands and decreasing job resources trigger a motivational process that leads to burnout, whereas increasing job resources trigger a motivational process that

In addition, the effect of increased exposure to job demands (i.e., from low to high demands) on burnout was significant, whereas the effect of decreased exposure to job demands (from high to low demands) on burnout was non-significant in both samples. Apparently, increased exposure to job demands requires high effort expenditure that accordingly increases physiological and psychological costs, which leads to increasing levels of burnout (cf. Meijman & Mulder, 1994). The fact that decreased exposure to high job demands did not result in a significant decrease in burnout suggests that recovering from the adverse effects of long-term exposure to high job demands is difficult.

Our study also found that various patterns of exposure to job demands (i.e., changing exposure to demands and stable exposure to demands) were not significantly related to work engagement in both samples. Previous cross-sectional studies using SEM also found that the effect of job demands on work engagement was non-significant (Hakanen, *et al*, 2006; Schaufeli & Bakker, 2004). It would seem possible that the job demands included in our study are predominantly hindrance-related stressors (cf. Podsakoff, LePine, & LePine, 2007), thus these should be related to burnout but not to employees' work engagement.

# 7.4.2 Exposure to stability

Our study showed that chronic exposure to low job resources was associated with a significant increase in burnout among both nurses and police officers, and a significant decrease in work engagement among police officers. Similarly, chronic exposure to high job demands was associated with a significant increase in burnout among nurses. These findings challenges the notion that change in the independent variable is needed to observe changes in the outcome variables; apparently, prolonged exposure to a particular constellation of job characteristics can also result in changes in outcomes such as engagement and burnout. Moreover, this finding is consistent with the idea of "loss cycles" (Hakanen *et al.*, 2006), in that it appears that those who were already at the highest level of disadvantage were most adversely impacted by further losses.

An unexpected result was found for nurses who experienced low demands at both time points. For this group, we found a significant increase of the level of burnout, where a decrease was expected. One explanation may be that our longitudinal study is based on a single point assessment of employees' perceptions of their work characteristics at the time they filled out the questionnaire. The judgments to their work characteristics may be affected by external factors, such as the length of the time lag used and the (lack of) stability of the independent variables. An explanation that draws on the findings of diary studies is that the level of burnout and work engagement varies from day to day (e.g., Xanthopoulou, Bakker & Ilies, 2012). Such intra-person fluctuations in burnout or work engagement may explain why levels of burnout can become more favorable even in adverse work environments. Finally, the finding that employees who reported low demands at both time points tended to report higher, rather than lower levels of burnout may also be explained by assuming that low job demands may lead to a lack of challenge in the work environment, thus reducing opportunities for learning and development and increasing the chances that boredom will occur (e.g., Reijseger, Schaufeli, Peeters, Taris, Van Beek & Ouweneel, 2013).

# 7.4.3 The effects of demands/resources on burnout and work engagement

The basic principle of Conservation of Resources (COR) theory is that stress ensues when people experience or anticipate resource loss, or fail to gain resources after significant resource investment (e.g. Hobfoll & Freedy, 1993; Lee & Ashforth, 1996). Burnout is the end state of a long-term process of resource loss that gradually develops over time depleting energetic resources (Hobfoll & Freedy, 1993), whereas engagement is the result of the inverted process of real or anticipated resource gain enhancing energetic resources. Consistent with this view, our study shows that experiencing an increase in job demands or a decrease in job resources resulted in relatively strong changes in burnout and work engagement, as compared to the effects of experiencing a decrease of demands or an increase of resources. Also note that our study found 13 significant effects of job demands or job resources on well-being (burnout, work engagement) among nurses and police officers in total. Of these effects, 11 were negative, whereas only 2 were positive. This is consistent with the view that people are more sensitive to losses than to gains (Tversky & Kahneman, 1992).

Finally, in the challenge–hindrance stressors framework (Cavanaugh, Boswell, Roehling, & Boudreau, 2000; LePine, Podsakoff, & LePine, 2005; Podsakoff *et al.*, 2007), certain job demands (such as workload and emotional demands) offer workers the potential for growth, mastery, or gain. Such demands are labeled as challenges. Other job demands, such as interpersonal conflict and work-family interference, are more likely to interfere with and thwart the attainment of personal goals and development, and these are labeled as hindrance stressors (Van den Broeck *et al.*, 2010; Webster, Beehr, & Love, 2011). However, factor analysis showed that in our study these four job demands indicators loaded highly on the same latent factor across both time points. Apparently, the participants in the present study experienced these four job demands as equally challenging or hindering, which suggests that the distinction between 'challenging' and 'hindering' does not necessarily generalize across studies and/or cultures.

# 7.4.4 Study limitations

A first limitation of the study is that all constructs were measured using self-reports, and these reports may differ from the actual (or "objective") job demands and job resources in the workplace. A second limitation is that whereas this study used a longitudinal design, this design involved in only two waves. This means that the gain and loss spirals suggested in the JD-R could only to a limited degree be examined, that is, complete spirals (e.g., low

resources  $\rightarrow$  higher burnout  $\rightarrow$  even lower resources) could not be observed. Finally, since at both study all variables waves were measured at the same time, employees' judgments of their work situation might be affected by external factors which could possibly result in less accurate and less reliable assessments of the characteristics of their work. Future research should therefore employ multiple waves or a daily diary design to examine to explore the dynamics of the JD-R model more fully.

# 7.4.5 Study implications

Based on this study's findings, several theoretical and practical implications emerge. From a theoretical point of view, our study sheds more light on the dual process assumption of the JD-R model by focusing on the dynamic and contextual factors affecting these processes (e.g., across-time changes in demands and resources). This study revealed that not only changes in demands and resources could affect well-being, but also that steady exposure to particular levels of demands and resources could result in positive or negative changes in the outcome variables. On the one hand, this underlines the notion that dynamic processes should not be examined using cross-sectional designs, since such designs cannot properly capture such processes. On the other hand, it is intriguing to see that different levels of exposure to demands and resources can have very different effects on the outcome variables: e.g., steady exposure to high levels of demands apparently has very different effects from steady exposure to low levels of demands. Clearly, these complex processes cannot be captured by the correlational methods that have to date been used for testing the JD-R model: in order to understand these processes more fully, researchers must focus on the actual levels of demands, resources and outcomes.

From a practical point of view, our study shows that employees who optimize their work environment (e.g., workers who are able to accumulate resources) report more positive well-being than others (e.g., those experiencing loss spirals). Insofar as workers engage in job crafting behaviors, that is, attempt to influence the characteristics of their jobs (cf. Wrzesniewski & Dutton, 2001), these behaviors could vary with the worker's level of exposure to job demands and job resources, and this also holds implications for those supervising or managing workers. For example, human resource officers should especially focus on those who hold a high demands or low resources job or on those who transfer to

such jobs. For example, they could help newcomers to learn the job fast in order to reduce their job demands. For workers in other types of jobs such help may well be less needed.

In conclusion, the study provided support for the assumption of different levels of exposure to job demands and job resources induces different levels of well-being. The changes framed as the loss spiral are weighed more heavily than are the changes framed as the gain spiral. The rise to job demands would be more robust determinants of burnout, while the lost to job resources is the determinants not only of burnout but also of work engagement. In addition, the study did not find job demands have a significant effect on work engagement.

# **Chapter 8**

# The Job Demands-Resources Model in China: A Differentiation in Type of Job Resources and an Extension with *Guanxi* Exchange

Based on:

Hu, Q., Schaufeli, W.B., Taris, T.W. (Re-submitted). The Job Demands-Resources model in China: A differentiation in type of job resources and an extension with *guanxi* exchange.

#### 8.1 Introduction

The job demands-resources (JD-R) model (Demerouti *et al.*, 2001) has gained considerable popularity in occupational health psychology since its emergence over a decade ago. The JD-R model posits that each and every job has particular job demands and particular job resources, and that these demands and resources are the antecedents of employee well-being, motivation, and performance. Specifically, the JD-R model proposes that employee well-being is related to a wide range of workplace characteristics that can be conceptualized as either job demands or job resources. Job resources have been defined as those task and social job characteristics that support the employee in successfully coping with job demands, attaining work goals, and achieving personal growth and development (Schaufeli & Bakker, 2004). Excess job demands and lacking job resources exert an energy-draining effect on employees through a stress process, while high levels of job resources are related to positive work outcomes through a motivational process. Although the JD-R model treats job demands and job resources as unitary concepts, it has been suggested that two types of job demands (challenges and hindrances) can be distinguished (LePine *et al.*, 2005). However, so far job resources have not yet been differentiated.

The first aim of the current paper is to distinguish between task-related work context (i.e., task resources) and work-related interpersonal interaction (i.e., social resources) in the JD-R model. In addition, the second aim is to include a typical Chinese form of social exchange between employees and supervisors (*guanxi* exchange) in the JD-R model in order to increase its relevance for the Chinese work context. It is assumed that the availability of social and task resources is contingent upon the outcome of the *guanxi* exchange process.

## 8.1.1 Task resources and social resources in the Job Demands-Resources model

Typically, studies using the JD-R model examine the indirect links between job characteristics, and personal and work outcomes, via employee well-being (see Schaufeli & Taris, 2014, for an overview). A job with abundant task resources offers employees challenge and opportunities to cope successfully with job demands. As a result, employees experience relatively little stress, feel engaged, and acquire new skills through learning (Karasek & Theorell, 1990; Taris *et al.*, 2003a), which fosters job performance and personal

growth (Reijseger, Schaufeli, Peeters, & Taris, 2012). Many scholars voiced concerns that learning and growth do not happen solely based on task resources but that this takes place in a social context with others. They suggested that personal learning and growth occur through dynamic social interactions— that is, through interactions with co-workers, while talking about work, and observing others doing their work (Miller & Stiver, 1997; Wenger, 1998).

Hence, scholars have recognized that both task and social resources are positively related to employee well-being. On the one hand, many studies emphasize the direct effects of task resources on employee well-being. For example, Karasek (1979) assumes that job control reduces employee's stress and increases learning. On the other hand, researchers also acknowledge the impact of social resources at work on job-related well-being. A point in case is the extension of Karasek's (1979) original Job Demand-Control model with social support as an additional, independent dimension (Johnson & Hall, 1988). The extended Job Demands-Control-Support model assumes that employee well-being not only depends on the interaction between - job demands and job control, but also on the relative quality and accessibility of social resources. Ouweneel, Taris, Van Zolingen and Schreurs (2009) found that levels of job control among health care managers were not high enough to counteract the negative effects of job demands on learning, whereas additional supervisor support had a positive influence on managers' on-the-job informal learning. This is because social resources encourage cooperation (Aronson, 1999) as well as the sharing of information from novel perspectives (Jehn, Northcraft, & Neal, 1999) and hence may facilitate decision-making and increase performance (Nemeth, 1986).

However, the Job Demands-Control (-Support) model is too restrictive to capture all relevant job (task and social) resources. As a general work stress model, the Job Demands–Resources Model (JD-R) takes the Job Demands-Control(-Support) model a step further by including a larger set of job demands and job resources. Accumulating evidence suggests that diverse job resources (e.g., performance feedback, job control, participation in decision making, job security, supervisor support, co-worker support, supervisory coaching, and opportunities for learning and personal development) are indirectly related to various positive work outcomes (e.g., organizational commitment, low turnover intention and sickness absence, and job performance) through work engagement (for an overview see: Schaufeli & Taris, 2014). Demerouti *et al.* (2001) suggested these aggregated job (i.e., task and social) resources can be parcelled into an integral, compositive dimension. Studies using

the JD-R model thus usually combine different and quite heterogeneous job resources into one undifferentiated latent job resources factor, but recent research suggests the distinctness of task and social resources (Weigl, Hornung, Parker, Petru, Glaser, & Angerer, 2010). It has been argued that although task resources and social resources are interrelated, they are theoretically and empirically distinct (Grant & Parker, 2009). That is, task resources refer to the individual-level work context, whereas social resources refer to interpersonal interactions and interdependencies that are related to the group-level work context. Task resources are embedded in social resources.

In the present study, we included two task resources (i.e. job control and participation in decision making) and two social resources (i.e. social support from colleagues and from the supervisor) an we formulate *Hypothesis 1:* The JD-R model that includes two types of job resources – task resources (i.e. job control and participation in decision) and social resources (i.e. supervisor support and colleague support) – fits better to the data than the model with one composite resources factor.

#### 8.1.2 Guanxi exchange in the Job Demands-Resources model

So far the JD-R model has been applied mainly in samples from western countries (e.g., Australia, Austria, Belgium, Germany, Finland, Netherlands, and Spain), and when it was applied to non-western samples it was in its original form (e.g., Hu *et al.*, 2011). The second objective of our study is to extend the original JD-R with a typical and important Chinese phenomenon - *guanxi* exchange - in order to increase its applicability in the Chinese context.

Jobs are embedded in networks of interpersonal relationships (Brass, 1981). Social resources include the formal work-oriented interaction within the work context, but people also interact in a more informal way. A densely connected group of work partners facilitates the development of trust and the monitoring and enforcement of norms of reciprocity (Coleman, 1990). For example, Argyle and Henderson (1985) found that friends at work received help about four times more often than disliked colleagues. This indicates that the quality and quantity of work-related interactions (i.e., social resources) is to some degree influenced by the quality of the informal interpersonal relationships. Interpersonal relationships exist in various forms in every human society, however, *guanxi* has been

considered as a typical product of Confucian values and it is inherent in the work ethics of the Chinese people. As "the moral principles regarding interactive behaviors of related parties" (Chen & Chen, 2004, p. 308), *guanxi* embodies a wide range of personal ties and nuanced patterns of interpersonal dynamics. Basically, *guanxi* is constituted by reciprocity, meaning that the behavior of petitioners is governed by the social norm known as "*renqing*" or "favors" (Hwang, 1987). Providing benefits to somebody in one's *guanxi* network at a particular time will create a "debt" (i.e., an implicit obligation) to the petitioner, and the petitioner should return the *renqing* (favor) or else (s)he will be viewed as untrustworthy. *Renqing* is the most important aspect of *guanxi* exchange that emphasizes not only a normative standard for regulating social exchange, but also a social mechanism that an individual can use to strive for desirable resources in hierarchically structured relationships (Hwang, 1987).

In contrast to western social exchange relations, which usually involve the exchange of equivalent value and timely return (Powell, 1990), Chinese guanxi exchange involves special favors (e.g., bonuses, promotion, fringe benefits, etc.) that go beyond an equal exchange and which can be paid back in the long run (Yum, 1988). Renging ensures trust among the members of the guanxi network, which tends to minimize the risk of uncertainty (Lovett, Simmons, & Kali, 1999). Guanxi interaction is embedded in intricate and informal personal relationships, and these informal, unofficial relations could influence the more formal structures of work-related interaction, by providing opportunities and constraints that characterize organizational life. Management in China is thought to depend largely on interpersonal relationships (Hui & Lin, 1996), and guanxi is considered as the basis for effective collaboration (Chen & Chen, 2004). In guanxi networks, people exchange more information and resources – not only pertaining to the task at hand, but also to other tasks or with an eye to possible future tasks. Because supervisors have limited time and energy, they can only develop close work relationships with a few employees whom they provide with material and immaterial resources to help them perform better. Guanxi exchange is a substitute for competitive disadvantages and employees use *renging* to deal with resource scarcity and uncertainty. As a consequence, employees who have good guanxi with their supervisors tend to receive more bonuses and are more likely to be promoted (Law, Wong, Wang, & Wang, 2000). Empirical research also attests that close guanxi bonds between coworkers facilitate job related support and recognition for each other (Cheung, Wu, Chan,

& Wong, 2009), and to social relations outside work (Law et al., 2000). Guanxi emphasizes emotional attachment and obligations, thus, the more supervisors and employees develop a high quality work relationship and interact with each other, the more likely it is that employees exhibit organizational citizenship behavior (Wong, Ngo, & Wong, 2003), organizational commitment (Cheung et al., 2009) and work engagement. However, if one does not follow the rule for guanxi reciprocity, the individual will be labeled untrustworthy (Hwang, 1987). Since untrustworthiness elicits distress and negative emotions such as irritability, anxiety, shame, and guilt (Donegan, Sanislow, Blumberg, & Fulbright et al., 2003), employees are likely to continuously invest and put effort in their relationship with others. Clearly, this could well exhaust their energy (Warren, Dunfee, & Li, 2004). Furthermore, it should be noted that since guanxi reciprocity at work is subjected to individual choice and regulation to a much larger degree, most investments in guanxi reciprocity will not yield any clear results. Nonetheless, people are still accustomed to look for guanxi, and become very anxious if they perceive themselves as unbalanced in a guanxi exchange relation. Therefore they will experience distress that might lead to burnout (Hu, Schuafeli & Taris, 2013). Moreover, in the process of guanxi exchange, supervisors make more generous resource allocations to those with whom they had more frequent interactions and closer personal bonds, and interpersonal relationships may take precedence over the procedural justice rules (Tsui & Farh, 1997; Zhang, 2001), which is considered as a main antecedent of burnout (Liljegren & Ekberg, 2009).

Based on the previous reasoning we formulate the following hypotheses: guanxi reciprocity is positively related to social resources and task resources (*Hypothesis 2a*); guanxi reciprocity has stronger relationships with social resources than with task resources (*Hypothesis 2b*); guanxi reciprocity is positively related to burnout (*Hypothesis 2c*); guanxi reciprocity is positively related to work engagement (*Hypothesis 2d*); and guanxi reciprocity is positively related to work engagement (*Hypothesis 2d*); and guanxi reciprocity is positively related to work outcomes (*Hypothesis 2e*) (see Figure 8.1).



Figure 8.1. The proposed JD-R model

Note: the direction of solid lines is positive; the direction of dotted lines is negative.

#### 8.2 Method

## 8.2.1 Sample and procedure

After informative meetings with representatives of the management department, all nurses from a general hospital in Yongkang city and all officers from the police force in Yongkang city (Zhejiang province) received paper-and-pencil questionnaires. The questionnaires were accompanied by a letter, in which the goal of the study was briefly introduced, and confidentiality and anonymity were emphasized. The final nurse sample is composed of 261 females (response rate 74.5 %), their mean age was 28.38 years (SD = 7.47). The police officers sample consisted of 401 males (86.1%) and 65 females (13.9%), their mean age was 36.76 (SD = 9.82), and the response rate was 93.2%.

#### 8.2.2 Measures

The measures used in the present study have been included in previous studies in China where they showed sufficient reliability and construct validity (Hu *et al.*, 2011; Hu & Schaufeli, 2011a; Hu & Schaufeli, 2011b; Zheng *et al.*, 2010). Table 8.1 presents the internal consistencies of the scales (Cronbach's  $\alpha$ ).

*Job demands* were assessed by the Chinese version of the Questionnaire on the Experience and Evaluation of Work (QEEW; Hu *et al.*, 2011; Van Veldhoven *et al.*, 2002; Zheng *et al.*, 2010). Three challenge demands were included in the present study: workload (5 items, e.g., "Do you have too much work to do?"), physical load (7 items, e.g., "Does your work require physical strength?"), and mental demands (5 items, e.g., "Does your work demand a lot of concentration?").

*Task resources* were also assessed by subscales of the Chinese version of the QEEW (Hu *et al.*, 2011; Zheng *et al.*, 2010). Two task resources were included: job control (3 items, e.g., "Can you decide how your work is executed on your own?") and participation in decision making (6 items, e.g., "Do you have a lot to say over what is going on in your work area?").

*Social resources* were also assessed by subscales of the Chinese version of the QEEW (Hu *et al.*, 2011; Zheng *et al.*, 2010). Two social resources were included: supervisor support (3 items, e.g., "Can you count on your direct supervisor when you encounter difficulties in your work?"); and colleague support (3 items, e.g., "If necessary, can you ask your colleagues for help?").

All demand and resource items were scored on a 7-point rating scale, ranging from 0 ("never") to 6 ("always"). Previous studies using the JD-R model in Chinese samples have shown good validity for these measures (see Hu *et al.*, 2011; Hu *et al.*, 2013, and resources measures shown in Appendix 1).

*Burnout* was assessed with the exhaustion and cynicism subscales of the Chinese version (Hu & Schaufeli, 2011b) of the Maslach Burnout Inventory—General Survey (MBI-GS; Schaufeli *et al.*, 1996a). Exhaustion was assessed with five items (e.g., "I feel used up at the end of the workday") and cynicism with four items (e.g., "I have become less enthusiastic about my work"). All items were scored on a 7-point frequency rating scale

ranging from 0 ("never") to 6 ("daily"). High scores on the exhaustion and cynicism subscales are indicative of burnout.

*Work Engagement* was assessed with the Chinese version (Hu *et al.*, 2011; Zheng *et al.*, 2010) of the Utrecht Work Engagement Scale (UWES-9; Schaufeli *et al.*, 2006a). The UWES-9 taps three underlying dimensions, each of which is measured with three items: vigor (e.g., "At my work, I feel bursting with energy"), dedication (e.g., "My job inspires me"), and absorption (e.g., "I get carried away when I am working"). All items were scored on a 7-point rating scale ranging from 0 ("never") to 6 ("daily"). High scores on all three dimensions indicate high levels of work engagement.

*Work Outcomes* included an attitudinal aspect (i.e., organizational commitment) and a behavioral aspect (i.e., job performance). Organizational Commitment (5 items) was assessed by a scale from the Chinese version of the QEEW (Hu *et al.*, 2011; Zheng *et al.*, 2010). Three example items are "I feel like 'a member of the family' in my workplace", "I am emotionally attached to my company", and "I feel that the company's problems are my problems". The scale was scored on a 5-point rating scale ranging from (1) "never" to (5) "always". Job performance was assessed by Health and Work Performance Questionnaire (HPQ). Three items were scored on a scale ranging from (0) "worst performance" to (10) "top performance". An example item is "How would you rate your performance in the past month?"

A scale to assess *guanxi exchange* between employee and supervisor was developed based on the exchange of favors ("*renqing*") between both. Ten items were derived from in-depth interviews held with Chinese employees. Four items referred to *renqing* investments and 6 items referred to *renqing*-rewards (see Appendix 2). Participants were required to rate on a 5-point scale (ranging from 1=strongly disagree to 5=strongly agree) the extent to which they agreed with the items. A confirmatory factor analysis of a correlated two-factor solution with *renqing*-investments and *renqing*-rewards as latent factors showed a good fit among nurses ( $\chi^2 (df = 34) = 35.22$ , GFI = .97, TLI = 1.00, CFI = 1.00, RMSEA = .01) as well as among police officers ( $\chi^2 (df = 34) = 150.31$ , GFI = .94, TLI = .92, CFI = .94, RMSEA = .09). Moreover, a multiple group confirmatory factor analysis revealed that the factor loadings were invariant across both samples as indicated by the non-significant difference in fit ( $\Delta \chi^2$ ( $\Delta df = 8$ ) = 10.69; *p* = .22) between the constrained ( $\chi^2 (df = 76) = 196.16$ , GFI=.95, TLI = .96, CFI = .96, RMSEA = .05) and the unconstrained models ( $\chi^2 (df = 68) = 185.47$ , GFI=.95, TLI = .95, CFI = .96, RMSEA = .05) with fixed and freely estimated factor leadings, respectively.

#### 8.2.3 Data analysis

Both hypotheses were tested simultaneously using Structural Equation Modeling techniques as implemented in the AMOS 7 computer program (Arbuckle, 2003). Maximum likelihood estimation was used and the input for each analysis was the covariance matrix. Data were analyzed in three successive steps. In the first step, the issue of common methods variance (CMV) was addressed by performing Harman's single-factor test (Model 1). In this model, CMV is controlled by explicitly incorporating the loadings of a latent method factor on each observed indicator. In the second step, the validity of the differentiation between task- and social resources was investigated. First, one undifferentiated latent resources factor (Model 2) was tested by a multigroup analysis that allows model testing across nurses and police officers simultaneously. Next, the validity of the differentiation between task- and social resources (Model 3) and compare the fit of Model 3 with that of Model 2. In the third step, the fit of an extended JD-R model was tested, which in addition to separate task and social resources also included *guanxi* exchange as an exogenous variable (Model 4).

The goodness-of-fit of the models was evaluated by using absolute and relative fit-indices. The absolute goodness of fit indices were: (1) the  $\chi^2$  goodness of fit statistic; (2) the Root Mean Square Error of Approximation (RMSEA); and (3) the Goodness of Fit Index (GFI). RMSEA values of .08 and lower indicate an acceptable fit (Byrne, 2001). As recommended by Marsh *et al.* (1996), two relative goodness of fit indices were computed: (1) the Comparative Fit Index (CFI); and (2) the Tucker-Lewis Index (TLI). As a rule of thumb, values of .90 or higher indicate good fit for both relative fit indices (Byrne, 2001). Nested models were compared by means of the  $\chi^2$  difference test.

# 8.3 Results

Table 8.1 provides the means, standard deviations, internal consistencies (Cronbach's alphas), and PM-correlation coefficients of all study variables for 261 Chinese nurses and

466 Chinese police officers. The internal consistencies of most of scales – except colleague support (.62), *renqing* investment (.66), emotional exhaustion (.67) and organizational commitment (.69) in the police officer sample, and vigor (.53) and organizational commitment (.67) in nurse sample – exceeded the value of .70, which is generally used as a rule of thumb for sufficient reliability (Nunnally & Bernstein, 1994).

Table 8.1. Means (M), standard deviations (SD), internal consistencies (Cronbach's a on the diagonal), and correlations between the study

variables for police officers (N = 466, lower half) and nurses (N = 261, upper half)

	Police		Nurses																	
	Þ	ß	Z	G																16
		]		1	1	2	3	4	5	6	7	~~~	6	10	11	12	13	14	15	
1. Workload	3.87	1.08	3.82	.96	86\.78	.47**	.31**	.15*	.25"	80.	80.	.17**	.16*	05	071	05	.40 <b>°</b>	36*	60 -	16**
2. Mental Demands	4.36	1.24	5.07	.98	.63	.76\.87	. 39*	.07	.10	04	08	<u>.</u> 03	10	00	- 03	- 05	.23*	.16	- 04	02
3.Physical Demands	2.84	1.16	4.22	1.10	.35**	.32	.74/.88	.07	.10	12	17**	<b>.</b> 14 <b>,</b>	.12	- 14*	22"	25"	.36**	.36*	23**	01
4. Supervisor Support	3.37	1.28	3.16	1.14	.25	<b>.</b> 53	.15*	.87.80	<b>.</b> 09	.42*	<b>.</b> ¥	.16	.04	.14	.05	.06	.05	01	.02	04
5. Colleague Support	3.60	1.40	3.22	1.11	.27**	.26	.20	.57**	.62\.84	.36**	<b>.</b> 39	.23 <b>*</b>	.21**	.23	.12	.12*	.06	<u>.</u>	.11	10
6. Job Control	2.52	1.30	2.36	1.28	- 13**	02	25**	.19*	<i>L</i> 0.	62./18.	.53*	06	.07	.11	.20*	.21"	15	17**	.17**	02
7. Participation in Decision	2.40	1.20	2.49	1.24	08	05	24**	.18**	60 <sup>.</sup>		.84\.92	<b>.</b> 19 <b>*</b>	.15*	"IZ.	.29**	.29**	17**	.14 <b>°</b>	.31**	10
8. <i>Renging</i> Reward	3.29	1.36	2.96	1.33	<b>"</b> 61.	<b>.</b> 19	.13*	.32	.27	08	02	.73/.78	.53*	"""	.20*	.22"	02	.02	.12	07
9. Renging Investment	2.52	1.4	2.59	1.31	.28**	.18**	.22**	.15**	.16**	11*	04	·44*	.77. / <b>0</b> 0.	.17**	60.	.14*	.02	90.	.21**	19**
10. VI	3.09	1.40	2.37	2.13	<b>1</b> 0 <b>*</b>	.16*	04	.36**	.36	20.	.18**	.23*	.18"	.74\.53	.58	<b>.</b> 61	19**	19	.27**	.05
11. DE	2.93	1.40	2.10	1.26	<b>"</b> 61.	.27,	.05	.35**	.22	.14*	.20*	.22"	.21*	.72"	.78\ .86	.87	37**	-31*	.47**	90.
12. AB	2.82	1.41	2.02	1.269	, III	.17"	02	.33	.25	.05	.16*	<b>.</b> 30	.22**	.75"	<b>"</b> LL	\$7\.\$6	-39"	34	.45*	80.
13. EX	3.08	1.68	3.48	1.25	.39**	.B.	.42**	<b>,</b> 60	.18*	17**	22**	<b>.</b> 19	.27**	- 14**	-04	- 14**	06 V.9	.86	30**	-06
14. CY	2.63	1.77	3.05	1.39	.32"	.14	.36*	.08	<b>,</b> 60	28**	29**	.18	.36*	14**	- 04	- 08	.63*	.70\ 92	-32"	10
15. Commitment	3.77	1.32	2.96	1.17	.02	8	07	.30	.26	.004	.17**	.28	.13*	.45**	.38	.43**	22**	-17**	<i>5</i> 0\.67	.08
16. Performance	7.14	1.36	6.58	140	- 21	- 05	- 08	- 04	10	19 <b>°</b>	16 <b>*</b>	00 -	- 16"	80	00	05	. 35	. 35."	1,	87/86

<u>Note:</u> \* p < .05; \*\* p < .01.

The one-factor model (M<sub>1</sub>) showed an inferior fit to the data. Therefore, it seems reasonable to conclude that the associations among the measures in the current study are not due to common methods variance. In order to test Hypothesis 1, Model 3 (M<sub>3</sub>) that includes two types of resources (i.e., task resources and social resources) was tested and compared with the original JD-R model with one undifferentiated latent resources factor (M<sub>2</sub>). Multi-group analysis indicated that the fit of M3 was superior to that of M<sub>2</sub> across both samples;  $\Delta \chi^2 (\Delta df = 10) = 286.11$ , p < .001 (see Table 8.2 for the fit indices of M<sub>2</sub> and M<sub>3</sub>). This means that Hypothesis 1 is confirmed.

Table 8.2. Multigroup analysis of the proposed JD-R model and the original JD-R model for nurses (N=261) and police officers (N=466)

	χ2	df	CFI	GFI	TLI	RMSEA	$\Delta \chi 2(\Delta df)$
Null model	4077.30	82		.51		.17	
M <sub>1</sub> (Single-factor)	2,587.75	208	.45	.65	.36	.13	
M <sub>2</sub> (undifferentiate	622.19	134	.88	.89	.83	.07	
resources)							
M <sub>3</sub> (Separate resources)	336.08	124	.95	.94	.95	.05	
$M_{3-modified}$	342.76	130	.95	.94	.92	.05	6.68(6) ns
Regression Weights	379.89	138	.94	.93	.92	.05	37.13(8)*
Constrained							
Covariances Constrained	366.06	134	.94	.93	.92	.05	23.29(4)*

<u>Notes:</u>  $\chi 2 = \text{chi-square}$ ; df = degrees of freedom; RMSEA = Root Mean Square Error of Approximation; TLI = Tucker Lewis Index; CFI = Comparative Fit Index;  $\Delta \chi 2 = \text{difference}$  in chi-square;  $\Delta df = \text{difference}$  in degrees of freedom. \* p < .001.

However, three paths (from job demands to work engagement, from job demands to work outcomes, and from social resources to burnout) were non-significant for both nurses ( $\beta = ..11$ , -.03, and .17) and police officers ( $\beta = .03$ , -.09, and .08), respectively. After deleting these non-significant paths, the fit of the revised model ( $M_{3-modified}$ ) did not deteriorate ( $\Delta\chi 2$  ( $\Delta df = 6$ ) = 6.68, *ns*) compared to  $M_3$ . As two different samples were involved, the equivalence of  $M_{3-modified}$  across samples was tested with respect to (a) the regression weights, and (b) the covariances. Compared with the unconstrained model ( $M_{3-modified}$ ), the fit of the models with equal regression weights and with equal covariances deteriorated significantly ( $\Delta\chi^2$  ( $\Delta df = 8$ ) = 37.13, *p* < .001 and  $\Delta\chi^2$  ( $\Delta df = 4$ ) = 23.29, *p* < .001,



respectively). This means that regression weights and covariances are not invariant across both samples. The parameter estimates for M3-modified are shown in Figure 8.2.

Figure 8.2. Standardized path coefficients of Model 2-modified in nurses (left, n=261) and police officers (right, n=466); \* *p* <.05, \*\* *p* <.01, \*\*\* *p* <.001.

As Fig 8.2 shows, three standardized path-coefficients (social resources  $\rightarrow$  work outcomes, social resources  $\rightarrow$  work engagement, burnout  $\rightarrow$  work outcomes) were non-significant among nurses, and two standardized path-coefficients (task resources  $\rightarrow$  work outcomes, task resources  $\rightarrow$  work engagement) were non-significant for police officers. In addition, the correlations between job demands and task resources were either non-significant or very weak in both samples.

Next, *guanxi* exchange was included as an exogenous variable in the JD-R model as depicted in Figure 8.1. This concept was assumed to be related to both types of resources as well as to burnout, engagement, and work outcomes (M<sub>4</sub>). Results of a multigroup analysis indicated that the fit of (M<sub>4</sub>) was acceptable ( $\chi^2$  (*df* = 168) = 493.03, GFI = .92, CFI = .92, TLI = .89, RMSEA = .05). After deleting two non-significant path coefficients for both nurses and police officers (job demands  $\rightarrow$  work outcomes ( $\beta$  = -.05 and -.01, *ns*), and social

resources  $\rightarrow$  burnout ( $\beta$  = .18 and -.02, *ns*), the fit of M<sub>4-modified</sub> did not deteriorate compared to M<sub>4</sub> ( $\Delta \chi 2$  ( $\Delta df = 6$ ) = 4.05, ns). This means that *guanxi* was successfully integrated in the JD-R model (see Table 8.3).

Model	χ2	df	CFI	GFI	TLI	RMSEA	$\Delta \chi 2(\Delta df)$
Null Model	4539.93	240		.50		.16	
M4 (JD-R model with guanxi)	493.03	168	.92	.92	.89	.05	
M4-modified (Unconstrained)	495.38	172	.93	.92	.90	.05	4.05 (6) ns
Regression Weights	561 58	185	01	01	80	05	60 10(13)*
Constrained	504.58	165	.91	.91	.09	.05	09.19(13)
Covariances Constrained	506.64	176	.92	.92	.90	.05	11.25(4)*

Table 8.3. Multigroup analysis of the JD-R model, including guanxi

<u>Notes:</u>  $\chi 2 =$  chi-square; df = degrees of freedom; RMSEA = Root Mean Square Error of Approximation; TLI = Tucker Lewis Index; CFI = Comparative Fit Index;  $\Delta \chi 2 =$  difference in chi-square;  $\Delta df =$  difference in degrees of freedom. \* p < .001.

Compared with the unconstrained model (M<sub>4-modified</sub>), the fit of the models with equal regression weights and with equal covariance deteriorated significantly ( $\Delta \chi^2$  ( $\Delta df = 13$ ) = 69.19, p < .001 and  $\Delta \chi^2$  ( $\Delta df = 4$ ) = 11.25, p < .05). Hence, regression weights and covariances are not invariant across both samples. Subsequent tests of each regression weight and each covariance separately revealed that four path coefficients (job demands  $\rightarrow$  burnout, *guanxi*  $\rightarrow$  work engagement, task resources  $\rightarrow$  work engagement, work engagement  $\rightarrow$  work outcomes) and three covariances (job demands – task resources, social resources – task resources, burnout – work engagement) were invariant across nurses and police officers. The standardized path coefficients of model M4-modified are displayed in Figure 8.3.



Figure 8.3. *Guanxi* in the JD-R model for 261 nurses (left) and 466 police officers (right); \* p < .05, \*\*p < .01, \*\*\* p < .001

The model depicted in Figure 8.3 shows that five path coefficients (task resources  $\rightarrow$  burnout, social resources  $\rightarrow$  work outcomes, social resources  $\rightarrow$  work engagement, guanxi  $\rightarrow$  burnout, guanxi  $\rightarrow$  work outcomes) were non-significant among nurses, and four path coefficients (job demands  $\rightarrow$  work engagement, task resources  $\rightarrow$  work outcomes, guanxi  $\rightarrow$  task resources, guanxi  $\rightarrow$  work engagement) were non-significant among police officers. In addition, correlations between job demands and task resources were non-significant in both samples. Both the correlations between job demands and social resources (r = .19, p < .05, and r = .36, p < .001) and those between social resources and task resources (r = .63, p < .001, and r = .32, p < .001) were positive, but differed greatly in magnitude between the two samples.

Moreover, the paths from job demands to burnout were positive and significant for nurses as well as police officers ( $\beta = .47$  and .39, p < .001), while the path from burnout to

work outcomes was highly negative for police officers ( $\beta = -.72$ , p < .001), but only marginally significant for nurses ( $\beta = -.15$ , p = .059), which confirms the strain hypothesis of the JD-R model. The paths from work engagement to work outcomes were positive and significant in both samples ( $\beta = .42$ , p < .001 and  $\beta = .37$ , p < .001). The paths from task resources to work engagement were positive and significant but magnitudes differed between nurses ( $\beta = .35$ , p < .001) and police officers ( $\beta = .16$ , p < .05), while the path from social resources to work engagement was only significant for police officers ( $\beta = .31$ , p < .001).

Additional Sobel tests revealed a significant indirect effect for police officers of social resources on work outcomes via work engagement (Sobel = 2.84, p < .01) as well as an indirect effect for nurses of task resources on work outcomes, via work engagement (Sobel = 2.33, p < .05). Apparently, in both samples, the two categories of resources played a different role as far as the motivational process of the JD-R model is concerned.

Furthermore, the path from social resources to work outcomes was positive and significant only for police officers ( $\beta = .33$ , p < .01), whereas the path from task resources to work outcomes was positive and significant only for nurses ( $\beta = .25$ , p < .05). The path from *guanxi* to social resources was positive and significant for nurses ( $\beta = .23$ , p < .01) as well as for police officers ( $\beta = .34$ , p < .001), while the path from *guanxi* to task resources was positive and significant only for nurses ( $\beta = .23$ , p < .01) as well as for police officers ( $\beta = .34$ , p < .001), while the path from *guanxi* to task resources was positive and significant only for nurses ( $\beta = .23$ , p < .05).

The path from *guanxi* to work outcomes was positive and significant only for police officers ( $\beta = .50$ , p < .001) and the path from *guanxi* to work engagement was positive and significant only for nurses ( $\beta = .25$ , p < .05). Sobel tests revealed that the indirect effect of *guanxi* on work outcomes, via social resources, was significant only for police officers (Sobel = 2.65, p < .01). However, the indirect effect of *guanxi* on work outcomes, via task resources, was non-significant for nurses (Sobel = 1.80, *ns*), as well as the indirect effect of *guanxi* on work engagement, via task resources (Sobel = 1.88, *ns*). Hence it seems the indirect effect of *guanxi* on work outcomes occurs mainly through social resources.

Taken together, it appears that *guanxi* can be integrated into the JD-R model as assumed in Hypothesis 2, although its patterns of associations with other concepts differed across samples. This means that *guanxi* plays a relevant but somewhat different role in both samples. Specifically, (1) *guanxi* is positively related to social and task resources, except for task resources among police officers (Hypothesis 2a largely confirmed); (2) *guanxi* is more strongly related to social than to task resources, but only for police officers (Hypothesis 2b

partly confirmed); (3) *guanxi* is positively related to burnout, but only for police officers (Hypothesis 2c partly confirmed); (4) *guanxi* is positively related to engagement, but only for nurses (Hypothesis 2d partly confirmed); (5) *guanxi* is positively related to work outcomes, but only for police officers (Hypothesis 2e partly confirmed).

# 8.4 Discussion

The current study was designed to contribute to the conceptual and cross-cultural development of the JD-R model by differentiating between two types of resources (i.e., task and social related) and by including the typical Chinese interpersonal phenomenon of *guanxi*, in terms of the exchange of favors (*renging*).

# 8.4.1 Main findings

Results of multi-group analysis (see Table 8.2 and Figure 8.2) provided robust support for a distinction between social resources and task resources in both samples of Chinese nurses and police officers. More specifically, the fit to the data of the model with two separate types of job resources was superior to that of the original JD-R model that includes only one, undifferentiated resource factor (Hypothesis 1 confirmed). So instead of one composite resources factor, it seems that task and social resources can be distinguished and that these types resources play different roles in the JD-R model. That is, social resources seem to be positively related to engagement and work outcomes (for police officers, but not for nurses), whereas task resources are positively related to engagement and work outcomes (for nurses, but not for police officers), as well as negatively related to burnout (for nurses – marginally – as well as for police officers).

Moreover, the current study supports the notion of a dual process in the JD-R model that specifies possible predictors and consequences of burnout and engagement, based on an energy-driven and a motivation-driven process, respectively. The former is confirmed by the finding that burnout fully mediates the relationship between job demands and work outcomes (for police officers). The latter is confirmed by the finding that work engagement partially mediates the relation between task resources and work outcomes for nurses, and the relation between social resources and work outcomes for police officers. Taken together, these

findings agree with a previous study that was carried out among Chinese nurses and blue collar workers that used one composite latent resources factor (Hu *et al.*, 2011), except that in the current study slightly different patterns were found for each of the two samples.

The non-significant or weak correlations between job demands and task resources fit with the roles of job demands and job resources in the original JD-R model. That is, the JD-R model assumes that job demands are negatively or non-significantly correlated with job resources (Schaufeli & Bakker, 2004). In our study this was the case for task resources only, they were either weakly negatively (for nurses) or non-significantly (for police officers) related to job demands. In contrast, social resources were positively associated with job demands in both samples. When the job demands are high, social resources in the workplace are also high, and vice versa. This agrees with the observation that especially in highly demanding situations, the support system from team members may alleviate the impact of job demands (Berson, Dan & Yammarino, 2006). Furthermore, social resources were expected to be positively associated with task resources in both samples, which seems to be the case. Task resources and social resources might reinforce each other mutually; for instance, social support may contribute to the problem solving, which, in turn, could facilitate employee control and participative decision-making.

# 8.4.2 Different patterns for nurses and police officers

Our study revealed that the impact on well-being of task resources and social resources differs for nurses and police officers. That is, whereas social resources seem especially relevant as an antecedent of well-being (engagement) among police officers, this place is taken by task resources for nurses. We can only speculate that these differences are caused by the different situation in which nurses and police officers find themselves in today's China. For instance, currently a health care reform takes place in China whereby the traditional health professionals-centered service model is gradually being replaced by a patient-centered model. As a result patients have become more entitled and raise their voice, which means for nurses that patient demands are increasing. In addition, increased patient needs and the application of medical technology healthcare requires a redesign of the structure and the processes of care provision. As a result, nurses' responsibilities have increased, both in terms of patient care as well as in relation to new medical technology. That

means that task resources such as job control and participating in decision-making are critically important for nurses in order to deal adequately with these increased demands and to stay engaged.

Compared with nurses, the role of social resources for police officers is stronger than that of task resources. The reason might be that Chinese law imposes substantially fewer procedural requirements on the police and gives police greater executive power in performing their job. For instance, only the police chief's permission, rather than the court's approval, is needed for Chinese police officers to conduct searches (Ma, 2003). To handle minor public order offenses (e.g., prostitution and gambling), Chinese police officers are allowed to hand out administrative sanctions, such as fines, without judicial review or approval (Wang, 2007). Compare with nurses, Chinese police officers have more authority and autonomy in executing their tasks so that the effect of task resources on work engagement is likely to be less strong.

Nevertheless, it is widely acknowledged that police work in China is stressful (Liu, 2011) and that a variety of coping strategies, especially social support, are needed to deal with demanding situations and events (McCreary & Thompson, 2006). This is because police officers are often caught between the courts and the public. Especially today police officers in China perform their work in a constantly changing society, and they must try to find a balance between public pressures to deal effectively with law breakers while at the same time obeying a set of constitutional restraints. Thereby, police often rely on supervisors for information, support and evaluation of their performance. Research has documented that police officers who feel marginalized or excluded from their peer group not only suffer from a lack of acceptance but are also denied information, sponsorship and promotion opportunities (Ellison & Genz, 1983). Taken together, it can be speculated that for these reasons social resources are particularly important for police to stay engaged. Furthermore, it is worth noting that the data collection of the present study was carried out exactly in the period in which a public evaluation of the police force by the citizens of Yongkang city took place. This might have temporarily increased the salience of colleague and supervisor support, by way of solidarity, and might have had a positive effect on levels of engagement.

#### 8.4.3 Different patterns with guanxi for nurses and police officers

*Guanxi* is embedded in informal and personal social interactions that take place in formal work situations. The social resources included in our study are based on work-related interactions but their availability is to a large degree influenced by the quality of *guanxi*. This is exemplified by the positive relation between *guanxi* and social resources in both nurses and police officers; that is, the better the *guanxi* exchange with one's supervisor, the more social resources (and vice versa). Furthermore, because – as we have argued above – task resources are more important for nurses to do their job well, whereas social resources are more important for police officers, it is likely that *guanxi* exchange with supervisors will be focused more on task resources among nurses and on more social resources is probably stronger for nurses, whereas that with social resources is probably stronger for police officers (see Figure 2).

On the one hand, *guanxi* encourages perceptions of a relational psychological contract; that is, employees agree to contribute loyalty, trust, and continued membership while the organization provides competent management, participation, and a sense of belonging (Maguire, 2002). On the other hand, the police subculture subjects its members to a strict operating code laden with discretion, secrecy, and solidarity in an attempt to insulate the officer from an uncaring and generally unsupportive management structure, as well as a hostile public (Van Maanen, 1978). This might explain why *guanxi* is associated with work outcomes (i.e. organizational commitment and performance) among police officers. The direct effect of *guanxi* on work outcomes seems stronger than the indirect effect via social resources. It might be that work-related social interactions are often difficult to avoid, while private social interactions at work – in the form of *guanxi* exchange – depend on one's own individual choice and can thus be better regulated and may therefore produce more beneficial effects (i.e. organizational commitment). *Guanxi* seen as exchange of favors (*renqing*) reinforces employees to form a person-to-group tie and, through this, develop a strong commitment to the group and its members (Blau, 1992).

*Guanxi* exchange only marginally promotes employees work engagement in both samples, which might reflect that the underlying motivational dynamics that are involved in work engagement and *guanxi* differ fundamentally. Work engagement is primarily

characterized by intrinsic motivation (Van Beek *et al.*, 2012), whereas *guanxi* is primarily driven by extrinsic motivation, namely favors. Compared with nurses, *guanxi* is positively and significantly related with burnout among police officers. This means that exchanging favors is more energy exhausting in a law enforcement setting that in a health care setting, probably because when exchanging such favors police officers should beware that they do not act against the law that they are supposed to enforce.

# 8.4.4 Limitations and suggestions for future research

The four most important limitations of the present study are the following. First, the internal consistencies (Cronbach alpha) of some scales are relatively low and do not meet the cutoff criterion of .70. However, with one exception, all alpha values exceed .60, which is considered a minimum for this type of surveys (Nunnally & Bernstein, 1994). Only the internal consistency of the vigor scale in the nurse sample is poor. However, the score of this scale was not analyzed in isolation, but as part of a latent construct that also included two other scales with alpha values exceeding .85.

Second, the fact that the present study was carried out in the China might call into question the generalizability of its findings to other countries. For example, Russian Blat (Ledeneva, 1998), Japanese Giri (Davies & Ikeno, 2002) and Korean Yonjul (Horak, 2013) share some of the similarities with Chinese Guanxi as both a product and a producer of informal networks of help and favor exchange. Furthermore, one interesting venue for future research is to expand the sample base to other countries (even to western countries) to explore the relationship of "private" social interactions and favoritism at work with the allocation of job resources. That is, guanxi could lead to a "corrosive" management practice and might foster corruption (Mollen Commission, 1994). Favoritism tends to arise from personal relationships and alliances that naturally arise in organizational life between supervisor and subordinates, particularly when each shares the other's viewpoint (Senger, 1971, p. 416). Hence, we call for similar studies on the JD-R model in other counties to investigate the validity of the distinction between task and social resources and the relationship with informal personal networks on the other. A unique advantage of carrying out the study in China is that a typical Chinese social phenomenon – guanxi exchange – could be included in the JD-R model, this making the model more "cross-cultural proof".

Third, the present study only used self-reports, which may have inflated the associations among the study variables due to common method variance or a socially desirable fashion (Edwards, 1953; Nyaw & Ng, 1994), especially in ethics sensitivity research involving *guanxi* exchange. However, Spector (2006) argued convincingly that self-reports do not automatically and inevitably inflate associations between variables and do not necessarily lead to significant results. Moreover, the associations reported in Table 8.1 show considerable variation, which goes against the idea that these are due to a common underlying process that affects all correlations uniformly. Further, the inferior fit of single-factor test (M1) indicated that a single factor did account for the covariance among the study variables, suggesting that social desirability was not especially problematic in the present research. However, this procedure does not statistically control for method effects. Future research should therefore include the social desirability scale such as the Impression Management Subscale (IMS) of Paulhus' (1986) Balanced Inventory of Desirable Responding (BIDR), or Crowne and Marlowe's Social Desirability Scale (1960), to control for social desirability response bias (SDRB).

Finally, the present study demonstrated that different types of resources may relate in different ways to other concepts, suggesting that the JD-R model should be amended to accommodate for these different types of resources. However, a similar point could be made for job demands. E.g., LePine *et al.* (2005) showed that it is possible to distinguish between challenge job demands (e.g., time pressure) and hindrance job demands (e.g., physical demands). Although the confirmatory factor analysis presented in the current study showed that all three demands examined here loaded on the same latent demands factor, future research may address this issue more fully, using a wider range of job demands than was included in the present study.

# 8.4.5 Implications

Our findings have several implications for occupational stress research. With regard to theory, it seems that the dimensionality of the job resources concept should be reconsidered. That is, where previous research using the JD-R model has focused on a compound job resources concept that included a wide variety of different resources, the current study suggests that a theoretical and empirical distinction between resources relating to the

task–related work context (i.e., task resources) and work-related interpersonal interactions (i.e., social resources) should be made. In addition, as formal job resources, both task resources and social resources are to some degree influenced by informal interpersonal relationships, especially *guanxi* reciprocity. In the practice of stress management, we propose to consider not only *formal* work-related interactions but also *informal* interpersonal relationships (such as *guanxi* reciprocity) when focusing on the effect of interpersonal relationship at work on well-being. Particularly when these informal relations span organizational hierarchical boundaries, they may offer significant and rewarding benefits to individuals. This could increase our understanding of how informal interactions could affect work-related attitudes and behaviours, organizational functioning, and perhaps even performance.

# 8.4.6 Conclusions

The current study shows that social resources and task resources seem to play a different role in the energetic and motivational process, as proposed by the JD-R model. Moreover, the typical Chinese notion of *guanxi* (exchange of favors) was successfully integrated into the JD-R model. This not only increases the applicability of the JD-R model in China, but also exemplifies how the JD-R model can be extended by integrating notions from non-western cultures.

# **Chapter 9**

Does Equity Mediate the Effects of Job Demands and Job Resources on Work Outcomes?

An Extension of the Job Demands-Resources Model

Based on:

Hu, Q., Schaufeli, W.B., & Taris (2013). Does equity mediate the effects of job demands and job resources on work outcomes? An extension of the job demands-resources model. *Career Development International*, *18*, 357-376.

#### 9.1 Introduction

The Job Demands-Resources (JD-R) Model (Demerouti et al., 2001) has gained much popularity in occupational stress research during the last decade (see Schaufeli & Taris, 2014, for an overview). According to this model, job demands and job resources are value-based job characteristics (Schaufeli & Taris, 2014). That is, job demands are negatively valued physical, social, or organizational aspects of the job that require sustained physical or psychological effort, and are therefore associated with certain psychological and/or physiological costs, such as fatigue or irritability (Bakker et al., 2003a). High demands trigger an erosion or health impairment process that could eventually lead to burnout and psychosomatic health complaints (Brotheridge & Grandey, 2002; Schaufeli & Bakker, 2004). Conversely, *job resources* are positively valued physical, social, or organizational aspects of the job that may be functional in achieving work goals, reducing job demands, and/or stimulating personal growth and development via a motivational process (Schaufeli & Bakker, 2004; Schaufeli & Taris, 2014). Empirical evidence from multiple studies in various occupations and countries confirms that job demands and lack of resources are positively associated with burnout, whereas job resources are positively related to engagement (e.g., Hu et al., 2011; Lewig, Xanthopoulou, Bakker, Dollard & Metzer, 2007; Schaufeli & Bakker, 2004).

Despite its apparent popularity, the JD-R model suffers from two unresolved issues. First, similar to related job stress models such as Karasek's Demand-Control model (DCM; Karasek, 1979), the JD-R assumes that a combination or interaction of job demands and job resources produces employee well-being (i.e., burnout and engagement). However, the empirical support for this idea is inconsistent. Second, although the JD-R model specifies what kind of job characteristics lead to particular psychological states, such as burnout and engagement, it does not tell us *why* this would be so. Both issues call for further theoretical development of the associations between job characteristics and employee well-being. The present study addresses both unresolved issues by proposing that the associations between job characteristics (demands and resources) and employee well-being (burnout and engagement) are mediated through an equity-based cognitive evaluation process. A key-role in this process is played by the employee's appraisal of his or her investments in and outcomes received from the job.

#### 9.1.1 Job demands, job resources and cognitive appraisal

In the past few decades, researchers investigated the combined effects of job demands and job resources on employee well-being. For example, it has occasionally been shown that the impact of job demands on burnout (Bakker *et al.*, 2003), and work engagement (Hakanen *et al.*, 2005) depends on the level of job resources. When abundant resources are available, the impact of job demands is lower than when resources are lacking.

However, most studies using the JD-R model do not support the idea that job demands and job resources interact statistically, and even the few studies that reported significant interaction effects provide only weak and inconsistent evidence (cf. Taris, 2006). For example, job control did not buffer the negative effect of pupil misbehavior on work engagement among teachers (Bakker, Hakanen, Demerouti & Xanthopoulou, 2007). Furthermore, Beehr, Jex, Stacy and Murray (2000) argued that social support may not just fail to alleviate the negative impact of job stressors, but could even *intensify* these harmful consequences, serving as a kind of "reverse-buffer" (e.g., Glaser, Tatum, Nebeker, Sorenson, & Aiello, 1999; Kaufmann & Beehr, 1986). Hu *et al.* (2011) conducted a comprehensive study on interactions between job demands and job resources, focusing on their joint effects (i.e., moderating and synergistic effects) on burnout and engagement, and found that these joint effects added very little beyond the additive effects. In sum: whereas there is strong evidence for the additive effects of job demands and job resources on employee well-being (i.e., burnout and engagement) in ways predicted by the JD-R model, the evidence for their interaction is still weak and inconsistent.

Up until now, demands and resources have been construed as independent entities that might or might not interact, and whose joint contribution to well-being can be established by relating their statistical interaction to employee well-being. Besides, some researchers argue that the JD-R model fails to account for the important distinction among types of events with respect to the way they tend to be appraised by employees (Cavanaugh *et al.*, 2000; Muja & Appelbaum, 2012). For example, if an individual believes that his or her resources are sufficient to meet the demands of the situation, the situation is appraised as a challenge that may lead to future gain (i.e. elevated self-esteem, learning). Conversely, if these resources

are judged to be insufficient, the situation is appraised as a threat because that may lead to future loss (i.e. poor self-esteem, strain). Also, the separation of job demands into "challenges" and "hindrances" (Crawford *et al.*, 2010) underlines the importance of cognitive appraisal for the effects of job demands on outcomes such as performance and well-being. Consistent with this reasoning, we believe that the nature of the relationship between job demands and job resources cannot be fully understood unless the cognitive appraisal of job characteristics and job resources is taken into account by integrating it into the JD-R model.

Therefore, instead of following the traditional JD-R model that links job characteristics (i.e., demands and resources) directly to well-being (engagement and burnout), the current study focuses on the mediating role of cognitive appraisal of demands and resources. More specifically, we postulate an intrapersonal, cognitive process (i.e., the perception of equity) that evaluates the relative importance of job demands and job resources as a mediator between job characteristics (job demands and job resources) and employee well-being (engagement and burnout). Basically, we assume that the imbalance between an employee's investments in his or her job (e.g., time, energy, skills) and the outcomes (e.g., status, appreciation, pay) that are received in return will result in negative consequences, notably burnout (Schaufeli, 2006). For example, high job demands require substantial investments that constitute a potential threat for the balance between investments and outcomes, giving rise to inequity. In contrast, job resources are "rewards" or positive outcomes that potentially have a beneficial impact on the balance between investments and outcomes, giving rise to equity (Eisenberger, Huntington, Hutchison, & Sowa, 1986). Alternatively, we propose that employees feel engaged when the outcomes they receive from their job outweigh their investments. That is, when job resources are (more than) sufficient to deal successfully with the job demands that the employee faces, work engagement is likely to result. This is because resources constitute a source or supply that produces benefits that satisfy an individual's needs. If this reasoning is correct, the associations between job demands and resources on the one hand and employee well-being on the other should at least partly be mediated by the degree of equity experienced by the employee. Below we first discuss the perception of equity and subsequently extend the JD-R model with the concept of cognitive appraisal (i.e., equity), after which we present the study hypotheses.

# 9.1.2 Equity

Social exchange theory asserts that employees seek to maintain a balance between the inputs that they bring to a relation (i.e., investments) and the consequences they derive from the exchange (i.e., outcomes) that takes place within this relation. Individuals who perceive themselves as unbalanced in an exchange relation will experience distress, and that distress will lead to efforts to restore equity in this relation (Adams, 1965). Equity, as conceived by social exchange theory, primarily refers to a process of social or interpersonal comparison in which one's own ratio of inputs and outcomes is compared to that of others. However, Pritchard (1969) noted that individuals also use internal standards, thus excluding the comparison-other proposed by Adams (1965) (cf. Schaufeli, 2006). In line with Pritchard's interpretation, the current study conceives equity as the balance between perceived *own* job investments and *own* job returns, relative to the employee's *own* internal standards.

People invest time, energy, and skills to meet their job demands, to get their work done, and to obtain more work-related returns in the form of resources intrinsic or extrinsic to the job (e.g., control, occupational development, task clarity, or trust, status, and salary). If an employee perceives certain job demands as stressful or highly demanding, (s)he will often cope by investing additional effort (Hockey, 1997). When this coping is effective and the job demands are met the expected returns will occur, the balance between investments and outcomes is restored, and equity is achieved. However, when coping is unsuccessful and the demands are not met, insufficient returns are achieved and inequity is experienced.

Similar exchange processes constitute the core of another popular job stress model; the Effort–Reward Imbalance (ERI) model (Siegrist, 1996). Central to the ERI approach is the ratio between effort and reward. Employees' well-being is assumed to depend on the balance between investments in the job (i.e., efforts or job demands) and rewards obtained from the job (i.e., personal or job resources. An imbalance resulting from high efforts and low rewards has been identified as a major risk factor for reduced well-being (for a review see Van Vegchel, de Jonge, Bosma & Schaufeli, 2005b). Note that contrary to Adams (1965), in the ERI approach an imbalance of low effort and high rewards is not considered problematic. A distinctive feature of the ERI model is that efforts and rewards are conceptualized and assessed separately, and employees do not explicitly assess the ratio or balance between the two. As a consequence, it remains unclear whether workers actually perceive the
theoretically postulated inequitable effort-reward ratio as being inequitable. Therefore, in the present research we not only ask participants separately about their efforts (demands) and rewards (resources), but also about their appraisal of the balance between the two.

#### 9.1.3 Equity as a mediator

Stress is perceived as a relation between individual and environment that is appraised as potentially endangering to one's well-being. According to Lazarus and Folkman (1984), two types of appraisal occur in stressful situations. First, a particular event or situation is evaluated as positive (i.e., as a challenge), neutral, or negative (i.e., involving loss or threat) – the so-called primary appraisal. Particularly in case of a negative primary appraisal, a secondary appraisal process takes place in which the resources are evaluated that the person can draw upon when dealing with the perceived threat or loss. For instance, in the work situation an employee might primarily appraise the workload as stressful (i.e., as a threat to one's well-being), but secondary appraisal reveals that (s)he has sufficient job control to address that high workload successfully. That is, a cognitive appraisal process occurs in which job demands and job resources are assessed *simultaneously* and *relative to each other*.

The outcome of this process not only constitutes the onset of coping behavior, as assumed by Lazarus and Folkman (1984), but it also leads to a *concomitant experience of equity* – the appraisal of the balance of an individual's investments and outcomes. That is, employees feel under-benefited when their job resources are insufficient to cope with their job demands, and feel over-benefited when a surplus of job resources is available. When the available job resources are sufficient to cope with the demands, the situation is balanced and equity is experienced. Inequity elicits negative emotions and cognitions, whereas the experience of equity elicits positive emotions and behaviors (Lazarus & Folkman, 1984).

Buunk and Schaufeli (1999) argued that an unbalanced relation between investments and returns would drain an individual's emotional resources and could eventually lead to burnout. They reasoned that continuously investing energy in one's job without receiving appropriate outcomes not only leads to emotional exhaustion, but also to the tendency to restore "the balance between give and take" by psychological withdrawal. Typically, emotional exhaustion and mental withdrawal (e.g. cynicism) constitute the hallmark of burnout (Schaufeli & Taris, 2005). A series of studies have supported the notion that, indeed, inequity, or feeling under-benefited, is associated with burnout (e.g., Bakker, Schaufeli, Sixma, Bosveld & van Dierendonck, 2000; Schaufeli, Van Dierendonck & Van Gorp, 1996b; Smets, Visser, Oort, Schaufeli & De Haes; 2004; Taris, Kalimo, & Schaufeli, 2002; Taris, Peeters, LeBlanc, Schreurs & Schaufeli, 2001). However, these studies did not include possible antecedents of inequity, such as job demands and job resources. Following Lazarus and Folkman (1984) it is assumed that the cognitive appraisal process, in which the employee evaluates the meaning of job demands and job resources relative to each other, produces feelings of (in)equity, depending on whether the outcome of this process matches with the person's individual standards (Pritchard, 1969). In case the available job resources do not compensate for the job demands according to that standard, the employee will feel under-benefited, so that burnout is likely to occur (Schaufeli, 2006). In sum, we assume that the perception of equity mediates the relation between job demands and burnout (Hypothesis 1a), as well as the relation between job resources and burnout (Hypothesis 1b).

Equity theory assumes that individuals attempt to maximize their benefits in exchange relations. As Walster, Walster and Berscheid (1978) stated, "... So long as individuals perceive they can maximize their outcomes by behaving equitably, they will do so. Should they perceive that they can maximize their outcomes by behaving inequitably, they will do so" (p. 16). This agrees with Conservation of Resources (COR) theory (Hobfoll, 1989) which posits that individuals strive to retain, protect and accumulate resources, also in the workplace (Hobfoll, 2002). When employees feel that their efforts which they invest to master the job demands they are facing are balanced by the outcomes or available job resources they will experience an affective-motivational state that has been labeled work engagement (Inceoglu & Fleck, 2010). That is, they are willing to put additional energy into their job because they feel it is worth it. Thus, we assume that the perception of equity mediates the relation between job resources and work engagement (Hypothesis 2a) as well as job demands and work engagement (Hypothesis 2b).

## 9.1.4 Curvi-linearity

Thus far, we have restricted ourselves to discussing the linear effects of equity: that is, feeling under-benefited is related to burnout (Hypothesis 1), whereas the experience of equity is related to engagement (Hypothesis 2). According to Walster *et al.* (1978), equity

will affect well-being curvilinearly as well. It is assumed that individuals favor a social exchange situation in which their investments are roughly equivalent to their outcomes. If they are involved in an inequitable relationship they will feel uneasy and distressed. It is not surprising that the under-benefited feel more distressed than the over-benefited (cf. Sprecher, 1986). Numerous studies have shown that lack of reciprocity is negatively related to employees' physiological and psychological well-being (Schaufeli, 2006). Aumer-Ryan, Hatfield and Frey (2007), for example, found the European American and the Asian-American groups were far less satisfied in under-benefited than in balanced and in over-benefited in romatics relatioship. Nevertheless, those who are feeling over-benefited – i.e., when the returns outweigh the investments – also experience low levels of well-being (e.g., guilt).

Consistent with this reasoning, researchers found that primarily feeling under-benefited at work may act as a risk factor for developing burnout, but also that over-benefited might result in burnout (Truchot & Badré, 2006; Van Dierendonck, Schaufeli, & Buunk, 1996). For example, Van Dierendonck, Schaufeli and Buunk (2001) found that feeling more deprived as well as feeling more advantaged resulted in higher future emotional exhaustion – a core symptom of burnout – in health care professionals. The study of Taris *et al.* (2002) also provided evidence for the presence of quadratic (U-shaped) effects of inequity on burnout, and health complaints. The relationship between feeling over-benefited and burnout seems to be prevalent especially in medical settings. It has been argued and found (VanYperen, Buunk, & Schaufeli, 1992) that health care workers usually have a communal exchange orientation, that means they are more oriented towards "giving" rather than "receiving". In case they feel over-benefited (i.e. receive more than they give) this is especially stressful for them and it induces strong feelings of guilt, which eventually might result in burnout. The relationship between guilt and burnout has repeatedly been demonstrated (e.g. Gill-Monte, 2012).

Thus, non-linear relations might exist between the perception of equity and burnout (Hypothesis 3). Specifically, feeling under-benefited as well as feeling over-benefited should be related to higher levels burnout, relative to a situation in which a balance between job demands and job resources (equity) exists. So far, no studies have been carried out on non-linear relationships between equity and work engagement. Since engagement is considered to be the opposite pole of burnout (Gonzalez-Roma, Schaufeli, Bakker & Lloret, 2006), it can – by way of analogy – be assumed that feeling under-benefited as well as

feeling over-benefited is related to lower levels of engagement as compared to a balanced situation of equity (Hypothesis 4).

All in all, the present study focuses on the mediating role played by the cognitive appraisal of job demands and job resources in terms of equity. This appraisal process links the perceived job characteristics (i.e., demands and job resources) to employee well-being (i.e., burnout and engagement). In doing so, this study extends the original Job Demands Resources (JD-R) model (Demerouti *et al.*, 2001) with equity as a mediator. That is, the JD-R model traditionally assumes that job demands and job resources are separate concepts and that each of them may affect well-being, either separately or in combination. Our study supplements the JD-R model with an integrative, cognitive appraisal process in which job demands and job resources are evaluated simultaneously and in relation to each other.

#### 9.2 Method

#### 9.2.1 Sample and procedure

The present study employed data from two samples. Sample 1 included 625 blue collar workers, employed in Chinese medium-sized family-owned businesses. The mean age Sample 1 was 31.81 years (SD = 9.16); 348 (56%) participants were male and 275 (44%) female. Questionnaires were distributed by the human resource departments and the survey was accompanied by a letter that explained the general aim of the study and emphasized the participants' privacy. The response rate was 73%. Sample 2 included 1,381 nurses from six Chinese hospitals, 1,297 were female (94%) and 84 male (6%). Their mean age was 29.64 years (SD = 7.65). Questionnaires were handed out by the head-nurse and a similar accompanying letter as used for Sample 1 was included. The response rate was 76%.

#### 9.2.2 Measures

The measures used in the present study had been included in previous research in China, where they showed sufficient reliability and construct validity (Hu *et al.*, 2011; Hu & Schaufeli, 2011a; Zheng *et al.*, 2010). For the internal consistencies of the scales (Cronbach's  $\alpha$ ) see Table 9.1.

*Job demands* were assessed by the Chinese version of the Questionnaire on the Experience and Evaluation of Work (QEEW; Van Veldhoven *et al.*, 2002; Zheng *et al.*, 2010). Five demands were included in the present study: workload (5 items, e.g., "Do you have too much work to do?"); emotional demands (3 items, e.g., "Are you confronted at your work with situations or events that affect you personally?"); mental demands (5 items, e.g., "Does your work demand a lot of concentration?"); physical demands (7 items e.g., "At your work, do you have to lift or move heavy loads?"); and interpersonal conflict (4 items, e.g., "How often do you get into arguments with others at work?").

*Job resources* were also assessed by subscales of the Chinese version of the QEEW (Zheng *et al.*, 2010). Three job resources were included: job control (3 items, e.g., "Do you have freedom in carrying out your work activities?"); task clarity (5 items, e.g., "Do you know exactly what areas you are responsible for and which areas are not your responsibility?"); and opportunities for learning and development (4 items; e.g., "In my job I have the possibilities to develop my strong points").

All demand and resource items were scored on a 5-point rating scale, ranging from 1 ("never") to 5 ("always").

*Burnout* was assessed with the exhaustion and cynicism subscales of the Chinese version (Hu & Schaufeli, 2011a) of the core of Maslach Burnout Inventory – General Survey (MBI-GS; Schaufeli *et al.*, 1996a). Exhaustion was assessed with five items (e.g., "I feel used up at the end of the workday") and cynicism with four items (e.g., "I have become less enthusiastic about my work"). All items were scored on a 7-point frequency rating scale ranging from 0 ("never") to 6 ("daily"). High scores on the exhaustion and cynicism subscales signify burnout.

*Work engagement* was assessed with the Chinese version (Zheng *et al.*, 2010) of the Utrecht Work Engagement Scale (UWES-9; Schaufeli *et al.*, 2006a). The UWES-9 taps three underlying dimensions, each of which is measured with three items: vigor (e.g., "At my work, I feel bursting with energy"), dedication (e.g., "My job inspires me"), and absorption (e.g., "I get carried away when I am working"). All items were scored on a 7-point rating scale ranging from 0 ("never") to 6 ("daily"). High scores on all three dimensions indicate high levels of work engagement.

Following Hatfield, Traupmann, Sprecher and Hay (1985) and Van Horn, Schaufeli and Taris (2001), the *perception of equity* was measured by a global single-item rating that

requested respondents to consider their own investments and outcomes in relation to each other: "People 'invest' in their jobs (e.g., time and effort), but also receive all kinds of material and immaterial outcomes in return (e.g., salary, status, recognition). When I compare the investments in my job with the outcomes that I receive from it, then I get ... back than I invest". A 5-point response scale was used, ranging from 1 ("much less") to 5 ("much more"). Thus, individual scores of 4 and 5 indicate that participants feel over-benefited (investments are lower than outcomes), whereas scores 1 and 2 indicate that participants feel under-benefited (investments exceed outcomes); scores equal to 3 signify a balance between investments and outcomes (i.e., equity).

#### 9.2.3 Data analysis

The four hypotheses were tested using structural equation modeling techniques as implemented in the AMOS computer program (Arbuckle, 2003). Four steps were followed: (1) the research model was examined in the overall, pooled sample; (2) a multi-group analysis was performed to assess the invariance of the estimated parameters across both samples (Byrne, 2010); and (3) the non-linear effect of equity was examined separately for nurses and blue collar workers. If a non-linear effect of equity was present, then (4) the association between equity and employee well-being was examined by comparing the mean scores for the over-benefited group, balanced group and the under-benefited group, using analysis of variance.

In the structural equation analysis, Maximum Likelihood estimation was used and the input for each analysis was the covariance matrix. To test the hypotheses, several nested models were compared by means of the  $\chi^2$  difference test. In addition, absolute and relative indices were computed to assess the goodness-of-fit of the models. The absolute goodness of fit indices were: (1) the  $\chi^2$  goodness of fit statistic; (2) the Root Mean Square Error of Approximation (RMSEA); and (3) the Goodness of Fit Index (GFI). RMSEA values of .08 and lower indicate an acceptable fit (Byrne, 2010). As recommended by Marsh *et al.* (1996), the following relative goodness of fit indices were computed: (1) Comparative Fit Index (CFI); and (2) Tucker-Lewis Index (TLI). As a rule of thumb, values of .90 or higher indicate good fit for all three relative fit indices (Byrne, 2010). Sobel tests were used to evaluate the significance of the mediation effect (Sobel, 1988). Finally, the nonlinear effects of equity

were tested by extending the research model with a nonlinear term which was computed as the squared of the standardized linear equity term. The shape of the possible nonlinear relationship between equity and the outcome variables was investigated using a polynomial approach (Royston & Altman, 1994; Sauerbrei & Royston, 1999). The quadratic model (Royston & Altman, 1994) includes a quadratic term to represent the nonlinear component of the relationship between equity and the outcomes. It allows for more flexibility in the shape of the fitted curve, that is, if there is only little linear structure, it results in a fit that is at least as good as a global polynomial, while if a quadratic term does not improve the fit, it selects a simple linear function.

#### 9.3 Results

#### 9.3.1 Descriptive statistics

Table 9.1 provides the means, standard deviations, Cronbach's alphas, and product-moment correlation coefficients of the study variables among blue collar workers (Sample 1) and nurses (Sample 2). As can be seen, the internal consistency of all scales are acceptable, with all alphas equaling or exceeding the threshold value of .70.

Table 9.1. Means (M), standard deviations (SD), internal consistencies (Cronbach's a on the diagonal), and correlations between the study variables for blue collar workers (N = 625, lower half) and nurses (N = 1,381, upper half)

	Workers	Nurse	5															
	M $SD$	M	20	-	2	3	4	ŝ	9	7	00	6	10	11	12	13	14	15
1. Workload	2.53 .85	3.41 .	80	75/.82	.52**	.59**	.58**	.37**	.02	<b>**</b> 60 <sup>:</sup>	8	08**	12**	*90''	.45**	.34**	11**	.09
2. Emotional Demands	1.93 .823	3.37	86	43**	.70/.83	.53**	.59**	.51**	0.	<u>.</u> 05	03	15**	19**	11**	.43	.39	13	.05
3. Mental Demands	3.43 .82	4.27	73	42**	.36**	.70/.88	.53**	.20	*90.	.15**	8	8	4 2	00	.35**	.23	10	*90
4. Physical Effort	2.36.90	3.26 .	86	43**	.33**	.22**	.85/.90	.39**	10	.02	03	23**	29**	20***	.47**	.43**	11**	<b>*</b> 80
5.Interpersonal Conflict	1.52 .59	2.19	76	29**	.44	.13**	.29**	.79/.84	00.	- 00	*90'-	16**	19**	14	.35**	.38 <b>*</b>	08	* <i>1</i> 0.
6. Control	2.17 .97	2. 44	92	03	.10*	.14	15	.02	.68/.75	.36**	.44	.19**	.17**	.21**	13	15**	10	*90'-
7. Task Clarity	2.98.92	3.27	8	90	.11**	.20**	*60	*60.	.38	.73/.82	.45**	.24**	.24**	.26**	14**	21**	*80	03
8. Developm. Opport.	2.13 .90	2.49 .	8	-05	05	.16*	20**	02	.52**	.41 **	.73/.82	.34	.32**	.36**	26	27**	.21**	00.
9. Vigor	3.09 1.52	2.58	1.31	01	- 01	.22	10*	*60'-	.15**	.27**	.28	.75/.80	*08.	***	32**	42	.20**	01
10. Dedication	3.03 1.52	2.56	1.35	-01	8	.23**	15**	16**	.19**	.31**	.37***	.75**	.76/.86	.78**	38**	47**	.20**	02
11. Absorption	2.74 1.53	2.27	1.38	01	0.	.20**	15**	11***	.22	.29**	.31**	*%	.75**	.75/.84	33**	40	.23**	02
12. Exhaustion	2.02 1.23	3.25	1.33	35**	.36**	.16*	.37**	.27**	ع	- 06	15**	14	20	14	.80/.87	*18.	25	.12**
13. Cynicism	1.45 1.25	2.52	1.47	17**	.28	6.	.26**	.22	4	13***	14**	23**	28**	21**	** 89.	.79/.89	25**	.10**
14. Equity (linear)	2.63 .76	2.18	82	-04	05	- 01	17**	- <sup>.09</sup> *	.05	- 08	.10*	*8.	*80.	*60 <sup>.</sup>	20	14	;	.40 *
15. Equity (non-linear)	1.00 1.59	1.00	1.71	10*	.10*	*80 <sup>.</sup>	10	.02	05	05	05	05	.04	.05	.05	*60	.12**	;

Note: \* = p < .05,  $*^* = p < .01$ .

A principal components factor analysis for the studied variables was conducted in the total samples. A varimax rotation revealed that the four job demands (i.e., workload, emotional demands, interpersonal conflicts and physical effort) loaded on one demand component, whereas the three job resources (job control, task clarity, and learning and development opportunity) loaded on a resources component. Moreover, vigor, dedication and absorption loaded on a work engagement component, whereas exhaustion and cynicism converged into a burnout component. Finally, the single-item Equity measure constituted the fifth component.

	Component	Component	Component	Component	Component
	1	2	3	4	5
Demands:					
Workload	.83				
Mental demands	.83				
Emotional demands	.78			.32	
Physical effort	.77				
Interpersonal conflict	.53			.45	
Engagement:					
Vigor		.90			
Dedication		.89			
Absorption		.88			
Resources:					
Job control			.83		
Development opport.			.78		
Task clarity			.70		
Burnout:					
Cynicism				.83	
Exhaustion	.44			.76	
Equity (linear)					.95
Explained variance	23.05	18.80	13.61	12.76	7.3

Table 9.2. Factor loadings of the study variables in the total sample (N=2,006)

Note: Only factor loadings of .30 and over are displayed.

## 9.3.2 Test of the comprehensive model in the overall sample

Our main hypothesis stated that the perception of equity would mediate the relation between job demands and resources on the one hand, and burnout and engagement on the other hand. The fit of the comprehensive model in the overall, pooled sample was acceptable  $(\chi^2 = 760.97, df = 68, \text{ GFI} = .95, \text{ CFI} = .95, \text{ TLI} = .93, \text{ RMSEA} = .07)$ , and all path coefficients were significant and in the expected direction (see Figure 9.1). Job demands were positively related to burnout, via the perception of equity (Sobel test = 5.76, p < .001; Hypothesis 1a confirmed), and negatively related to work engagement, also via the perception of equity (Sobel test = -4.71, p < .001; Hypothesis 2b confirmed). Moreover, job resources were positively associated with work engagement, via the perception of equity (Sobel test = 3.53, p < .001; Hypothesis 2a confirmed) as well as negatively related to burnout via the perception of equity (Sobel test = -3.91, p < .001; Hypothesis 1b confirmed).



Figure 9.1. Standardized effects for the final model in the total sample (N=2,006); all effects significant at p < .001 ( $\chi^2$  = 760.97, df = 68, GFI = .95, CFI = .95, TLI = .93, RMSEA = .07)

## 9.3.3 Multi-group test of the comprehensive model

As two samples were involved, equivalence of the parameters across samples was tested by constraining regression weights to be equal across samples in a multi-group analysis. Results revealed that the constrained model had a good fit to the data ( $\chi^2 = 933.72$ , df = 144, GFI = .94, CFI = .94, TLI = .92, RMSEA = .05). However, the model that allowed all parameters to vary across samples fitted the data significantly better ( $\chi^2 = 902.76$ , df = 136, GFI = .94, CFI = .94, TLI = .91, RMSEA = .05) than the model in which the regression weights were constrained to be equal ( $\Delta \chi^2$  with df = 8 was 30.96, p < .001).

Next, separate tests of each regression weight revealed that three paths (i.e., resources  $\rightarrow$  equity, resources  $\rightarrow$  burnout, demands  $\rightarrow$  work engagement) differed significantly across nurses and blue collar workers. The model in which these three paths varied across samples and in which all remaining paths were constrained to be equal fitted the data well ( $\chi^2 = 905.48$ , df = 141, GFI = .94, CFI = .94, TLI = .92, RMSEA = .05). Subsequent inspection of the parameter estimates in both samples revealed that job demands were positively related to burnout, via the perception of equity among nurses and workers (Sobel test = 4.16, p < .001; Hypothesis 1a confirmed for nurses and workers), and negatively related to work engagement, via the perception of equity among nurses and workers (Sobel test = -3.48, p < .001; Hypothesis 2b confirmed for nurses and workers). Job resources were positively associated with work engagement (Sobel test = 3.58, p < .001) and negatively associated with burnout (Sobel test = -4.33, p < .001), but only in nurses (Hypothesis 2a and 1b confirmed for nurses). Note that the regression paths revealed that job resources were significantly related to work engagement in both samples ( $\beta$ =.44 in nurses,  $\beta$  = .47 in workers, both ps < .001).

#### 9.3.4 Non-linear effects of equity on well-being

To test for non-linear effects of equity on employee well-being, the research model was extended with a term representing the non-linear effect of equity (i.e., squared equity). The model was then tested separately for nurses and blue collar workers. The fit was acceptable for nurses ( $\chi^2 = 592.77$ , df = 77, GFI = .94, CFI = .95, TLI = .93, RMSEA = .07) as well as for blue collar workers ( $\chi^2 = 328.59$ , df = 77, GFI = .93, CFI = .91, TLI = .89, RMSEA = .07).

Our results showed no non-linear effects of equity on burnout or work engagement in blue collar workers (Hypotheses 3 and 4 not supported for workers). For nurses, a significant non-linear direct effect was observed on burnout (a standardized effect of .13, p < .001) but not on work engagement (Hypothesis 3 confirmed for nurses, Hypothesis 4 not supported for nurses).

Next, we found that the direct path from job resources to non-linear equity was not significant for nurses (-.03, *ns*). After deleting this path, Sobel tests showed that job demands were positively related to burnout via both the linear and the non-linear equity terms (Sobel tests were 4.08, p < .001, and 2.74, p < .01, respectively). Figure 9.2 presents the parameter estimates for the final model for nurses.



Figure 9.2. Linear and non-linear effects of equity in the final JD-R model among nurses (N = 1,381;  $\chi^2$  = 595.98, df = 79, GFI = .94, CFI = .95, TLI = .93, RMSEA = .07; all effects significant at p < .05, except # = not significant)

In order to further explore the non-linear effect of equity on burnout among nurses, an over-benefited group (N = 83), a balanced group (N = 301) and an under-benefited group (N = 997) were created. For the balanced group, rewards and outcomes were the same (i.e., they

reported a score of 3 on the equity measure). The two other groups reported equity scores above and under the midpoint of this measure, respectively. Analysis of variance (ANOVA) revealed that means of the three groups differed significantly in levels of burnout,  $F_{(11, 1381)} =$ 6.48, p < .001. Figure 9.3 presents the mean levels of burnout for the three groups. Post-hoc tests showed that the mean of the under-benefited group differed significantly from those of the balanced (mean difference = -0.62, p < .001) and the over-benefited groups (mean difference = -0.35, p < .05). Interestingly, the difference between the means of the balanced and the over-benefited group was only marginally significant (mean difference = -0.27, p= .07). Thus, Hypothesis 3 was confirmed in that the expected curvilinear relation was observed for equity and burnout among nurses.

**Burnout** 



Figure 9.3. Burnout among nurses as a function of equity

## 9.4 Discussion

The present study aimed to address two limitations of current research on Demerouti *et al.*'s (2001) JD-R model, namely (1) the issue of how demands and resources combine in

affecting employee well-being, and (2) the lack of insight into how and why particular job demands and job resources affect employee well-being (Schaufeli & Taris, 2014). We proposed that the effects of job demands and job resources on burnout and engagement are mediated through an equity-based cognitive evaluation process, in which employees appraise their investments in and outcomes gained from their work (cf. Pritchard, 1969; Van Dierendonck, Buunk & Schaufeli, 2001). By doing so we shed light on the psychological processes underlying the associations between job characteristics (i.e., demands and resources) and employee well-being (i.e., burnout and engagement).

Our findings partly supported our hypothesis that equity mediates the relation between job demands and job resources on the one hand and well-being burnout and work engagement on the other hand. Multi-group analysis showed that job demands were associated with high levels of burnout, and that job resources were related to work engagement and low burnout in both nurses and blue collar workers. These findings are in line with previous findings on the JD-R model (Schaufeli & Taris, 2014). A closer look at our findings in the two samples reveals that the perception of equity mediated the relation between job demands and burnout in both nurses and blue collar workers. Interestingly, in both samples the indirect effect of job demands on burnout via equity was stronger than the indirect effect of job resources on work engagement via equity. So it seems that employees are more sensitive to detrimental job characteristics that drain their energy (i.e., job demands) than to beneficial job characteristics that satisfy their needs (job resources). This may be due to the fact that negative emotions that people experience as a consequence of inequity induce feelings of incompetence to deal adequately with stressors (Baumeister, Heatherton & Tice, 1994). Furthermore, earlier findings that people are more concerned about avoiding loss than about achieving gains (Hobfoll, 2002) may explain why among nurses the indirect effect of job resources on burnout via equity was stronger than the corresponding indirect effect of job resources on work engagement through equity.

The perception of equity mediated the relation between job demands and well-being (burnout and engagement, Hypothesis 1a and 2b) in both samples. Thus, when high job demands drain employees' energy, the ratio between their investments and rewards becomes less favorable. In the short term this does not necessarily lead to adverse consequences, but in the long term (especially when the employee cannot draw upon sufficient job resources), adverse consequences (such as burnout and the erosion of engagement) could occur.

Interestingly, our findings did not support the hypothesis that equity mediates the relation between job resources and well-being (burnout and engagement, Hypothesis 1b and 2a) in blue collar workers; rather, in this sample job resources were directly associated with low well-being. Apparently, the effects of job demands and job resources on equity and well-being differ as a function of the work context. In the present study, all participants in the blue collar sample worked in Chinese family-owned factories where job insecurity is very high and downsizing is endemic (Hu & Schaufeli, 2011b, for details). Thus compared to the nurses in our study, the blue collar workers experience low levels of job security – a major job resource (cf. Siegrist *et al.*, 2004).

Additionally, this low level of job security of blue collar workers could have restricted the systematic variance of our equity measure, leading to an underestimation of the magnitude of the associations under study (cf. Table 9.1). Alternatively, their past experiences may have led the blue collar workers in our study to focus more strongly upon the potential losses at work (Hobfoll, 2002) than on potential gains, which could explain why the direct effects of the two clusters of job characteristics on well-being were considerably stronger than the more subtle indirect effects via equity.

Our study not only revealed significant linear effects of equity on well-being (burnout and engagement) among nurses and blue collar workers, but also revealed significant non-linear effects of equity on burnout, albeit only for nurses. The linear effect of equity in our study is stronger than the non-linear effect, which goes against earlier studies in medical settings in Europe (Truchot & Badré, 2006; Van Dierendonck *et al.*, 1996, 2001). The reason might be that in collectivist cultures such as China where interpersonal sensitivity is high, and harmony, solidarity, and cohesion more favourably valued, equality is preferred to equity. Conversely, equity might be preferred to equality in individualistic cultures such as Western Europe, stressing productivity, competitiveness, and self-gain (Leung & Bond, 1984). It leads people in individualistic cultures (i.e., Western Europe) to be far more concerned with equity than are people in collectivist cultures (i.e., China). Employees from a collectivistic culture may demonstrate a more linear relationship between equity and well-being, whereas in employees from western individualistic cultures the more common curvilinear relationship between equity and well-being could be present.

Furthermore, our study found that the negative effects on well-being of feeling under-benefited were considerably stronger than those of feeling over-benefited, which does not agree with previous studies. For instance, Van Dierendonck *et al* (1996, 2001) observed that an asymmetrical health professionals—recipient relationship caused health professionals to feel over-benefited and more stressed. Our study agreed with the original assumption of Adams (1965) that the negative effects of feeling under-benefited outweigh those of feeling over-benefited. Finally, the fact that no non-linear association between equity and well-being was observed among blue collar workers might be due to the restriction-of-range effects discussed above. Long-term job insecurity for blue collar workers makes it very difficult for them to find an employment relationship that is rewarding, fair, and fulfilling.

#### 9.4.1 Study limitations

Our study has several limitations. First, perceived equity was measured by a global single item in which participants evaluated their investments and outcomes directly in relation to each other. This approach has been proven to be useful in the past (e.g., Hatfield *et al.*, 1985; Van Horn *et al.*, 2001). For example, the studies of Taris *et al.* (2001) and Van Horn *et al.* (2001) showed that various equity measures (e.g. single-item measures and multi-item measures that tap investments and outcomes separately) tend to be highly correlated. Moreover, these studies demonstrated that a global single-item equity measure shows similar associations with other concepts (e.g. burnout) as compared to other multi-item equity measures. Taris *et al.* (2001) observed that scores on single-item equity measures are a function of the separate assessments of investments and outcomes. Although different assessments of equity (e.g. single-item measures and multi-item measures) produce similar results (Prins, Buunk, & Van Yperen, 1993), more refined measures (e.g., focusing on investments and outcomes separately, or on various types of investments and outcomes) might have provided a more detailed picture of the relations among equity and the other study variables.

Second, the cross-sectional design of the present study obviously precludes causal conclusions. However, note that previous longitudinal research (e.g., Taris *et al.*, 2001) yielded findings that support the idea that (lack of) equity leads to (un)well-being. Seen from this perspective we believe that the theoretical model tested in the current study represents a plausible causal model, which, of course, remains to be tested longitudinally.

Finally, the present study employed two relatively unusual, non-western samples, both

collected in mainland China. Although this may well be considered a strengthen of the current research in that it contributes of our knowledge about the extent to which western theoretical notions also apply in non-western contexts, it is possible that some of our findings are unique to our samples. For example, equity appeared to have no effect on well-being among Chinese blue collar workers. Therefore, our findings should be interpreted with caution and further research is needed in order to generalize to other non-western countries.

## 9.4.2 Practical and scientific implications

The present study showed that the incorporation of equity in the JD-R model accounts for part of the association between job characteristics and employee well-being. From a scientific perspective, the contribution of the current study is that it extended the theoretical basis of the JD-R model, suggesting that the cognitive evaluation of job demands and job resources is partly responsible for the associations between these job characteristics and employee well-being. In addition, our results provide a possible explanation for the mixed results produced by previous JD-R research on the joint effects of job demands and job resources on well-being. Our findings suggest that it would be fruitful to focus on understanding the role of cognitive evaluation processes as mediator between job characteristics and employee well-being in the JD-R model.

Practically, our study suggests that part of the adverse effects of job demands on burnout and engagement may be mitigated by increasing job resources, since we found that job resources affected employee well-being both directly and indirectly, via equity. Such an approach would seem especially useful in situations where it is difficult or impossible to reduce job demands, e.g., when high emotional or physical demands constitute an inherent part of the job. Although the adverse effects of such demands are unlikely to disappear fully, our results suggest that the negative effects are buffered to at least some degree by job resources.

In conclusion, the present study extended the JD-R model with an equity-based cognitive evaluation process. Apparently, part of the associations between job characteristics and employee well-being are due to the cognitive appraisal of workers' investments in and outcomes gained from their jobs. This cognitive appraisal process can be targeted successfully by a cognitive behavioral approach that seeks to restore equity. In fact, Van Dierendonck,

Schaufeli and Buunk (1998) demonstrated the usefulness of an individual intervention program to reduce burnout and sickness absenteeism that focused on restoring the cognitive balance between investments and outcomes at work. The current study provides a further rationale for the theoretical underpinnings of interventions to improve employee well-being by focusing on the cognitive appraisal process.

# **Chapter 10**

**General Conclusions** 

## 10.1 Introduction

The objective of this dissertation was to investigate the validity of a leading job stress model used in occupational stress research: the Job Demands-Resources (JD-R) Model (Demerouti *et al.*, 2001). As an open and heuristic model, the JD-R model assumes that employee health and well-being result from the interplay between job demands and job resources. The JD-R model can be applied to various occupational settings, irrespective of the particular demands and resources involved. However, the model has been developed and tested in western countries so that it is still an open question whether it can be applied in the Chinese work context. Given its open, heuristic nature, another question is whether specific aspects of Chinese working life can be integrated into the JD-R model. Both issues are addressed in this dissertation: (1) Can the JD-R model be applied in the Chinese work context? (2) Can specific elements of Chinese working life be integrated in the JD-R model? In addition, this thesis also extends the JD-R model, particularly as far as the interplay of job demands and job resources is concerned. This concluding chapter starts with a brief description of the current Chinese social-economic context related to the workplace.

Work is embedded in a specific political, economic, cultural and social reality. China is the country with the biggest population in the world, accounting for about 21% of the total world population. Prior to China's Comprehensive Economic Reform in 1978, the majority of the population supported their lives by farming and planting. Wages were usually kept at an average subsistence level without much variation among workers under the planned economy. Differences in income and other material resources existed, but were usually small (Szelenyi, 1978; Zhou, 2000). In the transition from the planned economy to market economy since 1978, the rapid urbanization of the population caused many rural inhabitants to lose their lands, meaning that they had to become urban inhabitants. Further, the growing income gap between urban and rural areas lead many rural inhabitants to leave their villages and farms for the city in order to search economic opportunities, which led to a highly competitive labour market and an increase of living costs. Moreover, when China moved towards private ownership and a market-based economy, it brought profound changes in property rights and the distribution of resources. In the absence of sound and transparent distribution rules, the economic inequality increased markedly (Lam, 2009). Despite absolute gains in income, this inequality led to a deterioration of the relative financial position of many people, which might in turn have decreased the average level of subjective well-being among Chinese (Brockmann, Delhey, Welzel, & Yuan, 2009; Steele & Lynch, 2012).

The traditional socialist promise of lifetime employment in a planned economy was gradually replaced with performance-based labour contracts in state-owned and private enterprises since the advent of the market economy in China. However, labor laws that protect employees have only recently been introduced. For example, Labor Law was enacted in 1995, Labor Contract Law was enacted in 2008; and the first comprehensive social insurance law (covering five types of social insurances: pension, medical insurance, work-related injury insurance, unemployment insurance, and maternity insurance), was passed as recent as 2010. In fact, a sound and effective social security system is still lacking in today's China.

Furthermore, China has a unique cultural context that is characterized by a focus on the collective. This is manifested in the high value that is placed on social affiliation. This means that Chinese employees are more sensitive to relational conflicts at the workplace, as compared to employees in western countries (Spector, Allen, Poelmans *et al.*, 2007). Work behaviour of Chinese employees tends to be cooperative and to focus on group membership, and individual job performance is usually viewed as a result of collective effort.

The combination of these economic and socio-cultural factorsmay imply that Chinese employees tend to put greater emphasis on specific work conditions (e.g., conditions relating to job security and remuneration) than western employees.

Table 10.1 shows the general framework of the thesis and the topics of each chapter.

	Extension of the JD-R model	Validation in Chinese work context
General	<ul> <li>The nature of the interaction between demands and resources (Chapter 5).</li> <li>The inclusion of joint cognitive appraisal of demands and resources (Chapter 9).</li> <li>Making a distinction between different types of job resources (Chapter 8).</li> </ul>	<ul> <li>The convergent validity of four burnout measures (Chapters 2 and 3).</li> <li>Levels of engagement and workaholism across countries and cultures (Chapter 4).</li> <li>A longitudinal test of the JD-R model (Chapter 7).</li> </ul>
China Specific	<ul> <li>Including remuneration and job insecurity (Chapter 6).</li> <li>The inclusion of <i>guanxi</i> reciprocity (Chapter 8).</li> </ul>	

Table 10.1. The general framework of this PhD thesis

As can be seen from Table 10.1, the aim of this thesis is two-fold: (1) to extend the JD-R model with both general and specifically Chinese elements; (2) to validate core measures and the existing JD-R model in the Chinese work context.

Below, the main results of the eight empirical studies of this thesis are discussed in relation to the four sets of research questions that were formulated in Chapter 1.

## 10.2 Summary and evaluation of main results

Research question 1: What are the psychometric qualities of the four most often used burnout instruments (MBI, BM, SMBM, and OLBI) in the Chinese work context? And in how far do these four instruments assess a similar burnout construct (convergent validity)?

Burnout is a core element in the JD-R model, since it is assumed to mediate the relationship between job characteristics and work outcomes. Chapters 2 and 3 focused on the assessment of burnout in China. It has been argued that exhaustion and cynicism – a form of mental distancing or withdrawal – constitute the core of burnout (Schaufeli & Taris, 2005). By including four well-known burnout instruments (the Maslach Burnout Inventory–General Survey (MBI-GS; Schaufeli *et al.*, 1996a), the Burnout Measure (BM; Pines, 1993), the

Shirom-Melamed Burnout Measure (SMBM; Shirom & Melamed, 2006), and the Oldenburg Burnout Inventory (OLBI; Demerouti & Nachreiner, 1996; Halbesleben & Demerouti, 2005) in a study among Chinese nurses, Chapter 2 addressed validity issues in relation to the dimensionality of burnout and the role of exhaustion and withdrawal as core dimensions. The results suggested that burnout is best considered a multidimensional construct that consists of exhaustion and withdrawal, which are strongly related but yet conceptually distinct aspects. In addition, positively phrased items should be dropped from burnout measure, for they constitute a separate factor that is considered to be an artefact (Schaufeli & Salanova, 2007). So far, the four burnout measures employed in Chapter 2 had not been studied simultaneously before, neither in China nor elsewhere. These results are congruent with the western conceptualization of burnout as a two-dimensional construct (Schaufeli & Salanova, 2007). Hence, it can be concluded that the (convergent) validation of these measures in China has been successful.

Chapter 3 focused on student burnout, which is particularly relevant in China because of the highly competitive exams that prompt students to work extremely hard so that they feel constant pressure (Liu & Lu, 2011). Hence, although originally being considered a work-related phenomenon, burnout might also be relevant for Chinese students. Chapter 3 confirmed the robustness of the three-factor structure of the MBI-Student Survey (MBI-SS) (exhaustion, cynicism and reduced academic efficacy; Schaufeli *et al.*, 2002b) in three independent student samples (i.e., high school, university, and nursing school students). However, it was also suggested to reformulate and add a number of items to each subscale to increase their internal consistencies. Furthermore, perhaps because reduced academic efficacy with exhaustion and cynicism in the three student groups were far lower than the correlations between exhaustion and cynicism. Thus, it is suggested that reduced academic efficacy be measured with positive rather than negative items, or that only the core elements – exhaustion and cynicism –be used to measure students' burnout (cf. Bresó *et al.*, 2007).

To conclude, Chapters 2 and 3 confirmed the validity of western burnout measures – particularly the MBI-GS – in the Chinese work context. Thus, the MBI–GS can be used in China to tap employees' burnout. Note that although the factorial validity of the MBI-SS was confirmed in three independent samples of Chinese nurses, it is still recommended (1) to reformulate and add a number of items to its scales in order to improve the internal

consistency of its sub-scales, and (2) to replace the items of reduced academic efficacy with negative items or to use the two core element of burnout (exhaustion and cynicism) only.

*Research question 2: Do employees from western and eastern countries differ in mean levels of work engagement and workaholism?* 

As the opposite of burnout, work engagement represents a positive affective-cognitive state of fulfillment that is characterized by vigor, dedication, and absorption (Salanova et al., 2001; Schaufeli et al., 2002a). Work engagement is a positive type of working hard, while workaholism is a negative type of working hard. Workaholism includes two core characteristics: (1) working an excessive amount of time and (2) having a compulsive inner drive to work (Schaufeli et al., 2006b; 2008a). The crucial differences in both types of working hard is that workaholism lacks the positive affective component of work engagement (Salanova et al., 2013), whereas work engagement does not include the compulsive drive that is typical for workaholism (Schaufeli et al., 2008a). It has been argued that engaged employees are "pulled" to their work, whereas workaholics are "pushed" to their work (Taris et al., 2010). It seems that different psychological processes play a role in work engagement and workaholism (Gorgievski et al., 2010; Van Beek et al., 2012), which might correspond with differences in work motivation in Western Europe and in eastern Asia, respectively (Oyserman, et al, 2002). In individualistic and Christian Europe, work is associated with self-enhancement and personal development, whereas in collectivistic and Confucian Asia work is associated with enhancement of the group and self-sacrifice. Therefore, in this thesis it was assumed that western employees would show higher levels of work engagement, whereas eastern employee would show higher levels of workaholism.

Chapter 4 compared the mean levels of both kinds of working hard (work engagement and workaholism) across western and eastern countries. More specifically, industrialized Japan and emerging China – both with a collectivist orientation – were compared with industrialized western European countries with an individualist orientation – The Netherlands, Spain, and Finland. The results of the analysis showed that a latent factor model that included three dimensions of work engagement (vigor, dedication and absorption) and two dimensions of workaholism (working excessively and working compulsively) was invariant across cultures and countries. Thus, the factor structure for work engagement and workaholism did not differ between countries and cultures, meaning that the mean scores across the five countries can be compared meaningfully. As expected, on average western employees scored higher on work engagement than eastern employees, although some relatively small – but still significant – differences existed among the three western countries. Also as expected, Asian employees scored higher on workaholism than European employees. However, more detailed analysis revealed a more complicated pattern. Whereas Chinese employees reported the highest level of workaholism, unexpectedly Japanese employees showed the *lowest* level of workaholism. This result is at odds with the traditional view of hard working and workaholic Japanese. It was reasoned in Chapter 4 that recent economic and socio-cultural changes might explain this unexpected result. For instance, the long-term economic malaise and the lost of competitiveness in international markets may have directly influenced the employment situation and reward systems in Japan, which could have changed the motivation to work hard among Japanese employees.

To conclude, for the first time it was demonstrated that work engagement and workaholism are distinct constructs, *independent* of nation and culture. Moreover, the evidence suggests that levels of engagement are higher in western European countries than in East Asian countries. However, less clear-cut cultural differences were present for workaholism. Although the average level of workaholism was higher in eastern countries than in Western countries, a large variation in workaholism existed between both East Asian countries, with China having very high and Japan having very low levels of workaholism. Possibly, the origin of the systematic differences in work engagement and workaholism may be traced back to work values that stem from collectivistic and individualistic cultural orientations.

Research question 3: Can the JD-R model be supplemented with specific Chinese job demands (job insecurity) and job resources (remuneration)? To what extent does the (longitudinal) JD-R model apply to the Chinese work context?

One of the aims of this thesis was to examine the validity of a western stress model – the JD-R model – in the Chinese work context, for instance in a sample of typical Chinese

family-owned businesses with job stressors (job insecurity) and job resources (remuneration) that are especially relevant for that sample. Family-owned businesses have mushroomed and have become an important engine of China's economy (Yang, 2011). They are typically controlled by a small group of related parties and are run by owner–managers. Because of high cost consciousness, rapid increases in productivity and upgrading of products, family business are very dynamic and continuously search for new production technologies, low-cost workers and employ only small numbers of permanent staff. This leads to job stress – because of job insecurity – and extraordinary high turnover of employees – because of low pay (Wong, 2006).

As suggested by the JD-R model, employee well-being is related to various job characteristics and results from two additive processes (Demerouti *et al*, 2001; Bakker & Demerouti, 2007; Schaufeli & Taris, 2014). That is, high job demands and poor job resources exert an energy-draining effect on employees through a stress process, while high levels of job resources are related to positive work outcomes through a motivational process. Job insecurity is a stressor that refers to feelings of insecurity about one's job-related future. For instance, anticipated downsizing drains the employee's energy and is expected to be associated with certain psychological costs, such as job dissatisfaction, distress and burnout (for a meta-analysis see: Sverke, Hellgren, & Näswall, 2002). In contrast, remuneration is a job resource that is instrumental in fulfilling basic human needs, such as food, clothing, and shelter. Indirectly, it also promotes personal growth and development, for instance, when employees buy a computer which gives access to all kinds of information on the internet.

Chapters 5, 6 and 8 showed that – as predicted by the JD-R model – burnout fully mediated the relation between job demands (i.e. workload, emotional demands, mental demands, physical demands, interpersonal conflict, participation in decision making, and anticipated downsizing,) and work outcomes (i.e., organizational commitment, turnover intention, and job performance), for Chinese blue collar workers, health professionals and police officers. Moreover – and also as predicted by the JD-R model – burnout partially mediated the relation between job resources (job control, colleague support, supervisory support and coaching, learning opportunities, task clarity, and remuneration) and work outcomes. Taken together this supports the predictions of the JD-R model that high job demands and poor job resources exhaust employees' energy resources and may therefore lead to burnout, which in turn, may foster turnover intentions, poor organizational commitment

and poor job performance. Similarly, and also in accordance with the JD-R model, work engagement mediated the relation between job resources and organizational outcomes. Yet, this mediation effect, that is compatible with the motivational process of the JD-R model, was only partial in nature. That is, next to these mediation effects, a significant direct, positive effect of job resources on work outcomes was observed in Chapters 5 & 8. It is possible that job resources facilitate task accomplishment and strengthen the psychological contract. So in sum, the validity of both processes that are assumed by the JD-R model (i.e., the stress and motivational process) has been confirmed in a typical Chinese sample, although instead of full mediation, also partial mediation was observed.

Specifically, Chapter 6 revealed that among Chinese family business workers, job insecurity (anticipated job downsizing) and poor remuneration were negatively linked with work outcomes (i.e., turnover intentions and organizational commitment), via burnout (the stress process). Conversely, current remuneration was positively linked to these work outcomes, via work engagement (the motivational process). Moreover, it was found that anticipated job downsizing and remuneration also had a direct effect on work outcomes. Interestingly, rather than having a direct impact on burnout, the experience of past downsizing had an indirect effect through the anticipation of future downsizing. The reason may be that employees who have gone through downsizing before are likely to have lost confidence in management (Feather & Rauter, 2004) and therefore fear for future downsizing. This would lead to major stress that could eventually result in reduced well-being and poor work outcomes. For remuneration, the direct and indirect effects (via work engagement) on work outcomes were about equally strong. For anticipated downsizing, however, the direct effect was somewhat stronger than the indirect effect (via burnout). This might be because when family business workers are continuously confronted with job uncertainty, remuneration becomes more important as a way of compensating uncertainty.

Furthermore, in Chapter 8 – for the first time in research with the JD-R model – two kinds job resources were distinguished; task–related resources (i.e., job control and participation in decision making) and social resources (i.e., supervisor support and colleague support). The fit to the data of the model with two separate types of job resources was superior to that of the original JD-R model that included only one, undifferentiated resource factor. Hence, it seems that task and social resources can be distinguished and that these types of resources play different roles in the JD-R model, at least for Chinese nurses and

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police officers. Social resources seem especially relevant as an antecedent of well-being (engagement) among police officers, whereas task resources seem to be an antecedent of nurses' well-being. Furthermore, the relationship of task resources and social resources with job demands differed for nurses and police officers. Social resources were more strongly positively associated with job demands for police officers than for nurses, whereas task resources were unrelated to job demands. These differences might be due to occupation-specific factors. For instance, task resources such as job control and participating in decision-making might be critically important for nurses in dealing with patient demands and demands that are associated with medical technology (Verhaeghe, Peter, Paul et al., 2006; Zeng, 2009). In contrast, Chinese police officers have more authority and autonomy in executing their tasks than nurses so that the effect of task resources on work engagement is likely to be less strong. However, social resources such as support and information from fellow officers and supervisors are more important for police officers for doing their job and dealing effectively with public pressure while at the same time operating within legal restraints.

Being a dynamic model, the JD-R model assumes that high demands and poor resources will result in high levels of burnout, which in turn will lead to even higher demands and poorer resources, leading to a so-called "loss spiral". In a similar vein, resources produce work engagement, which in turn leads to even more resources (i.e., a so-called "gain spiral", Salanova et al., 2010; Hakanen et al., 2006). This implies that changes in levels of job characteristics induce corresponding changes in well-being, which was indeed found in Chapter 7 among Chinese nurses and Chinese police officers. Specifically, employees who experienced an increase in job demands from Time 1 to Time 2 showed a concomitant increase in levels of burnout, whereas an increase in resources was associated with an increase in work engagement and a decrease in burnout. Results were similar for nurses and police officers and are in line with previous longitudinal studies that were carried out among western samples (e.g., Boyd et al., 2011; Hakanen et al., 2008; Salanova et al., 2010; Schaufeli et al., 2009c). Furthermore, chapter 7 showed additional interesting findings. For instance, a decreased exposure to job demands did not result in a significant decrease in burnout, whereas chronic exposure to low job resources was associated with a significant increase in burnout among both nurses and police officers, and a significant decrease in work engagement among police officers. This result challenges the notion that decreases in job

demands are always "good" and suggests that lack of resources might be more detrimental than high demands. In addition and as expected, chronic exposure to high job demands (both at Time 1 and Time 2) was associated with a significant increase in burnout. Conversely, a chronic exposure to low job demands (both at Time 1 and Time 2) was associated with an unexpected but significant increase of the level of burnout. This latter counterintuitive result was only observed among nurses, and might be specific for this occupation. Interestingly, a similar finding was reported by Van Dierendonck, Schaufeli, and Buunk (1996), who found that nurses who invested less (e.g., in terms of effort, time and skills) in the relationship with their patients than they received in return from this relationship (for example, in terms of salary, gratitude and prestige) reported higher emotional exhaustion than those who felt that their investments and rewards were balanced. It can be speculated that in medical settings experiencing low job demands is a risk-factor for developing burnout.

To conclude, the JD-R model can be supplemented with specific Chinese job demands (job insecurity) and job resources (remuneration). Moreover, our research among Chinese samples showed that increasing job demands and decreasing job resources evoke a health-impairing process of energy depletion which is associated with burnout, whereas increasing job resources trigger a motivational process that fosters high work engagement. This means that the main predictions of the JD-R model also hold for Chinese samples. Finally, results showed that different types of job demands and job resources might have occupation-specific associations with each other and with employee well-being.

Research question 4: What is the nature of the interaction between job demands and job resources, and can the JD-R model be extended with the joint cognitive appraisal of job demands and job resources and with guanxi reciprocity?

The JD-R model not only suggests that job demands and job resources have individual separate effects on well-being and work outcomes: the model also suggests that job demands and job resources have *joint* effects on well-being and work outcomes. The JD-R model assumes two interaction effects: (1) job resources buffer the potentially negative effects of excessive job demands on employee well-being, while (2) highly demanding work situations

in combination with high levels of job resources result in higher levels of work engagement (Bakker & Demerouti, 2007). However, to date the exact nature of these interactions has not been uncovered. It implies that how job resources influence the strength of the relation between job demands and well-being still need to be explored systematically. Therefore Chapter 5 tested three different types of interaction effects between job demands and job resources in two samples (including health professionals and blue collar workers). These interaction effects included a moderating effect and two synergistic interaction effects (i.e., the quadrant approach described by Van Vegchel et al., 2005a, and the ratio approach described by Siegrist *et al.*, 2004). The multiplicative form is a common method to test the moderating effect, in which the combined effect of two predictor variables accounts for an additional proportion of the variance of an outcome variable, beyond their separate main effects; The synergistic form shares characteristics of both additive and interactive forms, in that job resources operate as a standard by which job demands are compared, and that influence the strength of the relation between job resources and strain. The quadrant approach was modeled by assigning employees who scored above the median on job demands as well as below the median on job resources to the high job strain group. Employees who simultaneously scored below the median on job demands and above the median on job resources were assigned to the non- job strain group. The remaining employees were assigned to the *intermediate* job strain group. The Effort-Reward Imbalance (ERI) ratio was computed for every respondent following the formula  $e/(r \times c)$  where e is the sum score of the job demands, r is the sum-score of the job resources and c corrects for different numbers of items in the nominator and denominator (Siegrist et al., 2004).

Hardly any evidence was found for moderating and synergistic effects of job demands and job resources on burnout and work engagement. This supports the idea that the additive effects of job demands and job resources on burnout and work engagement are considerably stronger than their interaction effects, and that this finding does not vary with the specific type of interaction effect that is studied. It could be speculated that, perhaps, in the Chinese context there is no simple interactive effect between job demands and job resources on well-being. However, theoretically there is no reason to assume that the additive and interactive effects of demands and resources would vary across cultural contexts, and it is noteworthy that in other national contexts such interactive effects are also rarely observed (Brough, Timms, Siu *et al.*, 2013; Taris, 2006). Alternatively, the combination of job demands and job resources should be explored in a different way, e.g., by focusing on the cognitive appraisal of job demands and job resources.

So far job demands and job resources have been assessed independently, after which they are usually related to each other using regression-based analytic techniques (i.e., by computing moderating effects and synergistic interaction effects). However, it can be assumed that employees do not perceive and evaluate demands and resources independently from each other, but instead use a kind of mental bookkeeping in which demands and resources are appraised simultaneously and in relation to each other. Chapter 9 explored cognitive appraisal as a "mediator" of the relationship between job demands and job resources on the one hand and outcomes on the other hand. It was assumed that the imbalance between an employee's investments in his or her job (e.g., time, energy, skills) and the outcomes (e.g., status, appreciation, pay) that are received in return will result in negative consequences, notably burnout (Schaufeli, 2006). In contrast, employees will feel engaged when the outcomes they receive from their job outweigh their investments. If this is correct, the associations between job demands and resources on the one hand and employee well-being on the other hand will at least partly be mediated through an equity-based cognitive evaluation process, in which employees appraise their investments in and outcomes gained from their work (Buunk & Schaufeli, 1999; Lazarus & Folkman, 1984; Pritchard, 1969). The findings of Chapter 9 supported this reasoning, showing that equity indeed mediated the relation between job demands and job resources on the one hand and well-being (i.e. burnout and work engagement) on the other hand, at least among Chinese nurses. Moreover, the indirect effect of job demands on burnout via equity was stronger than the indirect effect of job resources on work engagement via equity. Apparently, employees are more sensitive to job demands than to job resources. This may be due to the fact that negative emotions that people experience as a consequence of inequity induce the feeling of being incompetent to deal adequately with stressors (Baumeister et al., 1994). However, the perception of equity did not mediate the relation between job resources and well-being (burnout and engagement) among blue collar workers; rather, in this sample job resources were directly associated with well-being. Further, the Chapter 9 study confirmed the significant non-linear effect of equity on burnout for nurses, which agrees with the original assumption of Adams (1965) that the negative effects of feeling under-benefited would outweigh those of feeling over-benefited. It implies that the effects of job demands and job

resources on equity and well-being might differ, depending on the occupation under study.

Interpersonal relationships exist in various forms in every human society. Guanxi has been considered as a product of Confucian values and is inherent to the work ethics of the Chinese people. In western exchange relations, reciprocity often entails exchanges of roughly equivalent value (Powell, 1990), while the *guanxi* network often calls for special favors of an unequal level. Moreover, reciprocity refers to the long-term balance of investments and outcomes, meaning that current investments may be paid back in the long run and are given in the expectation that the reciprocal relationship will last into the unforeseeable future (Yum, 1988). However, human beings are "wired" to avoid unpredictable or uncertain decision contexts (Kahneman & Tversky, 1996; Tversky & Kahneman, 1974), and this also applies to the partners in a guanxi exchange relationship. Thus, the relationships in guanxi networks cannot be effectively established without the norm of reciprocity. The rule of reciprocity focuses on the behavior of petitioners by the social norm expressed as "renging" (Hwang, 1987). Renging is the underlying base of reciprocal mechanism of guanxi and the behavioral rules one has to abide in order to support the existence of the guanxi balance. Providing benefits to an actor in *guanxi* networks at a certain time will create a "renging" debt (i.e., an implicit obligation) to the petitioner, which the petitioner should return - or else s/he will be viewed as untrustworthy. Employees use guanxi networks to overcome the uncertainty and distrust that disrupt the process of resources distribution (Galaskiewicz & Wasserman, 1989). The centrality of *guanxi* reciprocity in Chinese society has long been recognized, and many studies have investigated guanxi reciprocity in the social and business fields (Ambler, 1994; Hwang, 1987).

Chapter 8 explores the relationship between job resources and a typical and important Chinese phenomenon – *guanxi* reciprocity. A positive relation between *guanxi* reciprocity and social resources in both nurses and police officers illustrated that the availability of social resources is to a large degree influenced by the quality of *guanxi* reciprocity. The relationship between *guanxi* reciprocity and task resources such as job control and participation in decision making was stronger for nurses, whereas the relation between *guanxi* and social resources such as supervisor support and colleague support was stronger for police officers. In addition, in both occupations the direct effect of *guanxi* reciprocity on organizational outcomes was stronger than its indirect effect, via social resources. It might be that work-related social interactions are often difficult to avoid, while private social interactions at work – in the form of *guanxi* reciprocity – depend on one's own individual choice and can thus be better regulated and may therefore produce more beneficial effects (Blau, 1992; Cheung *et al.*, 2009; Wong, Ngo, & Wong, 2003). Chapter 8 further found that *guanxi* reciprocity only marginally promoted employee work engagement in both samples, which suggests that the underlying motivational dynamics that are involved in work engagement and *guanxi* reciprocity differ fundamentally. That is, whereas *guanxi* reciprocity is primarily driven by extrinsic motivation (namely favors), work engagement is primarily characterized by intrinsic motivation (Van Beek *et al.*, 2011).

To conclude, the interaction between job demands and job resources is mainly additive in nature. The possible interactions of job resources and job demands in the JD-R model received limited support. This implies that there may not be a simple interactive effect formula for the joint effects of job demands and job resources on well-being, or, alternatively, that the importance of such interactive effects is simply overestimated. Moreover, the JD-R model can successfully be extended by including typical Chinese traditional interpersonal reciprocity (*guanxi*) as well as by including a more general joint cognitive appraisal of job demands and job resources. However, occupational differences were observed as far as the role of *guanxi* reciprocity and cognitive appraisal was concerned. This means that occupation-specific factors may influence the relations between job characteristics and well-being.

## 10.3 Overall conclusion

This PhD thesis served two goals in examining the JD-R model in the Chinese context. (1) It aimed to extend it with country specific stressors (job insecurity and remuneration) and traditional Chinese interpersonal exchange (*guanxi* reciprocity). (2) It aimed to validate the JD-R in the Chinese context. Table 10.2 presents the main research findings for each of these goals. Firstly, the robustness of the structure of western well-being measures (MBI, UWES, DUWAS) was confirmed in the Chinese work context. However, the wording of some items of the student version of the MBI should be modified to better match the Chinese culture. Secondly, when western measures are applied to eastern countries, the influence of socio-cultural differences should be considered. For instance, mean levels of work

engagement and workaholism differ across eastern and western countries, which is likely to be due to differences in culture-based value systems. Thirdly, the western JD-R model can be applied in the Chinese work context. In addition to generic job characteristics, typical and specific job characteristics such as job insecurity, remuneration, and *guanxi* reciprocity may be included in order to tailor the JD-R model to the Chinese local work context. Fourthly, the relations between job demands and job resources can be explored in a new and different way, namely by studying the joint cognitive appraisal of the balance of job demands and job resources. Fifthly, the results that are obtained with the JD-R model at least partly reflect differences between occupations, such as nurses, police officers, and blue collar workers working in small, family-owned businesses. For example, task–related and social–related resources showed differential effects on the well-being of nurses and police officers, and the joint cognitive appraisal of job demands and job resources (the perception of equity) was differentially (linearly or non-linearly) related to well-being (burnout and engagement) among nurses compared to blue collar workers.

	Extension of the JD-R model	Validation in Chinese work context
General	<ul> <li>The additive effects of job demands and job resources on well-being and work outcomes were confirmed (Chapter 5-9)</li> <li>The interactive effect of job demands and job resources on well-being and work outcomes was not supported (Chapter 5)</li> <li>The perception of equity as a mediator between job characteristics and well-being was included in the JD-R model (Chapter 9)</li> <li>Job resources were divided into task resources and social</li> </ul>	<ul> <li>The centrality of emotional exhaustion and cynicism as core elements of burnout (as measured with the MBI-GS) was confirmed in Chinese employees (Chapter 2).</li> <li>The three-dimensional structure of the MBI (emotional exhaustion, cynicism, and reduced academic efficacy) was confirmed in Chinese students (Chapter 3).</li> <li>The measurement equivalence of the work engagement scale (UWES) and the workaholism scale (DUWAS) were confirmed across five countries (Chapter 4).</li> <li>Differences in levels of engagement and workaholism were found between</li> </ul>
Specific for China	<ul> <li>into task resources and social resources (Chapter 8)</li> <li>A specific job stressor (job insecurity) and a specific job resource (remuneration) were included in the JD-R model (Chapter 6).</li> <li>A typically Chinese type of interpersonal reciprocity (<i>guanxi</i> reciprocity) was included in the JD-R model (Chapter 8)</li> </ul>	<ul> <li>and workaholism were found between western and eastern counries (Chapter 4).</li> <li>Cross-sectional research confirmed the dual-process assumption of the JD-R model (Chapter 5, 6, 8, and 9).</li> <li>The dynamic nature of the JD-R model was confirmed. Changes in levels of job demands and job resources varied with changes employee well-being (Chapter 7).</li> </ul>

 Table 10.2.
 General and country specific findings with the JD-R model in the Chinese context

## **10.4** Theoretical Contributions

Clarification of conceptual and measurement controversies in the burnout literature

The first theoretical contribution of this thesis is that it clarifies three controversies that exist in the burnout literature (see Chapter 2 & 3). The first conceptual controversy is about whether burnout should be viewed as work-related exhaustion (Cordes & Doughterty, 1993;
Shirom, 1989) or as a multidimensional construct that goes beyond mere exhaustion (Maslach & Jackson, 1981; Schaufeli *et al.*, 1996a). A systematic comparison of four well-known self-report burnout measures (MBI-GS, BM, SMBM, and OLBI), revealed that burnout is best represented as two underlying, strongly related factors: exhaustion and withdrawal (Schaufeli & Taris, 2005). This means the western conceptualization of burnout as a two-dimensional construct can be applied in Chinese context.

A second controversy concerns the wording of the burnout items: should these be negatively or positively phrased or should positively and negatively worded items be used alternatingly (Demerouti *et al.*, 2003)? Confirmatory factor analyses of four burnout questionnaires (MBI-GS, BM, SMBM, and OLBI), as well as simultaneous convergent validity analyses of all four questionnaires suggests that positively phrased items should be dropped since they constitute a separate factor that might be considered an artifact. Reversed positively worded items yielded different results as compared to genuine negatively phrased burnout items (Bresó *et al.*, 2007; Schaufeli & Salanova, 2007). This means it is better to use scales that only include negative items to measure negative states such as burnout.

The third controversy is whether burnout as a strictly occupational phenomenon should be limited to employees, or whether the concept can be broadened, for instance, to academic settings. Our findings showed that burnout also occurs in Chinese students, most likely because of the highly competitive academic environment (e.g., Chen & Stevenson, 1995; Lau, Nicholls, Thorkildsen, & Patashnick, 2000; Liu & Lu, 2011), and that the MBI-Student Survey includes three dimensions: exhaustion, cynicism, and reduced academic efficacy. However, the reduced academic efficacy was weakly correlated with the other two subscales. This points to the fact that emotional exhaustion and cynicism constitute the core elements of burnout among Chinese students.

# The underlying factorial structure of well-being measures (MBI, UWES and DUWAS) in the Chinese work context

The second theoretical contribution is that the MBI, UWES, and DUWAS measures, as well as the JD-R model have been successfully applied in various Chinese occupational samples. The study on the convergent validity of four burnout measures (MBI-GS, BM, SMBM, and OLBI) revealed that in China, emotional exhaustion and cynicism constitute the

core of burnout in a similar way as in western countries (Schaufeli & Taris, 2005). The validity of the three-factor MBI-SS (emotional exhaustion, cynicism, and reduced academic efficacy) was convincingly confirmed in different Chinese students groups, with findings that were very similar to those obtained in western samples (Schaufeli *et al.*, 2002b). Last but not least, a direct test of the invariance of a latent factor model that included three dimensions of work engagement (vigor, dedication and absorption) and two dimensions of workaholism (working excessively and working compulsively) was invariant across western and eastern countries, including China.

#### The application of the JD-R model to the Chinese work context

The third theoretical contribution concerns the generalization of the JD-R model to the Chinese work context. The JD-R model has been applied successfully in various countries, including the Netherlands (Bakker et al., 2003a), Austria (Korunka et al., 2009), Australia (Lewig & Dollard, 2003), Italy (Balducci et al., 2011), Spain (Llorens et al., 2006), and Finland (Hakanen et al., 2008). However, so far the JD-R model had not been tested in China. Our results unequivocally supported the existence of the two processes assumed by the JD-R model (i.e., the stress process and the motivational process). This validates the JD-R model for use in the Chinese work context, meaning that it can be used for empirical studies on employee well-being in China. However, little evidence for moderating and synergistic effects of job demands and job resources on burnout and work engagement was found. This is consistent with the study of Brough et al. (2013) on the interactive effect of job demands and job resources on well-being (psychological strain and work engagement) among Australian and Chinese respondents. This suggests that not finding this interaction between demands and resources is probably not simply due to the specific nature of the sample studied here. This means that if there is some sort of joint effect of demands and resources on outcomes, this effect should be explored in other ways than by examining multiplicative interaction effects of demands and resources in general. For instance, by a cognitive assessment of the nature of job characteristics, or by using specific job characteristics instead of the general job demands and job resources, or by matching specific job characteristics (i.e., specific demands and specific resources) with specific types of well-being and work outcomes as suggested by De Jonge and Dormann (2006) in their triple

#### match principle.

The Chinese culture and work context in relation to well-being measures and the JD-R model

The fourth theoretical contribution concerns the integration of specific Chinese job stressors, job resources and a typically Chinese interpersonal phenomenon (*guanxi*) into the JD-R model. Certain job characteristics that are related to economic survival and that are extrinsic in nature, such as remuneration and job insecurity, are more important for Chinese employees than for western employees. These job characteristics were successfully included in the JD-R model using a Chinese sample (Chapter 6). Moreover, the JD-R model was successfully extended by including a typical Chinese form of social exchange between employees and supervisors (*guanxi* reciprocity) to increase its relevance for the Chinese work context (Chapter 8). The inclusion of these typical Chinese elements into the JD-R model confirms the open, heuristic nature of the model which makes it flexible and broadly applicable to specific (national or cultural) work contexts (Schaufeli & Taris, 2014). These studies illustrate how elements from other cultures can be effectively incorporated into the JD-R framework. Such approaches differ sharply from other cross-cultural researches that have explained cultural influences in a post hoc, exploratory fashion (Aryee, Fields, & Luk, 1999).

On the other hand, although this thesis showed that specific well-being measures (that is, the MBI-GS, UWES, and DUWAS) can be applied to the Chinese context, Chapters 3 and 4 (for the MBI-SS, DUWAS) and Chapter 9 (for cognitive assessment) revealed that researchers should adapt the contents of and theory behind these measures to take into account the unique aspects of eastern culture. For instance, Chapter 9 showed that the linear effect of equity was stronger than the non-linear effect among Chinese nurses, which goes against earlier studies in medical settings in Europe (Truchot & Badré, 2006; Van Dierendonck et al., 1996, 2001). This might be explained by assuming that in collectivist cultures such as the Chinese equality is preferred to equity, as compared to western, individualist cultures. This means that the cognitive evaluation process of the relations between job characteristics and well-being would be influenced by equity-based and equality-based norms that depend on the cultural context.

#### Extending the JD-R model

In addition to typical Chinese elements, also more general extensions of the JD-R model were made in this thesis. Firstly, LePine, *et al.* (2005) proposed to make a distinction between hindrance demands (e.g., role conflict, role overload, and role ambiguity) and challenge demands (e.g., high workload, time pressure, and responsibility). It was shown that hindrance demands are related to burnout, whereas challenging demands are related to work engagement (Crawford *et al.*, 2010). However, Chapters 5-9 demonstrated that challenge demands, such as high workload and emotional demands, were negatively related with work engagement. Bakker and Sanz-Vergel (2013) found that work pressure was evaluated as more hindering than emotional demands in Dutch nurses. These findings contradict previous claims that work pressure or workload acts as a challenge demand for all employees (Crawford *et al.*, 2010; Lepine *et al.*, 2005). It seems that the positive impact of challenge demands (i.e., workload or work pressure) on work engagement does not necessarily generalize across cultures. Thus, it is conceivable that the psychological effect of specific job demands depends on the occupational group (Bakker & Sanz-Vergel, 2013).

Secondly, previous research on the JD-R model usually combined different and quite heterogeneous job resources into one undifferentiated latent job resources factor, but in Chapter 8 it was found that task–related resources and social–related resources can be distinguished, and that these played a slightly different role in Chinese police officers as compared to Chinese nurses. Apparently, task resources and social resources are two interrelated but distinct types of job resources, which implies that the effect of job resources on well-being and work outcomes relies to some degree on specific occupational characteristics.

Thirdly, although the JD-R model assumes an interaction effect between job demands and job resources (Bakker & Demerouti, 2007), so far the exact nature of this interaction has not been investigated. In Chapter 5 three different approaches to examining the demands-resources interaction were compared, namely a moderating effect and two synergistic interaction effects (i.e., the quadrant approach and the ratio approach). Although in the present case the findings for these three approaches were very similar (i.e., most interaction effects were non-significant), we believe that application of this systematic methodological approach in other studies may promote the understanding of the complex

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relationship between job demands and job resources.

Fourthly, a cognitive evaluation process (i.e., the perception of equity as the balance between perceived *own* job investments and *own* job returns, relative to the employee's *own* internal standards) was uncovered that acted as a mediator between job characteristics on the one hand and employee well-being on the other hand (Chapter 9). These results provide a possible explanation for the mixed findings that have been obtained in previous JD-R research on the joint effects of job demands and job resources on well-being. For instance, the weak and inconsistent evidence for the statistical interaction of job demands and job resources (cf. Taris, 2006). It seems that a process of "mental bookkeeping" is used in which demands and resources are simultaneously appraised (Chapter 9). An intrapersonal, cognitive process seems to operate that evaluates the relative importance of job demands and job resources, and that partly mediates the relationship of job characteristics with well-being.

#### Longitudinal test of the JD-R model

The final theoretical contribution of this thesis is that it explores the dynamic nature of the JD-R model, focusing on changes in employee well-being as a function changes in levels of job demands and job resources. The results obtained in Chapter 7 not only confirmed previous longitudinal research, but they also revealed that different levels of exposure to demands and resources may have different effects on outcome variables, such as burnout and work engagement. The results suggest that the relations between job demands and job resources on one hand and employee well-being on the other hand are not only dynamic, but also far more complex than was previously envisaged. Specifically, a decreased exposure to low job resources was associated with a significant increase in burnout among both nurses and police officers, and with a significant decrease in work engagement among police officers. While a chronic exposure to low job demands was associated with an unexpected but significant increase of the level of burnout among nurses. This challenges the notion that decreases or stable low in job demands are always "good" and suggests that lack of resources might be more detrimental than high demands.

#### **10.5** Practical implications

The obtained results have several practical implications for occupational health professionals in China and abroad.

Firstly, the studies on self-report questionnaires such as the MBI-GS, the UWES and the DUWAS (Chapters 2 - 4) have demonstrated that these instruments have appropriate psychometric properties so that they can be used to assess burnout, work engagement and workaholism, also in China. Practitioners may use these questionnaires at group level, for instance, to investigate the effectiveness of workplace interventions to reduce burnout (Taris, Kompier, Geurts et al., 2003b) and to increase work engagement (Tims, Bakker, Derks, & Van Rhenen, 2013). However, more research – specifically on establishing valid cut-off scores – is needed before these questionnaires can be used for individual assessment.

Secondly, practitioners can use the JD-R model in order to decrease burnout and to increase engagement (Schaufeli, Shi, & Dijkstra, in press). That is, on the basis of the model specific job demands and job resources can be identified that are associated with employee well-being and/or relevant organizational outcomes, such as organizational commitment and intention to leave. Next, these so-called drivers of burnout and engagement can be targeted for interventions. In that way, the JD-R model serves as a conceptual model that guides the selection of the most relevant demands and resources, being the drivers of burnout and engagement.

Thirdly, the results reported in Chapter 7 suggest that positive changes in job characteristics (i.e., decreasing demands and increasing resources) are positively related to employee well-being, whereas negative changes in these characteristics (i.e., increasing demands and decreasing resources) are associated with poor well-being. This implies that those employees who craft their jobs in such a way that job demands are reduced and job resources are increased, are likely to increase their levels of well-being (Tims, Bakker, & Derks, 2013). Practitioners should therefore actively encourage employees to craft their jobs so that demands are reduced and resources are increased. That way their work engagement will increase so that employees might thrive and flourish at work. Note that this implies that employees should be offered the autonomy to craft their jobs, which could imply that their supervisor's style of supervision might have to shift from a directive and controlling style to a more empowering leadership style.

Fourthly, the cognitive evaluation of job demands and job resources seems partly responsible for the associations between these job characteristics and employee well-being. Practically speaking, the results of Chapter 9 suggest that part of the adverse effects of job demands on burnout and engagement may be compensated by increasing job resources, since it was found that job resources affected employee well-being both directly and indirectly, via equity. Such an approach would seem especially useful in situations where it is difficult or impossible to reduce job demands, e.g., when high emotional or physical demands are inherent to the job. Although the adverse effects of high demands are unlikely to disappear fully, the results from Chapter 9 suggest that the negative effects are buffered to at least some degree by job resources.

Fifthly, when applying the JD-R model occupational differences were found. For example, (1) task-related resources were more closely related to nurses' well-being, whereas social-related resources were more closely related with well-being of police officers (Chapter 5); (2) job insecurity and remuneration were strong predictors of well-being among blue collar workers (Chapter 6); (3) the perception of equity mediated the relation between job resources and well-being in nurses, but not in blue collar workers (Chapter 9). This implies that not only the type of demands and resources that are relevant vary from job to job, but that -- even if a particular characteristic is relevant for several professions -- the magnitude of their effects may vary across professions. Thus, when it comes to work stress intervention, practitioners should not carefully assess what specific demands and resources are targeted, instead of using overall approach.

#### **10.6 Recommendations for future research**

The results obtained in this thesis suggest several avenues for future research. Although several suggestions were already presented above when discussing the theoretical and practical implications, below some additional issues are raised that need further attention.

Firstly, a number of recommendations can be made that have to do with assessment and measurement of concepts. Chapter 2-4 show acceptable psychometric characteristics of the Chinese version of the MBI-GS (SS), UWES and DUWAS. However, the majority of the study participants come from the Zhejiang province – an economical well-developed province in eastern China, which may have resulted in a biased sample. Therefore, future

studies should include respondents of other Chinese provinces, or even better use a national representative sample. The latter could also be used for establishing valid cut-off points for burnout, work engagement and workaholism so that the corresponding instruments can also be used for individual-level assessments as well.

Likewise, future cross-cultural studies should preferably include national (stratified) random samples that are representative for gender, age and occupation, in order to investigate the demographic and occupational differences work engagement, burnout and workaholism. In addition, future research could also include cultural values such as Schwartz's cultural value types (1992, 1999) and/or specific work values (e.g. Meaning of Work questionnaire; MOW, 1987) to investigate how value systems relate to workaholism, work engagement and burnout. In Chapter 9 cultural differences were assumed, not assessed.

It should be kept in mind that all data were based on self-reports, which may have inflated the associations among the study variables due to common method variance or a social desirability (Edwards, 1953; Nyaw & Ng, 1994). This might be especially so in research involving sensitive issues such as *guanxi* exchange (Chapter 8), the perception of equity (Chapter 9), turnover intention (Chapter 5-6), remuneration (Chapter 6), and performance (Chapter 8). Future research should therefore include more objective measures such as earned salary, actual turnover and actual performance indicators. Moreover, social desirability measures could be included in future research such as the Impression Management Subscale (IMS) of Paulhus' (1986) Balanced Inventory of Desirable Responding (BIDR), or Crowne and Marlowe's Social Desirability Scale (1960).

Secondly, previous studies using the JD-R model usually combined different and quite heterogeneous job resources into one undifferentiated latent job resources factor. Chapter 8 empirically confirmed that task–related resources can be separated from social resources. It was argued that task resources refer to the individual-level work context, whereas social resources refer to interpersonal interactions and interdependencies that are related to the group-level work context. Further research should explore and elaborate the relationship between task–related resources and social–related resources. For instance, what relations exist between task–related resources and social–related resources at the individual-level, team-level and/or organizational-level work context? How does interpersonal *guanxi* reciprocity influence the relations of task–related resources and social–related resources on employees' well-being and work outcomes at those three levels?

Thirdly, in Chapters 5-9 occupation specific results with the JD-R model were obtained. So far, no systematic study has been carried out on differences between various occupations. Future research should focus on identifying specific job demands and job resources that have an impact on levels of well-being of employees from specific occupations. In that way, occupation-specific profiles of most important job demands and job resources (and perhaps also outcomes) could be established.

Finally, in the longitudinal study of Chapter 7 only two measurement occasions were included. A two-wave study design like this is insufficient to investigate the gain and loss spirals that are assumed in the dynamic JD-R model (Schaufeli & Taris, 2014). Likewise, in Chapter 9 the theoretical model including cognitive assessment, which represents a causal relations among job characteristics and well-being in the JD-R model, remains to be tested longitudinally. Therefore, future research should employ multiple-wave measurements (Brauchli, Schaufeli, Jenny *et al.*, in press) or multiple day-level studies (Xanthopoulou *et al.*, 2012) to examine the dynamic nature of the JD-R model. Including the mediating role of equity in the relation between job characteristics and employee well-being.

#### 10.7 Final note

This PhD thesis showed that western measures of employee well-being (MBI, UWES and DUWAS) and western occupational well-being models (JD-R model) can be applied to a Chinese work context. From the studies reported in this thesis, we can be reasonably confident in claiming at least some cross-cultural universality when it comes to western measures and models of occupational well-being.

### Summary

#### Introduction

As a widely used western stress model, the JD-R model proposes that employee well-being is related to a wide range of job characteristics that can be conceptualized as either job demands or job resources. Job demands drain employees' energies and are therefore associated with certain psychological and/or physiological costs, which in the long run may lead to burnout. Job resources may reduce the adverse impact of job demands and stimulate personal growth and development. They have motivating potential and are associated with work engagement. In addition to the stress and motivation processes, the JD-R model also assumes two moderating effects, namely that: (1) job resources buffer the potentially negative effects of excessive job demands on employee health and well-being; and(2) highly demanding work situations in combination with high levels of job resources result in higher levels of work engagement. The JD-R model has been applied successfully in various western countries, for instance, in the Netherlands, Australia, Austria, Belgium, Finland, Italy and Spain. However, empirically studies on the JD-R model in non-western countries are still lacking. Therefore, the objective of this dissertation is to validate and expand the Job Demands-Resources (JD-R) Model in the Chinese work context.

#### **Research questions**

More specifically, the current PhD thesis answered four sets of research questions:

- 1. What are the psychometric qualities of the four most often used burnout instruments (MBI, BM, SMBM, and OLBI) in the Chinese work context? And in how far do these four instruments assess a similar burnout construct (convergent validity)?
- 2. Do employees from western and eastern countries differ in mean levels of work engagement and workaholism, two forms of working hard?
- 3. Can the JD-R model be supplemented with job demands (job insecurity) and job resources (remuneration) that are particularly relevant in the Chinese work context? To what extent does the (longitudinal) JD-R model apply to the Chinese work context?
- 4. What is the nature of the interaction between job demands and job resources? Can the JD-R model be extended with the joint cognitive appraisal of job demands and job resources, and with Guanxi reciprocity a typical Chinese form of social exchange?

#### **Summary of Chapters**

The PhD thesis included eight empirical studies that are reported in Chapters 2-9.

*Chapter 2* is about the psychometric quality and convergent validity of the four most widely used burnout measures in a sample of Chinese nurses (N=717). First, Structural Equation Modeling was used to investigate the factor structure of the Maslach Burnout Inventory-General Survey (MBI-GS), the Burnout Measure (BM), the Shirom-Melamed Burnout Measure (SMBM), and the Oldenburg Burnout Inventory (OLBI). Next, several competing models were tested to investigate the convergent validity of these four burnout instruments. It appeared that burnout is best conceived as a two-dimensional construct consisting of exhaustion and withdrawal, which are two related but conceptually distinct aspects that underlie the four burnout instruments. In addition, positively phrased items should be dropped from burnout measures for they constitute a separate factor that is considered to be an artifact.

*Chapter 3* investigated the dimensional structure of the Maslach Burnout Inventory-Student Survey (MBI-SS) among three samples of Chinese students (two high schools, a university, and a nursing school; total N=1,499). Confirmatory Factor Analyses corroborated the hypothesized three-factor model for the composite sample as well as for the three independent sub-samples. Subsequent multi-group analyses revealed that the three-dimensional structure of the MBI-SS is partially invariant across three samples. It is concluded that the MBI-SS can be used to assess levels burnout in Chinese students. However, it is suggested the positively phrased academic efficacy items of the should be replaced by negatively phrased items that tap academic *inefficacy*.

*Chapter 4* compared the mean levels of two types of working hard -- work engagement and workaholism -- across two cultures (East Asia and Western Europe) using a latent variable approach. It was assumed that in individualistic and Christian Western Europe (i.e., the Netherlands, Spain, and Finland; N=17,115) work is associated with self-enhancement and personal development, whereas in collectivistic and Confucian Eastern Asia (i.e., China and Japan; N=5,497) work is associated with group enhancement and self-sacrifice. Following this lead it was assumed that Western European employees would show higher levels of work engagement, whereas employee from East Asia would show higher levels of workaholism. The correlated latent factor model that included three dimensions of work engagement (vigor, dedication and absorption) and two dimensions of workaholism (working excessively and working compulsively) was invariant across cultures and countries. Furthermore, as expected Western European employees were more engaged at work than East Asian employees. In contrast, differences in levels of workaholism were less convincing; as expected, higher levels of workaholism were observed for Chinese employees, but not for Japanese employees. This difference in levels of workaholism between both countries was explained by referring to differences in economic development; with China being an emergent economy and Japan experiencing a long-lasting economic stagnation. Researchers as well as practitioners should be aware that systematic differences seems to exist, particularly in levels of work engagement, between Western and Eastern countries. It is likely that these differences are related to in work values that stem from differences in collectivistic and individualistic cultural orientation.

*Chapter 5* investigated the additive, synergistic, and moderating effects of job demands and job resources on well-being (burnout and work engagement) and organizational outcomes, as specified by the Job Demands-Resources (JD-R) model. A survey was conducted among two Chinese samples: 625 blue collar workers and 761 health professionals. A series of multi-group Structural Equation Modeling analyses supported the two processes proposed by the JD-R model: (1) the stress process that originates from job demands and leads, via burnout, to negative organizational outcomes (i.e., turnover intention and low organization commitment); (2) the motivational process that originates from job resources and leads, via work engagement, to positive organizational outcomes. In contrast to moderating effects, synergistic effects of job demands and job resources on burnout and work engagement were found in both samples. However, after controlling for additive effects of job demands and job resources, these synergistic effects largely disappeared. In conclusion, in addition to the stress- and motivational process, the hypothesized additive effects of the JD-R model were found, but the evidence for additional synergistic and moderating effects was weak.

*Chapter 6* explored the impact of job insecurity (i.e., past job downsizing and anticipated job downsizing) and current remuneration – via well-being (i.e., burnout and work engagement) – on organizational outcomes (i.e., organization commitment and low turnover intention) of Chinese family-owned business (N=585). The Job Demands-Resources (JD-R) model was used as a conceptual framework and data from 585

workers of three Chinese family-style factories were analyzed using Structural Equation Modeling. Results confirm the hypothesized model indicating that in accordance with the JD-R model: (1) job demands and job resources (i.e., downsizing and remuneration) are associated with organizational outcomes through well-being (burnout and work engagement) and; (2) anticipated job downsizing fully mediates the relation of past job downsizing with well-being. It is concluded that job demands and job resources that are particularly relevant for the Chinese work context can be successfully integrated into the JD-R model.

*Chapter* 7 examined the relationships -- over time -- between job demands and job resources with employee well-being (i.e., burnout, work engagement). It was assumed that different levels of exposure to job demands and job resources would induce different levels of well-being. Hypotheses were tested in a two-wave study among 172 nurses and 273 police officers from China. As expected, result showed that those who were exposed to increased job demands across a one-year period showed a significant increase in burnout, whereas those who were exposed to increased resources showed a significant increase in work engagement. Conversely, those who were exposed to decreased resources experienced a significant increase in burnout and a decrease in work engagement. Slightly different patterns were observed for both occupational groups that might result from differences in working conditions and duties. It was concluded that changes in the work characteristics are associated with subsequent across-time change in employees' well-being in ways as predicted by the Job Demands-Resources model.

*Chapter 8* focused on (1) the differentiation between two types of job resources (i.e., task resources and social resources) and (2) the extension the JD-R model with a typical Chinese form of social exchange – guanxi exchange – to increase its applicability in the Chinese context. Guanxi refers to interpersonal connection in which one is able to prevail upon another to perform a favor or service, or be prevailed upon. Hypotheses were tested in two Chinese samples of police officers (N= 466) and nurses (N= 261). Multigroup Structural Equation Modeling analyses supported the hypothesized distinction between social resources and task resources. Task resources predicted well-being in nurses, whereas social resources predicted well-being in police officers. Furthermore, guanxi exchange with supervisors was associated with social as well as with task resources. Moreover, in nurses guanxi exchange was related with engagement, whereas in police officers it was related with burnout. In conclusion: (1) task and social resources are two distinct types of job resources that play a

slightly different role in a law enforcement as compared to a health care setting; (2) guanxi exchange can be integrated successfully into the JD-R model, thereby increasing its relevance for the Chinese work context.

*Chapter 9* investigated the relation between job demands and job resources on the one hand, and employee well-being (i.e., burnout and work engagement) on the other hand. It was assumed that this relation is mediated by an equity-based cognitive evaluation process in which job demands and job resources are appraised simultaneously. This mediation hypothesis was tested in two Chinese samples consisting of blue collar workers (N = 625) and nurses (N = 1,381). As expected, Structural Equation Modeling among nurses corroborated the mediated role of equity-based cognitive evaluation, whereas only partial mediation was observed for blue collar workers.

#### Brief answers to the research questions

- The psychometric qualities in the Chinese work context of the four most often used burnout instruments (MBI, BM, SMBM, and OLBI) are good and they show convergent validity. That is, burnout – as assessed with these four instruments – consists of two dimensions: exhaustion and withdrawal, like it is the case in western countries.
- Employees from eastern countries like China and Japan report lower levels of work engagement compared to their colleagues from western European countries such as Finland, The Netherlands and Spain. Chinese employees show the highest and Japanese employees the lowest levels of workaholism with western Europeans in between.
- 3. The JD-R model can be supplemented with job demands (job insecurity) and job resources (remuneration) that are particularly relevant in the Chinese work context. Moreover, in Chinese samples levels of burnout and work engagement covary across time with job demands and job resources in ways as predicted by the JD-R model and found in western countries.
- 4. The additive effects of job demands and job resources that are assumed by the JD-R model were found, but the evidence for additional synergistic and moderating effects was weak. The JD-R model be extended with the joint cognitive appraisal of

job demands and job resources, as well as with a typical Chinese form of social exchange (i.e. guanxi reciprocity).

Taken together, it seems that the JDR-model -- as developed in western Europe -- can be applied to the Chinese work context. But perhaps even more importantly, it can also be expanded both in a more general way (by including the simultaneous cognitive appraisal of job demands and resources) as well as with elements that are relevant for the Chinese work context (downsizing, remuneration, guanxi). This illustrates the heuristic nature of the JD-R model and makes it a truly global occupational health model.

## Samenvatting

#### Introductie

Als een veel gebruikt Westers stressmodel stelt het JD - R model dat het welzijn van werknemers is gerelateerd aan een breed scala van baan kenmerken die geconceptualiseerd kunnen worden als job demands en job resources. Job demands zorgen voor een leegloop van de energie van werknemers en worden daarom geassocieerd met een bepaalde psychologische en / of fysiologische tol die op de lange termijn kan leiden tot burn-out. Job resources zouden de negatieve invloed van job demands kunnen verminderen en stimuleren persoonlijke groei en ontwikkeling. Ze bevatten verder het potentieel om te motiveren en zijn geassocieerd met bevlogenheid. Naast zijn invloed op stress- en motivatie processen veronderstelt het JD - R model ook twee modererende effecten, namelijk dat: (1) job resources de potentieel negatieve gevolgen van overmatige job demands op de gezondheid en het welzijn van medewerkers bufferen, en (2) sterk veeleisende werksituaties in combinatie met een hoge mate van job resources resulteren in hogere niveaus van bevlogenheid. Het JD - R model is met succes toegepast in diverse Westerse landen, bijvoorbeeld in Nederland, Australië, Oostenrijk, België, Finland, Italië, en Spanje. Echter, wat nog ontbreekt is empirisch onderzoek over de toepassing van het JD - R model in niet-Westerse landen. Daarom is het doel van dit proefschrift om het Job Demands -Resources (JD - R) model te valideren in en uit te breiden naar de Chinese werkcontext.

#### Onderzoeksvragen

Meer in het bijzonder beantwoord het huidige proefschrift vier sets van onderzoeksvragen:

1. Wat zijn de psychometrische kwaliteiten van de vier meest gebruikte burn-out instrumenten (MBI, BM, SMBM, en OLBI) in de Chinese werkcontext? En in hoeverre meten deze instrumenten een vergelijkbaar burn-out construct (convergente validiteit)?

2. Verschillen medewerkers uit Westelijke van Oostelijke landen gemiddeld gezien op twee vormen van hard werken, namelijk bevlogenheid en werkverslaving?

3. Kan het JD-R model worden aangevuld met job demands (baanonzekerheid) en job resources (beloning) welke bijzonder relevant zijn in de Chinese werkcontext? In hoeverre is het (longitudinale) JD-R-model toe te passen op de Chinese werkcontext?

4. Wat is de aard van de interactie tussen job demands en job resources? Kan het JD-R model worden uitgebreid met de gezamenlijke cognitieve appraisal van job demands en job resources, en met Guanxi wederkerigheid - een typisch Chinese vorm van sociale uitwisseling?

#### Samenvatting van de hoofdstukken

Het proefschrift omvatte acht empirische onderzoeken die worden beschreven in de hoofdstukken 2-9.

*Hoofdstuk 2* gaat over de psychometrische kwaliteit en de convergente validiteit van de vier meest gebruikte burn-out meetinstrumenten in een steekproef van Chinese verpleegkundigen (N = 717). Allereerst werd Structural Equation Modeling gebruikt om de factor structuur van de Maslach Burnout Inventory-General Survey (MBI-GS), de Burnout Measure (BM), de Shirom-Melamed Burnout Measure (SMBM) en de Oldenburg Burnout Inventory (OLBI) te onderzoeken. Vervolgens werden verschillende concurrerende modellen getest om de convergente validiteit van deze vier burn-out instrumenten te onderzoeken. Het bleek dat burn-out het best kan worden gezien als een tweedimensionaal construct bestaande uit uitputting en terugtrekking, twee verwante maar conceptueel verschillende aspecten die ten grondslag liggen aan de vier burn-out instrumenten. Bovendien dienen positief geformuleerde items op burn-out meetinstrumenten geschrapt te worden aangezien zij een afzonderlijke factor vormen die beschouwd kan worden als een artefact.

*Hoofdstuk 3* onderzocht de driedimensionale structuur van de Maslach Burnout Inventory-Studenten Enquête (MBI-SS) bij drie steekproeven van Chinese studenten (twee middelbare scholen, een universiteit, en een school voor verpleegkundigen; totaal N =1,499). Bevestigende Factor Analyses bevestigde het veronderstelde drie-factor model voor zowel de samengestelde steekproef alsmede de drie onafhankelijke sub-steekproeven. Uit opvolgende multigroep analyses bleek dat de driedimensionale structuur van het MBI-SS gedeeltelijk invariant bleek te zijn over de drie steekproeven. Geconcludeerd wordt dat de MBI-SS kan worden gebruikt om niveaus van burn-out te beoordelen bij Chinese studenten. Er wordt echter voorgesteld om de positief geformuleerde academische efficacy items te vervangen door negatief geformuleerde items die academische *in*efficacy meten.

Hoofdstuk 4 vergeleek de gemiddelde niveaus van twee soorten van hard werken bevlogenheid en werkverslaving - over twee culturen (Oosters Azië en Westers Europa) met behulp van een latente variabele benadering. Er werd aangenomen dat in het individualistische en christelijke Westerse Europa (dat wil zeggen, Nederland, Spanje en Finland; N = 17,115) werk wordt geassocieerd met zelfverbetering en persoonlijke ontwikkeling, terwijl in het collectivistische en confucianistische Oosterse Azië (namelijk, China en Japan; N = 5,497) werk wordt geassocieerd met groepsverbetering en zelfopoffering. Naar aanleiding van deze logica werd aangenomen dat Westerse werknemers een hogere mate van bevlogenheid zouden laten zien, terwijl Oosterse werknemers een hogere mate van werkverslaving zouden laten zien. Het gecorreleerd latente factor model dat drie dimensies van bevlogenheid (vitaliteit, toewijding en absorptie) en twee dimensies van werkverslaving (overmatig werken en dwangmatig werken) bevatte was invariant over culturen en landen. Bovendien waren, zoals verwacht, Westerse Europese medewerkers meer bevlogen op het werk dan Oosterse Aziatische werknemers. Daarentegen waren verschillen in werkverslaving minder overtuigend: zoals verwacht werd hogere werkverslaving waargenomen bij Chinese werknemers, maar niet bij Japanse werknemers. Dit verschil in niveaus van werkverslaving tussen beide landen werd verklaard door te verwijzen naar de verschillen in economische ontwikkeling, aangezien China een opkomende economie is en Japan een langdurige economische stagnatie meemaakt. Zowel onderzoekers als praktijkmensen moeten zich ervan bewust zijn dat er systematische verschillen lijken te bestaan tussen Westerse en Oosterse landen, met name in de mate van bevlogenheid. Het is waarschijnlijk dat deze verschillen zijn gerelateerd aan de werkwaarden die voortkomen uit verschillen in collectivistische en individualistische culturele oriëntatie.

*Hoofdstuk 5* onderzocht de additieve, synergetische en modererende effecten van job demands en job resources op welbevinden (burn-out en bevlogenheid) en organisatorische uitkomsten, zoals gespecificeerd door het Job Demands - Resources (JD - R) model. Een enquête werd gehouden bij twee Chinese steekproeven: 625 arbeiders en 761 gezondheidswerkers. Een reeks van multigroep Structural Equation Modeling analyses ondersteunde de twee door het JD - R model voorgestelde processen: (1) het stress proces dat ontstaat uit job demands en via burn-out leidt tot negatieve resultaten voor de organisatie (dat wil zeggen, turnover intention en lage organisatie commitment), (2) het motivationele proces dat ontstaat uit job resources en via bevlogenheid leidt tot positieve resultaten voor de organisatie. In tegenstelling tot de modererende effecten, werden synergetische effecten van job demands en job resources op burn-out en bevlogenheid gevonden in beide steekproeven. Echter, na correctie voor additieve effecten van job demands en job resources verdwenen deze synergetische effecten grotendeels. Concluderend kan men stellen dat naast de stressen motivatieprocessen de verwachte additieve effecten van het JD - R model werden gevonden, maar het bewijs voor extra synergetische en modererende effect was zwak.

*Hoofdstuk 6* onderzocht de invloed van baanonzekerheid (dat wil zeggen, voorgaande job downsizing en verwachte baan downsizing) en het huidige beloningsbeleid - via welzijn (dat wil zeggen, burn-out en bevlogenheid) - op de organisatorische uitkomsten (dat wil zeggen, de organisatie betrokkenheid en lage turnover intention) van een Chinees familiebedrijf (N = 58). Het Job Demands - Resources (JD - R) model werd gebruikt als een conceptueel kader en de gegevens van 585 werknemers van drie Chinese fabrieken in familiestijl werden geanalyseerd met behulp van Structural Equation Modeling. Resultaten bevestigen het verwachte model, namelijk dat in overeenstemming met het JD - R model: (1) job demands en job resources (namelijk, downsizing en beloning) worden geassocieerd met organisatorische resultaten door middel van welzijn (burn-out en bevlogenheid) en; (2) verwachte baan downsizing medieert volledig de relatie tussen voorgaande job downsizing en welzijn. Geconcludeerd wordt dat de job demands en job resources die voor de Chinese werkcontext bijzonder relevant zijn succesvol kunnen worden geïntegreerd in het JD - R model.

*Hoofdstuk 7* onderzocht de relaties - over tijd - tussen job demands en job resources enerzijds met het welzijn van werknemers (namelijk, burn-out, bevlogenheid) anderzijds. Er werd aangenomen dat de verschillende niveaus van blootstelling aan job demands en job resources verschillende niveaus van welzijn zouden veroorzaken. Deze hypotheses werden getest in een two-wave studie onder 172 verpleegkundigen en 273 politieagenten uit China. Zoals verwacht toonden degenen die werden blootgesteld aan verhoogde werkbelasting over een periode van een jaar een significante toename in burn-out, terwijl degenen die werden blootgesteld aan meer resources een significante toename in bevlogenheid lieten zien. Omgekeerd toonden degenen die werden blootgesteld aan verminderde resources een significante toename in burn-out en een afname in bevlogenheid. Ietwat andere patronen werden waargenomen voor beide beroepsgroepen, welke zouden kunnen voortvloeien uit de verschillen in arbeidsomstandigheden en plichten. De conclusie is dat veranderingen in de werk kenmerken zijn geassocieerd met latere veranderingen over tijd in het welzijn van de werknemers op manieren zoals voorspeld door het Job Demands - Resources model.

Hoofdstuk 8 richt zich op (1) de differentiatie tussen twee soorten job resources (namelijk, taak resources en sociale resources) en (2) de uitbreiding van de JD - R model met een typisch Chinese vorm van sociale uitwisseling - guanxi uitwisseling - om haar toepasbaarheid te vergroten in de Chinese context. Guanxi verwijst naar interpersoonlijke verbinding waarin men in staat is om op een ander te vertrouwen om een gunst of dienst uit te voeren, of om zelf vertrouwd op te worden om een gunst of dienst uit te voeren. De hypothesen werden getest in twee Chinese steekproeven van politieagenten (N = 466) en verpleegkundigen (N = 261). Multigroup Structural Equation Modeling analyses ondersteunden het verwachte onderscheid tussen sociale resources en de taak resources. Taak resources voorspelde welzijn bij verpleegkundigen, terwijl sociale resources welzijn bij politieagenten voorspelde. Bovendien werd guanxi uitwisseling met toezichthouders geassocieerd met zowel sociale als taak resources. Bovendien was bij verpleegkundigen guanxi uitwisseling gerelateerd tot betrokkenheid, terwijl bij politieagenten guanxi uitwisseling verbonden was met burn-out. Conclusie: (1) taak en sociale resources zijn twee verschillende types van job resources die een iets andere rol spelen in een rechtshandhaving instelling in vergelijking met een gezondheidszorg instelling, (2) guanxi uitwisseling kan met succes worden geïntegreerd in het JD - R model, waardoor de relevantie ervan voor de Chinese werkcontext wordt verhoogd.

*Hoofdstuk 9* onderzocht de relatie tussen job demands en job resources aan de ene kant en het welzijn van de werknemers (namelijk, burn-out en bevlogenheid) aan de andere kant. Er werd aangenomen dat deze relatie wordt gemedieerd door een equity-based cognitief evaluatie proces waarin job demands en job resources tegelijkertijd worden getaxeerd. Deze mediatie hypothese werd getest in twee Chinese steekproeven bestaande uit handarbeiders (N = 625) en verpleegkundigen (N = 1381). Zoals verwacht bevestigde Structural Equation Modeling de mediërende rol van equity-based cognitieve evaluatie bij verpleegkundigen, terwijl voor arbeiders slechts gedeeltelijke mediatie werd waargenomen.

#### Beknopte antwoorden op de onderzoeksvragen

1 . De psychometrische kwaliteiten in de Chinese werkcontext van de vier meest gebruikte burn-out instrumenten (MBI, BM, SMBM, en OLBI) zijn goed en tonen convergente validiteit. Dat wil zeggen, burn-out - zoals gemeten met deze vier instrumenten bestaat uit twee dimensies, uitputting en terugtrekking, zoals ook het geval is in Westerse landen.

2 . Werknemers uit Oosterse landen zoals China en Japan rapporteren lagere niveaus van bevlogenheid in vergelijking met hun collega's uit Westerse landen zoals Finland, Nederland en Spanje. Chinese werknemers tonen de hoogste en Japanse medewerkers de laagste niveaus van werkverslaving, met Westerse werknemers daar tussenin.

3. Het JD -R model kan worden aangevuld met job demands (baanonzekerheid) en job resources (beloning) en deze zijn in de Chinese werkcontext bijzonder relevant. Bovendien covarieerden niveaus van burn-out en bevlogenheid over tijd met job demands en job resources in Chinese steekproeven op een manier zoals voorspeld door het JD - R model en zoals reeds is gevonden in Westerse landen.

4 . De additieve effecten van job demands en job resources zoals werd aangenomen door het JD - R model werden gevonden, maar het bewijs voor additionele synergetische en modererende effecten was zwak. Het JD-R model kan worden uitgebreid met de gezamenlijke cognitieve appraisal van job demands en job resources, alsmede met een typisch Chinese vorm van sociale uitwisseling (namelijk, guanxi wederkerigheid).

Bij elkaar genomen lijkt het erop dat het JDR-model – zoals deze is ontwikkeld in het Westerse Europa – kan worden toegepast in de Chinese werkcontext. Maar misschien nog belangrijker is dat het ook kan worden uitgebreid op een meer algemene manier (met inbegrip van de gelijktijdige cognitieve appraisal van job demands en resources), alsook met elementen die relevant zijn in de Chinese werkcontext (downsizing, beloning, guanxi). Dit illustreert de heuristische aard van het JD-R model en maakt het een waar mondiaal model voor gezondheid op het werk.

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# Applendix

# Appendix 1 (Chapter 3)

## Maslach Burnout Inventory – Student Survey (MBI-SS)

#### Exhaustion

- 1. I feel emotionally drained by my studies (item 1).
- 2. I feel used up at the end of a day at school (item 4).
- 3. I feel burned out from my studies (item 7).
- 4. I feel tired when I get up in the morning and I have to face another day at school (item 10).
- 5. Studying or attending a class is really a strain for me (item 13).

#### Cynicism

- 1. I have become less interested in my studies since my enrollment at the school (item 2).
- 2. I have become less enthusiastic about my studies (item 5).
- 3. I have become more cynical about the potential usefulness of my studies (item 11).
- 4. I doubt the significance of my studies (item 14).

#### Academic Efficacy

- 1. I can effectively solve the problems that arise in my studies (item 3).
- 2. I believe that I make an effective contribution to the classes that I attend (item 6).
- 3. In my opinion, I am a good student (item 8).
- 4. I have learned many interesting things during the course of my studies (item 9).
- 5. I feel stimulated when I achieve my study goals (item 12).
- 6. During class I feel confident that I am effective in getting things done (item 15).

# Appendix 2 (Chapter 8)

# The two guanxi exchange scales: renqing investment and renqing reward.

## **Renqing Investment**

1. I have to do a favor to my supervisor from time to time to maintain a good guanxi.

2. I have to spend a lot of time and effort outside of my work to maintain a good *guanxi* with my supervisor.

3. I have to express very often my understanding and empathy to my supervisor to maintain a good *guanxi*.

4. I have to offer my supervisor gifts in the expectation that he/she will do me favor when I need it.

# Renqing Reward

1. I have developed a good *guanxi* with my supervisor whom I can call on for support when I need to get things done.

2. I have developed a good *guanxi* with my supervisor which increases my social status in my work team.

3. My supervisor will help me with my troubles at work because I have a good *guanxi* with him/her.

4. My supervisor provides me with adequate and timely information because I have a good *guanxi* with him/her.

5. My supervisor gives me my favorite tasks because I have a good guanxi with him/her.

6. My supervisor supports my career because I have a good guanxi with him/her.

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