Extending the ASSET Model of Occupational Stress among Chinese Higher Education Staff

ABSTRACT

The main aim of this study is to extend the ASSET model of Occupational Stress in a sample of Chinese university employees. Using Partial Least Squares modelling, our findings showed that job stressors resulted in job dissatisfaction. Surprisingly, job stressors did not directly impact on the level of perceived commitment. Job stressors resulted in lower level of psychological health. Employees who reported job dissatisfaction tend to perceive that their organization is committed towards them and similarly, they report a positive level of commitment towards their organization. Those who reported a higher level of psychological wellbeing tend to report a higher level of physical wellbeing. Theoretical and managerial implications are discussed in relation to changes in the Chinese higher education sector.

Keywords: ASSET Model of Occupational stress, People’s Republic of China, Higher Education Institution, Employee Wellbeing
In today’s society, the nature of work is evolving at an accelerated pace. Globalisation, increased demands for greater efficiency, improved service quality, adaptability to continuous changing work environment and uncertainty of employment all cause potential sources of occupational stress. Strong evidence indicates that the experience of occupational stress lead to changes in physiological, psychological and behavioural functions, which may be detrimental to individual health and national productivity.

The current study aimed to adopt and extend an established occupational stress model developed by Cartwright and Cooper (2002) in a public university in the People’s Republic of China. Its main objectives is to evaluate the applicability of the ASSET stress model in identifying the stress level experienced by Chinese staff in higher educational institutions (HEIs) and to explore the relationships between job stressors and effects such as individual health, job dissatisfaction and commitment. This paper reports findings on testing ASSET Model using Partial Least Square Modelling, a form of structural equation modelling technique in the Chinese HEI staff sample.

CHINESE HIGHER EDUCATION STRESS AND THE ASSET STRESS MODEL

The academic profession has long been highly valued and viewed as a secure working environment in the East and the West. However, stress problems in the HEIs have received increasing attention from researchers (Fisher, 1994; Gillespie et al 2001) after the higher educational systems in many countries have been greatly reformed. A three-year research study in 14 British Universities has revealed that staff stress level is significantly higher than the normative data collected by the researchers (Tytherleigh et al 2005). Staff in British universities reported high level of stress, which is significantly correlated with job insecurity, poor work relationships, lack of control and insufficient resources and communication. Another large-scale research has been carried out at 17 universities in Australia, which reported that university staff are subjected to very high stress due to insufficient funding and lack of resources, work overload, poor management practice, job insecurity, and poor recognition and reward (Winefield et al, 2003).

In China, over the past two decades, enormous social changes have been taking place since the state-planned economy was reformed into a market economy. As with their western counterparts, Chinese higher education institutions have also undergone significant reforms such as reduced
government funding, increased enrolment and the restructuring of personnel management system. However, despite its importance in the wellbeing and productivity of workers, there has been limited research carried out into work stress in Chinese HEIs. In order to understand the work stress mechanism and the impact of it on Chinese staff and organizations, an exploratory research of occupational stress was conducted at a university in Mainland China. The university in the study is one of China’s public universities under the direct supervision of the Ministry of Education. The university was established in early 20th century and has expanded rapidly. It has close to 40,000 students studying in 71 disciplines across 25 schools on three campuses. The study was carried out using ASSET model, which was adopted as a quick stress-screening tool for the purpose of stress study in a national research project in British universities (Tytherleigh et al. 2005).

**ASSET Stress Model**

There is an increasing attention into the negative effects of work stress has lead to increase in research into occupational stress. Stress has been defined with four discernable approaches: stimulus-based, response-based, interactive and transactional perspectives. The stimulus-based approach views stress as an external situation or a demand that is detrimental to the individual physical and psychological health. The response-based approach views stress as individual physical and psychological reaction to environmental forces or hazards. Major criticism on stimulus-response conceptualization is that these approaches only reflect one component of the stress process, fail to explore the relationship between different events and stress responses, and has limited understanding of stress process. The interactional approach views stress as a cause-effect structural relationship. It interprets stress as both the stimulus (sources of stress or stressor) and the response (outcome of stress or strain) (Cooper, Dewe and O’Driscoll 2001). The two-fold emphasis on the person and environment in stress research is characteristics of the interactive theoretical framework in psychology, which indicates that behaviour, attitudes and wellbeing are influenced jointly by person and environment (Cooper, Dewe and O’Driscoll 2001). Compared with interactional definitions; transactional definitions are more concerned with the dynamics of the psychological mechanisms of cognitive appraisal and coping mechanism in an individual that underpin a stressful encounter (Lazarus and Folkman 1984). Stress in the transactional framework varies within the person in
different conditions over time. Therefore, it is difficult to efficiently measure stress in this approach by traditional methodology. Furthermore, due to the emphasis on individual subjective appraisal, researchers believing that “the development of theory to guide one to identify those conditions of employment, are likely to affect adversely the psychological wellbeing of most persons exposed to them” prefer to adopt interactional theories in occupational stress research (Brief and George, 1995 cited in Jones and Bright 2001:186).

Using the basis of existing interactional models such as Cooper and Marshall’s (1976) Model of Stress, Cartwright and Cooper (2002) developed the ASSET model to study work-related stress issues across all occupations. Using the ASSET model (see Figure 1), a research project in the UK surveyed 25000 staff in 26 occupations and reported the most stressful jobs are ambulance workers, teachers, social workers, call centre operators, prison officers and police officers. This group reported poorer psychological and physical wellbeing as well as lower job satisfaction compared with the normative data (Johnson et al 2005).

The ASSET model proposes predictable relationship between potential stressors at work and individual health outcome and job outcome such as organizational commitment. A great number of studies lend support to the predictability of job stressors on employee wellbeing and job commitment. For example, job insecurity was proved to have negative impact on employee wellbeing and commitment (Cooper et al 2001). A study using ASSET model studied 16001 employees across different occupations shows the strongest predictor of productivity was psychological wellbeing, and the second major indicator was commitment (Donald et al 2005). Findings by Jacobs et al (2007) matched with this argument and indicated that performance was not only influenced by psychological wellbeing and commitment, but also impacted by physical health after a second analysis of data from 13 higher education institutions in the UK.

Noticeably, commitment in ASSET model was conceptualised as a two dimensional construct: individual commitment to organization and organizational commitment to individual. The literature
argues that commitment reflects the psychological bond that ties the employee to the organization (e.g., Meyer and Allen 1991). The established measurements of commitment placed more emphasis on the degree of employee loyalty and commitment to the organization. However, in today’s organizations, changes such as mergers and acquisitions and outsourcing take place more frequently than ever before. The degree that employee feel that their organizations are committed to them also play decisive role in the rational choice of being committed to employers. Therefore, the commitment construct in the ASSET model is more comprehensive and can more effectively capture the dynamic nature of the construct.

Differentiating from previous work stress models, ASSET Model recognizes commitment, usually conceptualized as being the outcome of stress, may themselves also be a source of stress (Cartwright and Cooper 2002). Cartwright and Cooper argued that for some occupational groups, high levels of commitment and job satisfaction might moderate the effects of stress. In their study of ASSET stress model, Jackson and Rothmann (2006) reported the moderating effect of commitment of job insecurity on physical and psychological health in a sample of 1170 South African educators.

ASSET model was widely used in the Western working environment. However there is scant research testing ASSET model in Asian countries. In order to assess the predictability of ASSET model in work stress of Chinese HEI staff, we proposed the following hypotheses based on the ASSET stress theoretical framework:

\textit{Hypothesis 1.} As individuals experience more job related stressors, they will report a higher level of job dissatisfaction to their job.

\textit{Hypothesis 2.} Individuals who report a higher level of job related stressors will report a lower level of commitment between the employers and their employer.

\textit{Hypothesis 3.} As individuals report more job related stressors, they will report a lower level of physical health.

\textit{Hypothesis 4.} As individuals report more job related stressors, they will report a lower level of psychological health.

\textit{Hypothesis 5.} There is a negative relationship between dissatisfaction and the level of commitment reported by the employees.
Hypothesis 6. There is a negative relationship between the job dissatisfaction and the level of physical health reported by the employees.

Hypothesis 7. There is a negative relationship between job dissatisfaction and the level of psychological health reported by the employees.

Hypothesis 8. As employees report a higher level of commitment, they will report a lower level of physical health.

Hypothesis 9. As employees report a higher level of commitment, they will report a lower level of psychological health.

Hypothesis 10. There is a positive relationship between psychological and physical health.

Hypothesis 11. Job dissatisfaction mediates the relationship between job stressors and commitment.

Method

Sample and Procedure

The stratified random sample on which the study is based is composed of academic and non-academic staff in a public university in east of mainland China. Academic staff have been categorised into three groups on the basis of their work type namely teaching and researching, teaching and training, and research only. Non-academic staff includes administrative staff, service staff and staff in libraries or IT services. Three hundred and twenty questionnaires were distributed. The survey yielded a response rate of 50 percent. After discarding those questionnaires with excessive missing data, the final valid sample for the study was 150. There are 102 academic staff and 48 non-academic staff in the sample. In order to ensure a high response rate, the questionnaires were administered jointly by the researcher and the Counselling Service Unit of the university. Respondents were asked to put the completed questionnaires into the mailbox for this organizational stress audit in each school. The questionnaire clarified the purpose of the survey and ensured confidentiality.

Measures and Model Evaluation

Self-reported ASSET instrument (Cartwright and Cooper 2002) was used for this study. The ASSET questionnaires consist of four parts. The first three relate to the ASSET model and together evaluate the respondent’s perceptions of the sources of pressure and the outcome of work stress. The
final supplementary questionnaire collects demographical data. Only demographic items were revised to adapt to the Chinese educational environment. The original instrument of ASSET is in English. Back translation method and pilot test were adopted to improve the reliability and validity of the research in Chinese-speaking workplace.

The ASSET model has proven to have good validity and reliability, as indicated by an increasing number of studies conducted in the UK, Greek and South Africa (e.g., Faragher, Cooper and Cartwright 2004; Johnson and Cooper 2003, Vakola and Nikolaou 2005, Jackson and Rothmann 2006). An exceptional advantage of using ASSET model in UK is that the normative database of ASSET stress audit can aid organizations benchmark employee wellbeing and job outcome with respect of stress in their workplace (Johnson, 2009).

To test our proposed model, shown in Figure 1, we utilized SmartPLS v.2 (Ringle, Wende and Will 2005), a form of structural equation modelling, to analyze our model. SmartPLS, a latent path model, is a technique used for estimating path coefficients in causal models and the software allows for the simultaneous testing of hypotheses. Survey data were input to SPSS v.17 to calculate z scores and descriptive statistics.

In PLS, the path coefficients are standardized regression coefficients; the loadings are similar to factor loadings. The significance of each variable to another is then determined according to the bootstrap procedure in the SmartPLS (Ringle et al 2005) software. The bootstrapping procedure is carried out to provide extra confidence that the results are not sample-specific by using repeated random samples drawn from the data. In this instance, the bootstrap procedure was repeated until it reached 500 bootstrap samples.

PLS differs from LISREL, as it is suitable for the analysis of small samples while the latter requires substantially larger samples. Another advantage of using PLS over LISREL is that PLS does not require multivariate normal data. Furthermore, PLS is considered to be appropriate in building causal modelling for future testing purposes. Given the number of variables in the proposed model, the sample size is within the range considered to be suitable for PLS analysis (Chin and Newstead 1999: 314).
Commitment is the only reflective construct and its composite reliability coefficient is 0.86. Validity and reliability of the reflective construct is then checked by examining the average variance extracted (AVE). AVE computed for the construct is 0.77, which is greater than the threshold of 0.50. Furthermore, comparison of the square root of the AVE is larger than its correlation with any other construct; hence indicating discriminant validity.

The procedures outlined in Petter, Straub and Rai (2001) are followed to check for validity and reliability of formative scales. Face and content validity of the formative constructs are derived from theory and these constructs are considered to be abstract and complex. Our decision to keep or delete low loading items is based on theoretical meaning of the constructs. We subsequently performed a check for multicollinearity by calculating the Variance Inflation Factors (VIFs) of the items composing each of the formative scales. Results showed that multicollinearity is not an issue as the VIFs were all less than 3.33 (Cenfetelli and Bassellier 2009).

We used Harman’s ex post one factor test to ensure that the current study did not suffer from common method variance (Podsakoff and Organ 1986). The analysis showed that there were 18 factors (with eigenvalues greater than 1.0) which explained 73 percent of the variance. This finding provided support that common method variance is not an issue in the current study. A detailed description of main measurements in our path model is presented below. The items were adapted from the ASSET model, developed by Cartwright and Cooper (2002).

Job Stressors (Formative scale): This is a second order latent variable, formed with seven reflective scales (Work relation, Work life balance, Job overload, Job insecurity, Resources & Communication, and Pay & Benefit). Most of the scales have good internal reliability, with Cronbach’s alphas ranging from .70 to .87 (exception of Job insecurity [.67] and work life balance [.60]). The items were rated on a six-point Likert scale ranging from ‘1’=strongly disagree to ‘6’=strongly agree.

Job dissatisfaction (Formative scale): We reconceptualised Cartwright and Cooper’s ‘Aspects of your job’ construct as job dissatisfaction. This is because this scale was viewed as an indicator of job dissatisfaction for its very high negative correlation with established job satisfaction measurement (Johnson, 2009, 142). Hence, we renamed our construct as job dissatisfaction to reflect this. The scale
was measured with a six-point Likert scale, ranging from ‘1’= strongly disagree to ‘6’= strongly agree. A high rating represents high level of job dissatisfaction. It is measured by eight items. A sample item includes “My work is dull and repetitive”.

Commitment (Reflective scale): The second order construct is measured by two reflective sub-scales: commitment of the organization to the employee (Cronbach’s alpha=.73, sample item includes “I feel valued and trusted by the organization”) and commitment of the employee to the organization (Cronbach’s alpha =.79, sample item includes “I feel that it is worthwhile to work hard for this organization). The items were rated from ‘1’=strongly disagree’ to ‘6’=strongly agree.

Employee Wellbeing (Formative scales): We used two second order latent variables to operationalise employee wellbeing. The first construct, Physical health (six items), gives an insight into physical problems related to stress, not an in-depth clinical diagnosis (sample item includes: ‘How often you have the symptom of insomnia?’). The second construct, Psychological health (11 items), measures the symptoms of stress-induced psychological ill-health. Sample item includes: ‘How often you have constant irritability?’. Responses for both sub-scales were anchored on a 4-point Likert scale, ranging from ‘1’= never to ‘4’=often. These were reverse coded so that higher score indicates better health.

RESULTS

Descriptive statistics and intercorrelations of the constructs are reported in Table 1. The independent variables in the path model explained 62.4 percent of physical health and 18.6 percent of psychological health in a sample of Chinese employees. We followed the calculation of goodness of fit index by Tenenhaus et al’s (2004, cited in Chin, 2010), which showed that the path model has a large goodness of fit (GOF index=0.563).

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Insert Table 1 about here

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There was support for Hypothesis 1, as the path from Job Stressors to Job Dissatisfaction was found to be positive and statistically significant. Hypothesis 2 was not supported as the path from Job Stressors to Commitment was not statistically significant. There was a moderate negative path from
Job Stressors to Physical Health. On the other hand, the path from Job Stressors to Psychological Health was negative and statistically significant.

There was only one statistically significant path from Job Dissatisfaction. The statistically significant path was to Commitment. Thus, Hypothesis 5 was supported. Hypotheses 6 and 7 were not supported as the paths from Commitment to Physical and Psychological Health respectively, were not statistically significant. There was support for Hypothesis 10 as the path from Psychological Health to Physical Health was found to be positive and statistically significant. Hypothesis 11 was also supported as job dissatisfaction mediates the relationship between job stressors and commitment (Sobel=2.2563, p=0.0241).

**DISCUSSION AND IMPLICATIONS**

The primary aim of the current study is to apply the ASSET model of Occupational Stress developed by Cartwright and Cooper (2002) in a sample of academic and non-academic employees in a Chinese university. Our findings showed that the ASSET model is appropriate for understanding the effect of occupational stress on the level of physical and psychological wellbeing among a sample of Chinese university employees. Furthermore, our study indicated that a negative path relation exists between job stressors and physical and psychological wellbeing. We found that job stressors tend to directly impact on lower level of psychological health. Its effect on physical health was only moderate. This result is generally consistent with western studies of stressors-wellbeing relationship in HEIs (Dua 1994; Winefield et al. 2003). Some related studies in China supported this result as well (He et al., 2000; Siu 2002). Also, our study found that individuals who reported a higher level of psychological wellbeing also tend to report a higher level of physical wellbeing. This finding collaborates the evidence in the literature which support the relationship between physical and psychological wellbeing (Cooper et al. 2001).

Job stressors are a proven source of job dissatisfaction in the university resulting in low commitment. Job dissatisfaction as a major effect of strain was well documented in occupational stress research (Sullivan and Bhagat 1992). A negative significant correlation between stress and job satisfaction was found in a study of British HEI staff (Abouserie 1996). The stress effect role of job dissatisfaction in ASSET model was validated by our study of Chinese university staff.
The antecedent role of job dissatisfaction to commitment was also identified in our model, while its relation to wellbeing was not supported. The impact job dissatisfaction on health was reported by Cass et al (2003) in a meta-analysis of Hong Kong workers. Significant differences in social, political and work environment between mainland China and Hong-Kong could be attributed for the inconsistency of the results. The relationship between job satisfaction and health needs further investigation in Chinese workers in the future.

Surprisingly, job stressors did not directly impact on the level of perceived commitment. Due to high autonomy of academic staff and lower turnover culture in Chinese HEIs, there might be distinct factors that are important for influencing commitment in the sampled HEI staff. In China, during 1990’s, there was a trend occurring where university staff who experienced difficulties to acquire job satisfaction tended to relocate their career in industry or become entrepreneurs instead of switching to other universities. So we explored the relationship of job dissatisfaction and commitment. Our study disclosed that job dissatisfaction mediated the relationship between job stressors and commitment. The identification of job dissatisfaction as a mediator in the stress process between job stressors and commitment provide some interesting relationship. Employees with higher level of job stressors reported higher level of job dissatisfaction and lower level of commitment.

Our findings are important in that they provide support to the relationship between job stressors and employee wellbeing and to the relationship between job dissatisfaction and commitment. The findings can provide organizations a simple HR framework of antecedents and outcomes of work stress particularly when many organizational changes take place in HEI sector. The findings from our stress audit in the Chinese university could be used to help construct a stress prevention strategy and action plan for resolving any problems identified in HEIs. The identification of the mediating role of job dissatisfaction between job stressors and organizational commitment, provided some implication to occupational stress theory and HR management. Job satisfaction and commitment are well studied in human resources management research yielding inconsistent results in their causal relationship (Currivan, 1999). In occupational stress research models, job dissatisfaction and organisational commitment are often conceptualized as the stress outcomes (Cartwright & Cooper 2002). There is little examination of the relationship between the two constructs in occupational stress model. The
identification of the mediating role of job satisfaction between job stressors and commitment might imply that in stress intervention, HR managers in Chinese HEIs should consider job satisfaction as an important organisational effectiveness indicator like the HR managers in the private sector in Western countries.

Job satisfaction of Chinese HEIs staff can be improved at two levels. At the job level, work redesigning for teaching and administrative/support positions may reduce workload and increase job control. At the organisational level, job security, sound, equitable and fair pay and benefit, frequent communication from university management, and provision of resources for academic and non-academic work should be introduced by the HR management function. Further, accommodating work life balances policies into HR strategy could be another possible means of reducing occupational stress, improve job satisfaction and performance (Houston, Meyer and Paewai, 2006).

CONCLUSION

Our findings should be interpreted with care as we collected the data using a single method (survey) from a single source, in a single time period. Despite the potential effect of common method bias, a number of tests were conducted to ensure the effects are minimized. In addition to Harman’s One Factor test, we also conducted checks for multicollinearity in formative scales, AVE for reflective scale, and goodness of fit index.

Our study is the first to test and expand occupational stress model of ASSET in Chinese working environment. The respondents were all employed at the same university in China. Future research could be conducted on a larger sample in the higher education institutions in China. Multiple data collection techniques should be undertaken (including peer evaluations) and collection of the dependent and independent measures at two different time periods. This would ensure that common method variance is minimised.

In summary, we found support for the applicability of the ASSET model of Occupational Stress in a Chinese higher education institution. The findings suggest that the model is applicable in the Chinese context. Stress is an issue which has a negative impact on employee wellbeing in the Chinese higher education sector.
References


Figure 1. The ASSET Model of Occupational Stress

Source: Cartwright and Cooper (2002)
Figure 2. Proposed Model of Higher Education Stress in a Chinese Public University
Table 1. Descriptive statistics and inter-correlations of second order constructs

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<th>mean</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<td>1. Commitment</td>
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<td>.82</td>
<td>.87</td>
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<tr>
<td>2. Job dissatisfaction</td>
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<td>6.66</td>
<td>-0.41</td>
<td>1.00</td>
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<tr>
<td>3. Physical Health</td>
<td>11.59</td>
<td>4.10</td>
<td>-0.28</td>
<td>0.46</td>
<td>1.00</td>
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<tr>
<td>4. Psychological Health</td>
<td>20.69</td>
<td>6.91</td>
<td>-0.21</td>
<td>0.34</td>
<td>0.75</td>
<td>1.00</td>
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<td>5. Job Stressors</td>
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<td>5.44</td>
<td>-0.36</td>
<td>0.85</td>
<td>0.53</td>
<td>0.42</td>
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</table>

Underline italicised item represents Square root of the average variance estimate
Table 2. Results of Path Analysis

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<th>Path Coefficients</th>
<th>t-statistic</th>
<th>Sig. Level</th>
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<td>Job Stressors → Job Dissatisfaction</td>
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<td>Job Stressors → Commitment</td>
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<td>Job Stressors → Physical Health</td>
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<td>Job Dissatisfaction → Commitment</td>
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<td>2.2614</td>
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<tr>
<td>Psychological Health → Physical Health</td>
<td>0.6422</td>
<td>10.2314</td>
</tr>
</tbody>
</table>

N=150
† p<.10, * p<.05, ** p<.01, *** p<.001
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Using the basis of existing interactional models such as Cooper and Marshall’s (1976) Model of Stress, Cartwright and Cooper (2002) developed the ASSET model to study work-related stress issues across all occupations. Using the ASSET model (see Figure 1), a research project in the UK surveyed 25000 staff in 26 occupations and reported the most stressful jobs are ambulance workers, teachers, social workers, call centre operators, prison officers and police officers. This group reported poorer psychological and physical wellbeing as well as lower job satisfaction compared with the normative data (Johnson et al 2005).

The ASSET model proposes predictable relationship between potential stressors at work and individual health outcome and job outcome such as organizational commitment. A great number of studies lend support to the predictability of job stressors on employee wellbeing and job commitment. For example, job insecurity was proved to have negative impact on employee wellbeing and commitment (Cooper et al 2001). A study using ASSET model studied 16001 employees across different occupations shows the strongest predictor of productivity was psychological wellbeing, and the second major indicator was commitment (Donald et al 2005). Findings by Jacobs et al (2007) matched with this argument and indicated that performance was not only influenced by psychological wellbeing and commitment, but also impacted by physical health after a second analysis of data from 13 higher education institutions in the UK.

Noticeably, commitment in ASSET model was conceptualised as a two dimensional construct: individual commitment to organization and organizational commitment to individual. The
literature argues that commitment reflects the psychological bond that ties the employee to the organization (e.g., Meyer and Allen 1991). The established measurements of commitment placed more emphasis on the degree of employee loyalty and commitment to the organization. However, in today’s organizations, changes such as mergers and acquisitions and outsourcing take place more frequently than ever before. The degree that employee feel that their organizations are committed to them also play decisive role in the rational choice of being committed to employers. Therefore, the commitment construct in the ASSET model is more comprehensive and can more effectively capture the dynamic nature of the construct.

Differentiating from previous work stress models, ASSET Model recognizes commitment, usually conceptualized as being the outcome of stress, may themselves also be a source of stress (Cartwright and Cooper 2002). Cartwright and Cooper argued that for some occupational groups, high levels of commitment and job satisfaction might moderate the effects of stress. In their study of ASSET stress model, Jackson and Rothmann (2006) reported the moderating effect of commitment of job insecurity on physical and psychological health in a sample of 1170 South African educators.

ASSET model was widely used in the Western working environment. However there is scant research testing ASSET model in Asian countries. In order to assess the predictability of ASSET model in work stress of Chinese HEI staff, we proposed the following hypotheses based on the ASSET stress theoretical framework:

Hypothesis 1. Job related stressors are positively related to job dissatisfaction

Hypothesis 2. Job related stressors are negatively related to commitment.

Hypothesis 3. Job related stressors are negatively related to physical health of employee.

Hypothesis 4. Job related stressors are negatively related to psychological health of employee.

Hypothesis 5. Job dissatisfaction is negatively related to commitment.

Hypothesis 6. Job dissatisfaction is negatively related to physical health of employee.

Hypothesis 7. Job dissatisfaction is negatively related to psychological health of employee.

Hypothesis 8. Commitment is positively related to physical health of employee.

Hypothesis 9. Commitment is positively related to psychological health of employee.

Hypothesis 10. Psychological health is positively related to physical health of employee.
Hypothesis 11. Job dissatisfaction mediates the relationship between job stressors and commitment.

Method

Sample and Procedure
We surveyed all of the academic and administrative staff in a public university located in the east of mainland China. Stratified random sampling was used to make samples more representative of all staff. Some department and schools are randomly selected from the three types of groups. Three hundred and twenty questionnaires were distributed. In order to ensure a high response rate, the questionnaires were administered jointly by the researcher and the Counselling Service Unit of the university. Respondents were asked to return the completed questionnaires into a mailbox designated for the stress audit. The questionnaire clarified the purpose of the survey and ensured confidentiality. The survey yielded a response rate of 50 percent. After discarding those questionnaires with excessive missing data, the final valid sample for the study was 150, including 102 academic staff and 48 non-academic staff.

Measures and Model Evaluation
Self-reported ASSET instrument (Cartwright and Cooper 2002) was used for this study. The ASSET questionnaires consist of four parts. The first three relate to the ASSET model and together evaluate the respondent’s perceptions of the sources of pressure and the outcome of work stress. The final supplementary questionnaire collects demographical data. Only demographic items were revised to adapt to the Chinese educational environment. Prior to data collection, we pilot tested the survey with 15 respondents in the university, who didn’t participate in the final survey. The survey was translated from English into Mandarin by a bilingual Chinese academic. It was then back translated into English, consistent with Brislin (1979).

The ASSET model has proven to have good validity and reliability, as indicated by an increasing number of studies conducted in the UK, Greek and South Africa (e.g., Faragher, Cooper and Cartwright 2004; Johnson and Cooper 2003, Vakola and Nikolaou 2005, Jackson and Rothmann 2006). An exceptional advantage of using ASSET model in UK is that the normative database of
ASSET stress audit can aid organizations benchmark employee well-being and job outcome with respect of stress in their workplace (Johnson, 2009).

To test our proposed model, shown in Figure 1, we utilized SmartPLS v.2 (Ringle, Wende and Will 2005), a form of structural equation modelling, to analyze our model. SmartPLS, a latent path model, is a technique used for estimating path coefficients in causal models and the software allows for the simultaneous testing of hypotheses. Survey data were input to SPSS v.17 to calculate z scores and descriptive statistics.

In PLS, the path coefficients are standardized regression coefficients; the loadings are similar to factor loadings. The significance of each variable to another is then determined according to the bootstrap procedure in the SmartPLS (Ringle et al 2005) software. The bootstrapping procedure is carried out to provide extra confidence that the results are not sample-specific by using repeated random samples drawn from the data. In this instance, the bootstrap procedure was repeated until it reached 500 bootstrap samples.

PLS differs from LISREL, as it is suitable for the analysis of small samples while the latter requires substantially larger samples. Another advantage of using PLS over LISREL is that PLS does not require multivariate normal data. Furthermore, PLS is considered to be appropriate in building causal modelling for future testing purposes. Given the number of variables in the proposed model, the sample size is within the range considered to be suitable for PLS analysis (Chin and Newstead 1999: 314).

Commitment is the only reflective construct and its composite reliability coefficient is 0.86. Validity and reliability of the reflective construct is then checked by examining the average variance extracted (AVE). AVE computed for the construct is 0.77, which is greater than the threshold of 0.50. Furthermore, comparison of the square root of the AVE is larger than its correlation with any other construct; hence indicating discriminant validity.

The procedures outlined in Petter, Straub and Rai (2001) are followed to check for validity and reliability of formative scales. Face and content validity of the formative constructs are derived from theory and these constructs are considered to be abstract and complex. Our decision to keep or delete low loading items is based on theoretical meaning of the constructs. We subsequently
performed a check for multicollinearity by calculating the Variance Inflation Factors (VIFs) of the items composing each of the formative scales. Results showed that multicollinearity is not an issue as the VIFs were all less than 3.33 (Cenfetelli and Bassellier 2009).

We used Harman’s ex post one factor test to ensure that the current study did not suffer from common method variance (Podsakoff and Organ 1986). The analysis showed that there were 18 factors (with eigenvalues greater than 1.0) which explained 73 percent of the variance. This finding provided support that common method variance is not an issue in the current study. A detailed description of main measurements in our path model is presented below. The items were adapted from the ASSET model, developed by Cartwright and Cooper (2002).

**Job Stressors (Formative scale):** This is a second order latent variable, formed with seven reflective scales, namely Work relation (8 items), Work life balance (4 items), Job overload (4 items), Job insecurity (4 items), Control (4 items), Resources and Communication (4 items), and Pay & benefit (1 item). Most of the scales have good internal reliability, with Cronbach’s alphas ranging from .70 to .87 (exception of Job insecurity [.67] and work life balance [.60]). The items were rated on a six-point Likert scale ranging from ‘1’=strongly disagree to ‘6’=strongly agree.

**Job dissatisfaction (Formative scale):** We reconceptualised Cartwright and Cooper’s ‘Aspects of your job’ construct as job dissatisfaction (8 items). This is because this scale was viewed as an indicator of job dissatisfaction for its very high negative correlation with established job satisfaction measurement (Johnson, 2009, 142). Hence, we renamed our construct as job dissatisfaction to reflect this. The scale was measured with a six-point Likert scale, ranging from ‘1’= strongly disagree to ‘6’= strongly agree. A high rating represents high level of job dissatisfaction. It is measured by eight items. A sample item includes “My work is dull and repetitive”.

**Commitment (Reflective scale):** The second order construct is measured by two reflective sub-scales: commitment of the organization to the employee (5 items Cronbach’s alpha=.73, sample item includes “I feel valued and trusted by the organization”. ) and commitment of the employee to the organization (4 items, Cronbach’s alpha =.79, sample item includes “I feel that it is worthwhile to work hard for this organization”). The items were rated from ‘1’=strongly disagree’ to ‘6’=strongly agree.
Employee Wellbeing (Formative scales): We used two second order latent variables to operationalise employee wellbeing. The first construct, Physical health (6 items), gives an insight into physical problems related to stress, not an in-depth clinical diagnosis (sample item includes: ‘How often you have the symptom of insomnia?’). The second construct, Psychological health (11 items), measures the symptoms of stress-induced psychological ill-health. Sample item includes: ‘How often you have constant irritability?’ Responses for both sub-scales were anchored on a 4-point Likert scale, ranging from ‘1’= never to ‘4’=often. These were reverse coded so that higher score indicates better health.

RESULTS

Descriptive statistics and intercorrelations of the constructs are reported in Table 1. The independent variables in the path model explained 62.4 percent of physical health and 18.6 percent of psychological health in a sample of Chinese employees. We followed the calculation of goodness of fit index by Tenenhaus et al’s (2004, cited in Chin, 2010), which showed that the path model has a large goodness of fit (GOF index=0.563).

Insert Table 1 about here

There was support for Hypothesis 1, as the path from Job Stressors to Job Dissatisfaction was found to be positive and statistically significant. Hypothesis 2 was not supported as the path from Job Stressors to Commitment was not statistically significant. There was a moderate negative path from Job Stressors to Physical Health. On the other hand, the path from Job Stressors to Psychological Health was negative and statistically significant.

There was only one statistically significant path from Job Dissatisfaction. The statistically significant path was to Commitment. Thus, Hypothesis 5 was supported. Hypotheses 6 and 7 were not supported as the paths from Commitment to Physical and Psychological Health respectively, were not statistically significant. There was support for Hypothesis 10 as the path from Psychological Health to Physical Health was found to be positive and statistically significant. Hypothesis 11 was
also supported as job dissatisfaction mediates the relationship between job stressors and commitment (Sobel=2.2563, p=0.0241).

DISCUSSION AND IMPLICATIONS

The primary aim of the current study is to apply the ASSET model of Occupational Stress developed by Cartwright and Cooper (2002) in a sample of academic and non-academic employees in a Chinese university. Our findings showed that the ASSET model is appropriate for understanding the effect of occupational stress on the level of physical and psychological wellbeing among a sample of Chinese university employees. Furthermore, our study indicated that a negative path relation exists between job stressors and physical and psychological wellbeing. We found that job stressors tend to directly impact on lower level of psychological health. Its effect on physical health was only moderate. This result is generally consistent with western studies of stressors-wellbeing relationship in HEIs (Du 1994; Winefield et al 2003). Some related studies in China supported this result as well (He et al, 2000; Siu 2002). Also, our study found that individuals who reported a higher level of psychological wellbeing also tend to report a higher level of physical wellbeing. This finding collaborates the evidence in the literature which support the relationship between physical and psychological wellbeing (Cooper et al 2001).

Job stressors are a proven source of job dissatisfaction in the university resulting in low commitment. Job dissatisfaction as a major effect of strain was well documented in occupational stress research (Sullivan and Bhagat 1992). A negative significant correlation between stress and job satisfaction was found in a study of British HEI staff (Abouserie 1996). The stress effect role of job dissatisfaction in ASSET model was validated by our study of Chinese university staff.

The antecedent role of job dissatisfaction to commitment was also identified in our model, while its relation to wellbeing was not supported. The impact job dissatisfaction on health was reported by Cass et al (2003) in a meta-analysis of Hong Kong workers. Significant differences in social, political and work environment between mainland China and Hong-Kong could be attributed for the inconsistency of the results. The relationship between job satisfaction and health needs further investigation in Chinese workers in the future.

Surprisingly, job stressors did not directly impact on the level of perceived commitment. Due
to high autonomy of academic staff and lower turnover culture in Chinese HEIs, there might be
distinct factors that are important for influencing commitment in the sampled HEI staff. In China,
during 1990’s, there was a trend occurring where university staff who experienced difficulties to
acquire job satisfaction tended to relocate their career in industry or become entrepreneurs instead of
switching to other universities. So we explored the relationship of job dissatisfaction and
commitment. Our study disclosed that job dissatisfaction mediated the relationship between job
stressors and commitment. The identification of job dissatisfaction as a mediator in the stress process
between job stressors and commitment provide some interesting relationship. This finding is
consistent with a study by Elangovan (2001) using structural equation to analyse the relationship of
stress, satisfaction and commitment. Findings from the current study provided a strong support for the
stress-satisfaction-commitment causal link, as stress does not have a direct effect on commitment
(Elangovan 2001).

Our findings are important in that they provide support to the relationship between job
stressors and employee wellbeing and to the relationship between job dissatisfaction and commitment.
The findings can provide organizations a simple HR framework of antecedents and outcomes of work
stress particularly when many organizational changes take place in HEI sector. The findings from our
stress audit in the Chinese university could be used to help construct a stress prevention strategy and
action plan for resolving any problems identified in HEIs. The identification of the mediating role of
job dissatisfaction between job stressors and organizational commitment, provided some implication
to occupational stress theory and HR management. Job dissatisfaction and commitment are well
studied in human resources management research yielding inconsistent results in their causal
relationship (Currivan, 1999). In occupational stress research models, job dissatisfaction and
organisational commitment are often conceptualized as the stress outcomes (Cartwright & Cooper
2002). There is little examination of the relationship between the two constructs in occupational
stress model. The identification of the mediating role of job satisfaction between job stressors and
commitment might imply that in stress intervention, HR managers in Chinese HEIs should consider
job satisfaction as an important organisational effectiveness indicator like the HR managers in the
private sector in Western countries.
Job satisfaction of Chinese HEIs staff can be improved at two levels. At the job level, work redesigning for teaching and administrative/support positions may reduce workload and increase job control. At the organisational level, job security, sound, equitable and fair pay and benefit, frequent communication from university management, and provision of resources for academic and non-academic work should be introduced by the HR management function. Further, accommodating work life balances policies into HR strategy could be another possible means of reducing occupational stress, improve job satisfaction and performance (Houston, Meyer and Paewai, 2006).

CONCLUSION

Our findings should be interpreted with care as we collected the data using a single method (survey) from a single source, in a single time period. Despite the potential effect of common method bias, a number of tests were conducted to ensure the effects are minimized. In addition to Harman’s One Factor test, we also conducted checks for multicollinariness in formative scales, AVE for reflective scale, and goodness of fit index.

Our study is the first to test and expand occupational stress model of ASSET in Chinese working environment. The respondents were all employed at the same university in China. Future research could be conducted on a larger sample in the higher education institutions in China. Multiple data collection techniques should be undertaken (including peer evaluations) and collection of the dependent and independent measures at two different time periods. This would ensure that common method variance is minimised.

In summary, we found partial support for the applicability of the ASSET model of Occupational Stress in a Chinese higher education institution. The findings suggest that the model is partially applicable in the Chinese context. Job related stress is an issue which has a negative impact on employee wellbeing in the Chinese higher education sector.

References


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Petter S, Straud D and Rai A (2007) Specifying formative constructs in information systems research, 

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*Journal of Management*, 12(4): 545-560


Figure 1. The ASSET Model of Occupational Stress

Source: Cartwright and Cooper (2002)
Figure 2. Proposed Model of Higher Education Stress in a Chinese Public University
Table 1. Descriptive statistics and inter-correlations of second order constructs

<table>
<thead>
<tr>
<th></th>
<th>mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>1. Commitment</td>
<td>4.43</td>
<td>.82</td>
<td>.87</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Job dissatisfaction</td>
<td>25.65</td>
<td>6.66</td>
<td>-0.41</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Physical Health</td>
<td>11.59</td>
<td>4.10</td>
<td>-0.28</td>
<td>0.46</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Psychological Health</td>
<td>20.69</td>
<td>6.91</td>
<td>-0.21</td>
<td>0.34</td>
<td>0.75</td>
<td>1.00</td>
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<td>5. Job Stressors</td>
<td>20.08</td>
<td>5.44</td>
<td>-0.36</td>
<td>0.85</td>
<td>0.53</td>
<td>0.42</td>
<td>1.00</td>
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</table>

Underline italicised item represents Square root of the average variance estimate
Table 2. Results of Path Analysis

<table>
<thead>
<tr>
<th>Path</th>
<th>Coefficients</th>
<th>t-statistic</th>
<th>Sig. Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Stressors → Job Dissatisfaction</td>
<td>0.8512</td>
<td>33.6706</td>
<td>***</td>
</tr>
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<td>Job Stressors → Commitment</td>
<td>-0.054</td>
<td>0.2888</td>
<td>n.s.</td>
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<tr>
<td>Job Stressors → Physical Health</td>
<td>-0.1883</td>
<td>1.7391</td>
<td>†</td>
</tr>
<tr>
<td>Job Stressors → Psychological Health</td>
<td>-0.4635</td>
<td>3.2537</td>
<td>**</td>
</tr>
<tr>
<td>Job Dissatisfaction → Commitment</td>
<td>-0.3649</td>
<td>2.2614</td>
<td>*</td>
</tr>
<tr>
<td>Job Dissatisfaction → Physical Health</td>
<td>0.0612</td>
<td>0.6015</td>
<td>n.s.</td>
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<tr>
<td>Job Dissatisfaction → Psychological Health</td>
<td>-0.082</td>
<td>0.5967</td>
<td>n.s.</td>
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<tr>
<td>Commitment → Physical Health</td>
<td>-0.0462</td>
<td>0.7733</td>
<td>n.s.</td>
</tr>
<tr>
<td>Commitment → Psychological Health</td>
<td>-0.0769</td>
<td>0.8938</td>
<td>n.s.</td>
</tr>
<tr>
<td>Psychological Health → Physical Health</td>
<td>0.6422</td>
<td>10.2314</td>
<td>***</td>
</tr>
</tbody>
</table>

N=150
† p<.10, * p<.05, ** p<.01, *** p<.001