

Lingnan University

Digital Commons @ Lingnan University

Staff Publications

Lingnan Staff Publication

12-2009

Work stress and depression : the direct and moderating effects of informal social support and coping

Weiqing CHEN
Sun Yat-sen University

Oi Ling SIU
Lingnan University, Hong Kong

Jiafang LU
Lingnan University, Hong Kong

Cary L. COOPER
Lancaster University

David Rosser PHILLIPS
Lingnan University, Hong Kong

Follow this and additional works at: https://commons.ln.edu.hk/sw_master



Part of the [Work, Economy and Organizations Commons](#)

Recommended Citation

Chen, W.-Q., Siu, O.-L., Lu, J.-F., Cooper, C. L., & Phillips, D. R. (2009). Work stress and depression: The direct and moderating effects of informal social support and coping. *Stress and Health*, 25(5), 431-443. doi: 10.1002/smi.1263

This Journal article is brought to you for free and open access by the Lingnan Staff Publication at Digital Commons @ Lingnan University. It has been accepted for inclusion in Staff Publications by an authorized administrator of Digital Commons @ Lingnan University.

Work stress and depression: the direct and moderating effects of informal social support and coping

Wei-Qing Chen,¹ Oi-Ling Siu,² Jia-Fang Lu², Cary L. Cooper³ and David R. Phillips²

¹ *Sun Yat-Sen University, Guangzhou, China*

² *Lingnan University, Hong Kong SAR, China*

³ *Lancaster University Management School, Lancaster University, England, UK*

Summary

This article investigated the relationship between job stressors and employee mental health (depression). It also examined the direct and moderating effects of informal social support (objective and subjective) and coping (active coping, overeating and drinking, passivity, and distancing) on the relationships. Survey data were collected from 843 employees in eight types of domestic- and foreign-invested enterprises in China. Hierarchical regression analyses revealed that increased exposure to job stressors was directly associated with higher levels of depression. Subjective informal social support and passivity were found to have direct effect on employees' depression. Further, objective informal social support and distancing buffered the negative effect of job stressors on depression. The theoretical and practical implications of these findings are discussed in the paper.

Keywords

work stress; depression; informal social support; coping strategies; Chinese

Introduction

According to the World Health Organization (Mathers et al., 2003), neuropsychiatric disorders ranked first among all diseases in China at 34.95 million Disability Adjusted Life Years (DALY), or about 17.4 per cent of the total DALY in China. A recent survey conducted in China indicated that the 12-month prevalence rate of depressive disorders was 2.5 per cent in Beijing and 1.7 per cent in Shanghai, and the total estimated cost of depression in China was 51,370 million Renminbi (RMB) (or US \$6,264 million) at 2002 prices (Hu, He, Zhang, & Chen, 2007). In a recent finding, depressed people committed as many as 23 per cent (more than 6,000 cases) of the homicides recorded between 2002 and 2006 in China (China Daily, 23 November 2007, p. 1). It can be attributed from the Chinese cultural perspective that, for instance, some depressed Chinese tend to believe their lives are hard, and if they choose to die, they choose to die with their most loved ones so that their loved ones will no longer suffer in life. About half of these people committed suicide after killing others. It is therefore practically and theoretically important to delineate factors that may help reduce the harmful effects of depression.

Previous studies have consistently found that a number of work-related stressors are associated with depression and other psychological disorders in Asian and Western settings (e.g. Karasek & Theorell, 1990; Lambert, Lambert, Petrini, & Li, 2007; Tsutsumi, Kayaba, Theorell, & Siegrist, 2001; Tytherleigh, Jacobs, Webb, Ricketts, & Cooper, 2007). It is particularly pertinent to study work stress and depression in China because it has been undergoing economic reforms and social changes over the last decades. The breath-taking economic growth has been attributed to several main sources: the reformed state-owned enterprises, non-state-owned enterprises and the foreign-invested enterprises. As these firms employ different human resource management systems and craft, and reward different work cultures, the employment relationships in these firms are somewhat different (Chiu, 2002). Other than anecdotal accounts, however, few studies have empirically examined the work stress of various types of firms in China sufficiently to present a comprehensive picture.

In line with the development of positive psychology (e.g. Peterson, 2006; Seligman & Csikszentmihalyi, 2000), there has been more emphasis on mental health in the workplace (Seligman, 2008). Coping with work stress has become a crucial factor in enhancing mental health in the workplace, which, in turn, may boost performance and even profits in organizations. Social support takes an important role in the stress and coping processes, yet, it has been argued that the moderating role of social support in work stress research is inconsistent (e.g. Dormann & Zapf, 2002). According to Dewe (1989), there are two categories of coping: (1) direct action coping (problem-focused, active, control); and (2) palliative coping (emotion-focused including social support, passive, and avoidance). However, it is argued that the category of palliative coping is too broad. It is suggested that, when social support is isolated from palliative coping measures, it would become a key factor in the promotion of health (e.g. Schwarzer & Knoll, 2007; Torkelson & Muhonen, 2004).

Theory and hypotheses

Stress and depression

Depressive disorders represent a major proportion of the mental disorders of current worldwide concern as they may result in disability, premature death and severe suffering of those affected and their families. Various studies have addressed the issue of psychosocial correlates and risk factors of depression. The most frequently studied domains have been the impact of life events, coping capacities, cognitive styles and the quality of relationships with the family and the social environment. In contemporary cognitive diathesis-stress models, small everyday stress activates a cognitive vulnerability factor to result in depression. A number of work-related stressors have been implicated in the development of depression and other psychological disorders. Among these are underutilization of skills (Jones-Johnson & Johnson, 1992), lack of meaning (Marshall, Barnett, & Sayer, 1997), lack of participation in decision making (Spector, 1986), overload (Yip, Rowlinson, &

Siu, 2008), lack of personal control (Karasek & Theorell, 1990; Spector, 1986; Tsutsumi et al., 2001), and effort–reward imbalance (Tsutsumi et al., 2001). Adopting an instrument covering a comprehensive measure of job stressors will therefore be valuable to yield a comprehensive picture. Based on the previous literature, we therefore hypothesized that:

Hypothesis 1: Employees who perceive higher levels of job stressors will report higher levels of depression.

Informal social support

The primary social factor hypothesized to mitigate the negative effects of stress in the work setting is the degree of social support that an individual receives. Social support has been defined in various ways, but, basically, it is a multidimensional concept that involves subjective concern, instrumental aid, information or appraisal from different sources (Schwarzer, Knoll, & Rieckmann, 2004). A growing body of research has demonstrated that social support has important implications for many individual and organizational outcomes. As summarized by Cohen and Wills (1985), the literature on direct effect of social support (fewer symptoms of mental and physical ill health) has been well established. Studies show that social support increases job satisfaction and commitment (Allen & Meyer, 1990; Mathieu & Zajac, 1990), decreases turn- over and absenteeism, reduces depressive symptoms (Ganster, Fusilier, & Mayes, 1986; Holahan, Holahan, Moos, & Brennan, 1997), and enhances overall mental health (Anderson, 1991).

Informal social support or informal support in this paper refers to unpaid help given by family (including spouse, siblings and relatives), friends, neighbours and co-workers. Informal social support has been hypothesized to play two distinct protective roles in the stress process: objective and subjective means. Objective measures imply quantity of social support (in terms of size of social network and frequency of contact), whereas subjective measures imply quality of social support (in terms of perceived importance of relationships). In general, subjective measures account for more variance than actual support received for measures related to depression and psychological well-being (Chi & Chou, 2001; Phillips, Siu, Yeh, & Cheng, 2008; Siu & Phillips, 2002). For instance, Phillips et al. (2008) reported that both objective and subjective measures of informal support were related to older persons' psychological well-being, but only subjective measures of informal support were found to be important predictors of psychological well-being. The current study uses samples from employees in China and we expected both types of effects may arise from objective and subjective informal social support—the main effects on depression and the buffering effects on the relationship between job stressors and depression. We hypothesized that

Hypothesis 2a: Employees who report high levels of objective or subjective informal support will report low levels of depression.

Hypothesis 2b: Objective or subjective informal support moderates the stressor–depression relationship, in that the stress–depression relationship will be weaker when objective or subjective informal support is high than when objective or subjective informal support is low.

Coping strategies

In addition to the quality of relationships with the social environment, another frequently studied psychosocial correlate of depression has been the impact of coping strategies. Coping has been considered an important element in the stress process because coping strategies can help buffer the effects of stressors on strains (Lazarus & Folkman, 1984). According to the transactional theory, coping consists of 'cognitive and behavioral efforts to master, reduce or tolerate the internal or external demands that are created by the stressful transaction' (Folkman, 1984, p. 843). Dewe (1989) summarized that there are several taxonomies to categorize types of coping: active– passive, control–avoidance, problem-focused– emotion-focused, and others. There is a traditional view of active coping or problem-focused coping as having positive health-related benefits and passive or emotion-focused coping as having a maladaptive and dysfunctional nature (e.g. Semmer, 1996, Folkman & Moskowitz, 2004). Yet the adaptive potential of coping through an emotional approach has been reaffirmed (Stanton, Parsa, & Austenfeld, 2002).

It seems that, perhaps for cultural or social reasons, the Chinese are more likely to adopt some of the emotion-focused strategies by changing perceptions. For instance, Lee (1985) advocated two forms of supernatural beliefs and practices, feng-shui and yuan-fen (predestines the importance affinity), that are common coping behaviours used to tackle social stress in Hong Kong. The integration of such Taoism philosophy with psychotherapy in the workplace may have been overlooked in coping literatures. The traditional Chinese philosophy of Tao has the basic tenets of dao (the way) and wuwei (non-intervention), which can help to change a chaotic situation to a harmonious one in some circumstances. This philosophy advocates following the way of nature and not letting strong ambition lead to unrealistic effort to achieve rapid success. These are considered to be good strategies or coping resources before crises and are particularly useful among older people or workers who are in relatively disadvantaged positions.

Recently, Siu, Spector and Cooper (2006) conducted a three-phase study among Chinese employees in Greater China to develop and validate the Chinese coping strategies that were most common and frequently used. The structures of Chinese coping strategies include four factors: (1) active positive coping; (2) passive adaptive coping; (3) social support; and (4) hobbies/relaxation. The results also show that active positive coping, social support and hobbies/relaxation have a beneficial role in work well-being (job satisfaction, physical and behavioural symptoms), whereas passive adaptive coping relatively has a maladaptive effect. However, they did not demonstrate the differential moderating role of each coping strategy. Further, if Chinese people are more inclined to adopt emotion-focused coping, it is important to conduct research in another large sample of Chinese to examine the differential impact of each type of coping on depression. Future intervention work by human resource management can then be recommended. Based on previous literature, we therefore hypothesized that

Hypothesis 3: Coping strategies moderate the stress–depression relationship, in that the stress–depression relationship will be weaker when adaptive coping (active coping, distancing) is adopted

and the stress–depression relationship will be stronger when maladaptive coping (overeating/drinking, passivity) is used.

Work stress and organizational types

In China today, the reformed state-owned enterprises, domestic private firms and the foreign-invested firms coexist as key players in the Chinese economy. It is believed that employment and management differences among the various types of firms would create work conditions and dynamics that may affect employees' stress and well-being. There have been some empirical observations on these in both Western and Chinese societies (e.g. Wierszal-Bazyl, Cooper, Sparks, & Spector, 2000; Xu, Pan, Wu, & Yim, 2006). For instance, Wierszal-Bazyl et al. (2000) investigated managerial stress in private and state organizations in Poland and reported that being private- or state-owned was a predictor of certain sources of stress connected with insufficient organizational support and excessive workload which were higher in state enterprises. Further, Wong, Wong, Ngo, and Lui (2005) reported differences in management practices and attitudes such as autonomy and decision-making processes between foreign-invested enterprises and state-owned enterprises. Yet detailed organizational comparisons from a cultural perspective within the Chinese context have rarely been conducted. As suggested by Sparks and Cooper (1999), to fully understand the work–strain relationship, research should incorporate a great range of variables that are specific to a particular workplace. Home countries' management cultures could be such an important variable. It is therefore particularly worthwhile to study how and to what extent employees in China working in organizations with different ownership structures are exposed to different types of stressors. Hence, we also examine the major source(s) of work stress in Western–Eastern invested firms in China.

Method

Participants and procedures

Dongguan is one of largest export-oriented manufacture and assembly districts in China. It has been frequently cited as a typical example of modern Chinese economic zones in economic and development research, and provided a setting for us to conduct the current study in early 2006. A cluster sampling method was used to recruit the sample. Eight types of organizations were identified in Dongguan (see below), and at least two factories for each type of organizations were approached through top management team members. Upon their approval, all of the employees in the chosen organization were invited to complete the questionnaires by a self-administered survey method at a designated time in the work sites. Respondents were assured about the confidentiality of data collected. Completed questionnaires were collected immediately after completion at the sites. After removing 44 incomplete questionnaires, the final sample for the present study comprised 843 respondents (48.1 per cent males and 51.9 per cent females) recruited from 12 factories that agreed

to participate in Dong-guan. The majority (82.3 per cent) of the participants were in the age group of 21 to 36 years old: 7.2 per cent of them were under the age of 21 years old, 10.2 per cent were between 37 and 55, and 0.4 per cent were above 55. Concerning marital status, just over half (52.3 per cent) of the participants were married, 44.4 per cent single, 1.8 per cent cohabiting, and 1.6 per cent were separated/divorced/widowed. Participants also represented a wide range of job levels, including operational (11.4 per cent), clerical/administrative support (12.2 per cent), professional/technical (30.9 per cent), sales/ marketing (6.3 per cent), first level manager (3.6 per cent), middle and top-level manager (25.2 per cent), and a variety of other staff positions (10.4 per cent). In terms of educational level, 32.6 per cent of the participants had received middle schooling or below, 24.1 per cent had completed some vocational school education, 29.9 per cent had some college certificates, 12.5 per cent had a university degree, and 0.8 per cent had postgraduate qualifications. Participants were drawn from European-invested companies (9.8 per cent), the US-invested (15.2 per cent), Hong Kong-invested (12.0 per cent), Taiwan-invested (13.2 per cent), Japan-invested (10.8 per cent), South Korea-invested (14.5 per cent), Chinese state-owned enterprises (11.5 per cent) and Chinese private companies (13.0 per cent).

Measurement

A Shortened Stress Evaluation Tool, ASSET (Cartwright & Cooper, 2002; Faragher, Cooper, & Cartwright, 2004) covers important sources of stress in the workplace and has been validated in many countries (Donald et al., 2005; Johnson, 2009; Johnson & Cooper, 2003; Tytherleigh et al., 2007), and based on it, we expect that small workplace hassles may together activate cognitive vulnerabilities in employees and will be a precursor of depression. Donald et al. (2005) adopted the stressor scale of ASSET and found it related to mental health in a large sample in the UK (N = 16,001). In a recent review, Johnson (2009) reported that each of the ASSET scales has good reliability across studies. The Psychological Well-being Scale of ASSET has been found reliable and valid in Chinese samples (Siu, Spector, Cooper, & Lu, 2005); however, the stressor scale of ASSET has not yet been used in Chinese samples. The current study therefore attempted to replicate Western findings to use the stressor scale of ASSET to measure employees' stress perceptions, which comprises eight subscales of job stressors:

- Work relationships (eight items). Items such as 'my relationship with colleagues are poor' and 'I do receive the support from others (boss/ colleague) that I would like', evaluate issues arising from the contacts people have work with their colleagues/managers.
- Your job (eight items). This subscale relates to the fundamental nature of the job itself. Example items are 'my physical working conditions are unpleasant (noisy, dirty, poorly designed)' and 'my performance at work is closely monitored'.
- Overload (four items). Contains items such as 'I do not have enough time to do my job as well as I would like', which examine workload and time pressure being experienced by the respondent.
- Control (four items). Information about the respondent's perception of the amount of control they

have over their work is evaluated using items such as 'I am not involved in decisions affecting my job'.

- Job security (four items). Explores the level of job security perceived by the respondent to determine the extent to which this is considered a stressor. An example item is 'my job skills may become redundant in the near future'.
- Resources and communication (four items). Issues relating to the equipment/resources available at work and the respondent's perception of the effectiveness of the communication processes within their organization are measured. An example item is 'I do not have the proper equipment or resources to do my job'.
- Work-life balance (four items). This factor evaluates the extent to which the demands of work interfere with the respondent's personal and home life. An example item is 'I work longer hours than I would choose to'.
- Pay and benefits (one item). The financial rewards obtained from work often influence feelings of self-worth and are perceived to indicate the individual's value to the organization. A single item measures the extent to which pay and benefits are considered a source of stress.

These 37 items were translated into Chinese by a back translation method by the second author. Permission to use the scales was sought from the founders of ASSET. The questions were answered on a six-point Likert scale: from strongly disagree to strongly agree. We excluded the single-indicator factor of pay and benefit, and conducted a confirmatory factor analysis to evaluate the factor structure of the other 36 items. The chi-square of the seven-factor model was 2212.92 ($df = 573$, $p < 0.001$). The goodness-of-fit index (GFI), comparative fit index (CFI) and normed fit index (NFI) were 0.87, 0.80 and 0.75, respectively, and the root-mean-square error of approximation (RMSEA) was 0.058. These results indicated that the model did not fit to this sample very well. We then modified the scale by removing 12 items based on large standardized residuals (i.e. greater than ± 2), salience of item content across jobs and consideration of maintaining at least two items for each latent factor (Motl & Conroy, 2000). The chi-square of the modified seven-factor scale was 823.19 ($df = 231$, $p < 0.001$). The GFI, CFI and NFI were 0.92, 0.90 and 0.87, respectively, and the RMSEA was 0.055. Even though fit indexes of 0.90 are considered acceptable, indexes > 0.95 are preferable according to Hu and Bentler (1999). These results together indicate that the 24-item seven-factor scale provides a fair fit to the data. A summation of mean scores for each sub-scale represents a stressor measure, with high scores indicating higher levels of stressors. The coefficient alpha is 0.90.

Social support. Seven items were used to assess two measures of informal social support: objective social support (four items) (e.g. 'When you encounter problems, do you receive comfort and concern from spouse, friends, neighbours or co-workers?') and subjective social support (three items) (e.g. 'How many close friends that you can receive support and care?'). These seven items were extracted from the 10-item social support scale developed by Xiao (1994; 1999), which has been used in

numerous studies in clinical settings in China. We excluded the three-item support-seeking scale because it was more like a measure of coping behaviour. We further dropped one item, 'how frequently do you receive support and care from your family members (e.g. spouse, parents, children, siblings, and other)', from the subjective informal social support scale because the participants were mostly migrant workers and the informal support from their family members was generally unavailable. A confirmatory factor analysis was then conducted to evaluate the factor structure of the informal social support scale. The chi-square of the two-factor model was 43.01 ($df = 8$, $p < 0.001$). The GFI, CFI and NFI were 0.98, 0.97 and 0.96, respectively, and the RMSEA value was 0.072. These results suggested that the two-factor model provides a good fit to the data. The scoring system for computing factors scores is the summing of the scores across those items allocated to each factor. The coefficient alphas for objective informal support and subjective informal support are 0.65 and 0.55, respectively.

Coping strategies. Modelled on the work by Siu (2002), 15 items adapted from the Coping Scale of the Occupational Stress Indicator (Cooper, Sloan, & Williams, 1988) were used to measure active coping, overeating/overdrinking, passivity and distancing. A confirmatory factor analysis was further conducted to evaluate the factor structure of the coping scale. The chi-square of the four-factor model was 354.374 ($df = 84$, $p < 0.001$). The GFI, CFI and NFI were 0.95, 0.85 and 0.81, respectively, and RMSEA was 0.062. Taken together, these results indicate that the four-factor model provides a fair fit to the data. The coefficient alphas are 0.54, 0.72, 0.59 and 0.58 for the four respective subscales.

Depression. The 20-item Center for Epidemiological Survey-Depression Scale (CES-D) was used to measure depression. It has been translated and revised in China (Zhang, Gong, & Wu, 1987). The participants were asked how frequent were the 20 depressive symptoms that they might have experienced in the 7-day period preceding the survey. Each item was rated from '0' for 'less than 1 day' to '3' for '5–7 days'. The scores were then summed to obtain total scores ranging from 0 to 60. The coefficient alpha for this 20-item CES-D scale is 0.81.

Control variables. We used respective single items to measure the control variables of gender, age, education level and organizational types. Gender was coded as 1 for male and 2 for female. Age was measured by a scale reflecting four intervals: '1' was for below 21 years old, '2' for 21 to 36 years old, '3' for 37 to 55, and '4' for above 55. Education level was measured on a scale reflecting five categories: (1) middle school or below; (2) vocational school education; (3) college certificates; (4) university degree; and (5) post-graduate qualifications. The categories were coded from 1 to 5. Organizations of various funding/ownership sources, labelled as organizational types, were grouped into Western firms and Eastern firms. Western firms were coded as '1' and included firms that were invested by European and North American countries; while Eastern firms were coded as '2' and indicated

Chinese private firms, Chinese state-owned enterprises and those firms that were invested by Asian entities such as Japan, South Korea, Taiwan and Hong Kong.

Data analysis

Independent-samples t-test was adopted to compare the mean values of job stressors between Western and Eastern firms. Hierarchical regression analyses were conducted to test the hypotheses about the antecedents and moderating variables in predicting depression (Aiken & West, 1991; Baron & Kenny, 1986). In order to avoid the confounding of results due to co-variation of background characteristics of respondents with the independent and dependent variables, and on the assumption that these variables both conceptually and temporally precede other study variables, four demographic or contextual factors were controlled in all of the analyses: gender, age, education level, and organizational types. Thus, in regressions predicting depression, the control variables were entered as a block in the first step. To examine the main effects, job stressors, two factors of informal support and four coping strategies were entered into the regression equation in the second step. The products of job stressors and two factors of informal support, and the products of job stressors and four coping strategies were entered into the regression in the third step to examine the significance of interaction effects. The centring procedures were also adopted (Aiken & West, 1991).

Results

The means and independent-samples t-test results for the eight aspects of job stressors and stressors in total between Western firms and Eastern firms are presented in Table I. There was a significant difference of stressors in total between Western firms and Eastern firms. Specifically, employees who worked in Western firms reported significantly higher level of stress than those who worked in Eastern firms (mean difference = 1.12, $t = 2.41$, $p < 0.05$). A further examination of eight aspects of job stressors suggested that the difference can largely be attributed to four factors: work relationships ($t = 2.18$, $p < 0.05$), work overload ($t = 2.01$, $p < 0.05$), work-life balance ($t = 2.48$, $p < 0.01$), and pay and benefits ($t = 2.63$, $p < 0.01$).

The results of zero-order correlations for the study variables are presented in Table II. As shown in this table, the magnitude of the correlation between stressors and depression was 0.28 ($p < 0.01$), whereas the correlations between two components of social support and depression were lower (from $r_s = -0.14$ to $r_s = -0.21$, $p < 0.01$), and those between four components of coping strategies and depression vary and range from -0.03 ($p = \text{n.s.}$) to 0.32 ($p < 0.01$).

The results of the regression that tested the hypothesized antecedents and moderating variables of depression are presented in Table III. Job stressors were positively related with depression ($b = 0.16$, $p < 0.01$), which provides support for Hypothesis 1. Hypotheses 2a and 2b, about direct and moderating effects of informal social support, were partially supported. Subjective informal support was negatively related with depression ($b = -0.11$, $p < 0.01$), and objective informal support was a

significant moderator for depression ($p < 0.05$).

To illustrate this interaction effect, we followed the procedures recommended by Aiken and West (1991) in which we examined the relationship between stressors and depression separately for employees with high level of objective informal support [one standard deviation (SD) above the mean] and low level of objective informal support (one SD below the mean). As can be seen in Figure 1, when objective informal support was low, higher levels of stressors led to higher levels of depression. In fact, the result of simple slope analyses suggested by Aiken and West (1991) revealed that stressors were significantly (positively) related to depression ($b = 0.40$; $p < 0.001$) when objective informal support was low and stressors were less significantly related to depression ($b = 0.22$; $p < 0.01$) when objective informal support was high.

Concerning coping, it is worth noting that passivity had a significant main effect on depression ($b = 0.24$, $p < 0.01$), which suggests that passive employees tend to be more depressive. Hypothesis 3, which states that coping strategies will moderate the relationship between job stressors and depression, received partial support with distancing as a significant moderator for depression ($p < 0.05$). To illustrate the interaction effect of distancing behaviour, we replicated the above procedures and examined the relationship between stressors and depression separately for employees with high level of distancing behaviours and low level of distancing behaviours. As can be seen in Figure 2, when distancing was low, higher levels of stressors led to higher levels of depression. In fact, the simple slope analyses revealed that stressors were significantly (positively) related to depression ($b = 0.41$; $p < 0.001$) when distancing was low, and stressors were less significantly related to depression ($b = 0.19$; $p < 0.01$) when distancing was high.

Table I. Independent-samples *t*-test results of job stressors between Western firms and Eastern firms ($N = 843$).

	Western firms ($N = 211$)		Eastern firms ($N = 632$)		<i>t</i>	Sig.
	Mean	SD	Mean	SD		
Work relationships	2.85	0.84	2.71	0.82	2.18	*
Your job	3.01	0.95	2.99	1.07	0.24	n.s.
Control	3.02	0.96	2.92	0.95	1.24	n.s.
Job security	3.40	1.10	3.25	1.18	1.57	n.s.
Overload	2.94	0.92	2.80	0.91	2.01	*
Resources and communication	3.09	0.96	3.04	1.01	0.53	n.s.
Work-life balance	3.25	1.17	3.02	1.17	2.48	*
Pay and benefits	4.03	1.42	3.73	1.42	2.63	**
Stressors in total	25.58	5.68	24.46	5.85	2.41	*

* Significant at the 0.05 level.

** Significant at the 0.01 level.

Sig: significance; SD: standard deviation; n.s.: not significant.

Table II. Mean, SD, coefficient alphas and intercorrelations among main variables (N = 843).

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Gender	1.52	0.50	—	—	—	—	—	—	—	—	—	—	—	—
2. Age	2.04	0.43	-0.20**	—	—	—	—	—	—	—	—	—	—	—
3. Education level	2.25	1.07	-0.07	0.09*	—	—	—	—	—	—	—	—	—	—
4. Organizational types	1.75	0.43	-0.08*	0.10**	-0.18**	—	—	—	—	—	—	—	—	—
5. Stressors	24.74	5.83	-0.07	-0.03	-0.12**	-0.08*	0.90	—	—	—	—	—	—	—
6. Objective informal support	6.38	2.93	-0.01	0.06	0.07*	0.07*	-0.18**	0.65	—	—	—	—	—	—
7. Subjective informal support	5.80	1.62	0.06	0.01	-0.05	0.12**	-0.23**	0.20**	0.55	—	—	—	—	—
8. Active coping	3.75	0.77	-0.06	0.09**	0.08*	0.00	-0.07	0.24**	0.23**	0.54	—	—	—	—
9. Overeating and drinking	1.65	0.88	-0.33**	0.13**	-0.04	0.00	0.13**	-0.01	-0.05	0.05	0.72	—	—	—
10. Passivity	2.75	0.84	0.07	-0.05	-0.07*	-0.04	0.19**	-0.09**	-0.15**	-0.02	0.16**	0.59	—	—
11. Distancing	2.46	0.82	0.01	0.04	-0.07*	-0.13**	0.36**	-0.11**	-0.11**	0.05	0.16**	0.19**	0.58	—
12. Depression	15.96	7.06	-0.02	-0.11**	-0.05	-0.05	0.28**	-0.14**	-0.21**	-0.03	0.12**	0.32**	0.18**	0.81

Values in diagonals from 4 to 11 are coefficient alphas.

* Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.

Gender—1: Male; 2: Female.

Organizational types—1: Western firms; 2: Eastern firms.

M: mean; SD, standard deviation.

Table III. Regression of depression on demographic characteristics, stressors, informal social support and coping (N = 843).

	Standardized coefficient β		
Control variables			
Gender	-0.05	-0.02	-0.02
Age	-0.11**	-0.10**	-0.11**
Education level	-0.05	0.00	-0.01
Organizational types	-0.05	0.01	-0.00
Independent variables			
Stressors	—	0.16**	0.16**
Objective informal support	—	-0.06	-0.07
Subjective informal support	—	-0.13**	-0.11**
Active coping	—	0.03	0.03
Overeating and drinking	—	0.06	0.07
Passivity	—	0.25**	0.24**
Distancing	—	0.04	0.06
Interaction			
Stressors \times Objective informal support	—	—	-0.08*
Stressors \times Subjective informal support	—	—	-0.04
Stressors \times Active coping	—	—	0.01
Stressors \times Overeating and drinking	—	—	-0.05
Stressors \times Passivity	—	—	0.02
Stressors \times Distancing	—	—	-0.09*
R^2	0.02	0.18	0.20
Adjusted R^2	0.01	0.17	0.18
F	3.82**	16.64**	11.85**
ΔR^2	0.02**	0.17**	0.02*

* Correlation is significant at the 0.05 level.

** Correlation is significant at the 0.01 level.

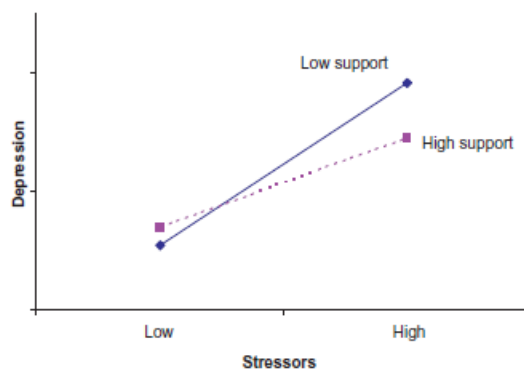


Figure 1. Moderating effect of objective informal support on the relationship between stressors and depression.

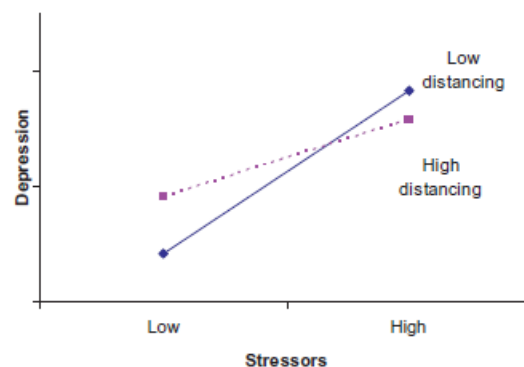


Figure 2. Moderating effect of distancing on the relationship between stressors and depression.

Discussion

The primary aims of this study were to further our understanding of the influence of job stressors on employee mental health (depression) and to examine stress moderators that might mitigate this relationship. The findings support the salience of job stressors in relation to depression. Employees who were exposed to higher level of job stressors were more likely to report depressive symptoms. This result corroborates both Asian and Western findings (e.g. Donald et al., 2005; Tsutsumi et al., 2001). The findings also generally confirm the direct and moderating effects of informal social

support. Specifically, subjective informal support was negatively related to depression, whereas objective informal support moderated the negative impact of job stressors on depression. Apparently, these results are somewhat different from what were obtained in previous studies in Hong Kong using samples of older persons (Phillips et al., 2008; Siu & Phillips, 2002). They found only subjective informal support was a significant important predictor of psychological well-being. It seems that, for employees in different enterprises in China, enlarging their social network and having more frequent contacts with spouse, friends, neighbours, and co-workers are already good enough to enhance their mental health or alleviate their depressive symptoms. Human resources management in China could consider organizing more activities for staff to increase their social networks. As argued earlier, findings from previous research concerning the role of informal support on stress processes have been inconsistent (e.g. Dormann & Zapf, 2002), which may be because different types of informal support are not clearly classified or controlled. To a certain extent, our findings support the idea of isolating social support from palliative coping measures (Dewe, 1989) in stress and health research (e.g. Schwarzer et al., 2004; Schwarzer & Knoll, 2007). If social support were considered as an emotion-focused coping, which is usually categorized as a palliative coping, the beneficial role of social support would have been neglected. Future research should therefore probably look more into the separate roles of objective and subjective measures of informal social support in stress and health research in the workplace.

Regarding the role of coping, our findings also support the direct and moderating effects of some coping strategies. We found that passivity directly fostered depressive symptoms. In a previous study in Greater China, Siu et al. (2006) found that passive adaptive coping relatively has a direct maladaptive effect on work well-being, so our result again corroborated the finding. Further, we found distancing has a positive buffering effect on the relationship between stressors and depression, in that the stressor–depression relationship was weaker when distancing coping was adopted. This can be attributed to the fact that distancing is similar to the traditional Chinese philosophy of Tao. As mentioned earlier, Tao's basic tenets of *dao* (the way) and *wuwei* (non-intervention) can help workers change a chaotic situation to a harmonious one in some circumstances. To reiterate, these may be considered coping resources before crises and are particularly useful for those workers who are in relatively disadvantaged positions in China. Therefore, the adaptive potential of coping through distancing, a kind of emotion-focused approach, has been reaffirmed (Folkman & Moskowitz, 2004; Stanton et al., 2002). These findings have practical implications for human resource managers who could conduct intervention work on stress management by providing training in appropriate coping strategies for Chinese employees in China.

Work stress research specifically relating to depression has, to date, been conducted primarily in the West, so extending this area of research to a large Chinese sample drawn from different types of enterprises in the current study has provided evidence of generalizability of theories in the literature. We believe our results can be generalized to Chinese populations in other cities in China. Our results further found that employees who worked in Western firms perceived higher level of

stress than those who worked in Eastern firms. It would seem that Western firms could alleviate some employees' work stress through management practices such as building quality work relationships, supporting employees' family caring responsibilities and allowing more job autonomy among employees.

The present study contributes to existing literature in three ways. Firstly, it contributes to cross-cultural research by testing the relationship between job stressors and depression in a large sample of Chinese employees from different enterprises and by using a Western job stressor scale. Secondly, the current study attempts to examine the differential direct and moderating effects of the two types of informal social support and of the different coping strategies on the relationship between work stress and depression. Thirdly, the current study contributes to development of positive psychology by exploring stress moderators to enhance mental health in the workplace.

The current study is the first to have adopted the Chinese version of the stressor scale of ASSET, and our study finds the modified shortened scale reliable and valid. Hence, to a certain extent, we are able to extend this scale from Western work settings to a wider geographical population. Because the ASSET stressor scale covers different sources of stress in the workplace, future research in Chinese societies or comparative studies can replicate this research using such measure to further explore its validity.

Limitations and future research

The main weakness of this study is likely to be that the measures were derived from self-reports of participants, thereby exposing the findings to interpretations from common biases, response consistency effects and the like. This is not an uncommon criticism of research in the area of work stress and depression, in that both constructs consist of cognitions and perceptions and that one is naturally led to use self-report strategies for operationalizing them. Furthermore, the alphas for some of the informal social support and coping scales are rather low. Future research could consider using better measures that have been validated in Chinese societies such as the 12-item Chinese Coping Strategies scale (Maxwell & Siu, 2008; Siu et al., 2006) and the informal support scales (Phillips et al., 2008). The other limitation to the study is the restriction of the assessment to depression as an indicator of mental health. Future research could valuably assess more high prevalence psychological problems affecting Chinese populations including anxiety and somatic symptoms.

References

- Aiken, L.S., & West, S.G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage.
- Allen, N.J., & Meyer, J.P. (1990). The measurement and antecedent of affective, continuance, and normative commitment to the organization. *Journal of Occupational Psychology*, 63, 1–18.
- Anderson, J.G. (1991). Stress and burnout among nurses: A Social network approach. *Journal of*

Social Behavior and Personality, 6, 251–272.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.

Cartwright, S., & Cooper, C.L. (2002). *ASSET: Management guide*. Manchester, UK: Robertson Cooper.

Chi, I., & Chou, K.L. (2001). Social support and depression among elderly Chinese people in Hong Kong. *International Journal of Aging and Human Development*, 52, 231–252.

Chiu, W.C.K. (2002). Do types of economic ownership matter in getting employees to commit? An exploratory study in the People's Republic of China. *International Journal of Human Resource Management*, 13, 865–882.

Cohen, S., & Wills, T.A. (1985). Stress, informal support, and the buffering hypothesis. *Psychological Bulletin*, 98, 310–357. Cooper, C.L., Sloane, S.J., & Williams, S. (1988). *Occupational Stress Indicator (OSI): Management guides*. Windsor: NFER Nelson.

Dewe, P.J. (1989). Examining the nature of work stress: Individual evaluations of stressful experiences and coping. *Human Relations*, 42, 993–1013.

Donald, I., Taylor, P., Johnson, S., Cooper, C., Cartwright, S., & Robertson, S. (2005). Work environments, stress, and productivity: An examination using ASSET. *International Journal of Stress Management*, 12, 409–423.

Dormann, C., & Zapf, D. (2002). Social stressors at work, irritation, and depressive symptoms: Accounting for unmeasured third variables in a multi-wave study. *Journal of Organizational and Occupational Psychology*, 75, 33–58.

Faragher, E.B., Cooper, C.L., & Cartwright, S. (2004). A shortened stress evaluation tool (ASSET). *Stress and Health*, 20, 189–201.

Folkman, S. (1984). Personal control and stress and coping processes: A theoretical analysis. *Journal of Personality and Social Psychology*, 46, 839–852.

Folkman, S., & Moskowitz, J.T. (2004). Coping: Pitfalls and promise. *Annual Review of Psychology*, 55, 745–774.

Ganster, D.C., Fusilier, M.R., & Mayes, B.T. (1986). Role of informal support in the experience of stress at work. *Journal of Applied Psychology*, 71, 102–110.

Holahan, C.J., Holahan, C.K., Moos, R.H., & Brennan, P.L. (1997). Psychosocial adjustment in patients reporting cardiac illness. *Psychology & Health*, 12, 345–360.

Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55.

Hu, T.W., He, Y., Zhang, M., & Chen, N. (2007). Economic costs of depression in China. *Social Psychiatry and Psychiatric Epidemiology*, 42, 110–116.

Johnson, S. (2009). Organizational screening: The ASSET model. In S. Cartwright, & C.L. Cooper (Eds), *The Oxford handbook of organizational well-being* (pp. 133–155). Oxford, UK: Oxford

University Press.

Johnson, S., & Cooper, C.L. (2003). The construct validity of the ASSET stress measure. *Stress and Health*, 19, 181–185.

Jones-Johnson, G., & Johnson, W.R. (1992). Subjective underemployment and psychosocial stress: The role of perceived social and supervisor support. *Journal of Social Psychology*, 132, 11–21.

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

Lambert, V.A., Lambert, C.E., Petrini, M., & Li, X.M. (2007). Predictors of physical and mental health in hospital nurses within the People's Republic of China. *International Nursing Review*, 54, 85–91.

Lazarus, R.S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.

Lee, R.P.L. (1985). Social stress and coping behavior in Hong Kong. In W.S. Tseng, & D.Y.H. Wu (Eds), *Chinese Culture and Mental Health* (pp.193–210). Orlando: Academic Press, Inc.

Marshall, N.L., Barnett, R.C., & Sayer, A. (1997). The changing workforce, job stress, and psychological distress. *Journal of Occupational Health Psychology*, 2, 99–107.

Mathers, C.D., Bernard, C., Iburg K., Inoue, M., Ma Fat, D., Shibuya, K., Stein, C., Tomijima, N. (2003). The global burden of disease in 2002: Data sources, methods and results. Geneva: World Health Organization (gpe discussion paper no. 54). Retrieved 8 December 2008, from <http://www.who.int/evidence>.

Mathieu, J.E., & Zajac, D.M. (1990). A review and meta- analysis of the antecedents, correlates, and consequences of organizational commitment. *Psychological Bulletin*, 108, 171–194.

Maxwell, J.P., & Siu, O.L. (2008). The Chinese Coping Strategies Scale: Relationships with aggression, anger, and rumination in a diverse sample of Hong Kong Chinese adults. *Personality and Individual Differences*, 44, 1049–1059.

Motl, R.W., & Conroy, D.E. (2000). Validity and factorial invariance of the social physique anxiety scale. *Medicine and Science in Sports and Exercise*, 32, 1007–1017.

Peterson, C. (2006). *A primer in positive psychology*. New York Oxford University Press.

Phillips, D.R., Siu, O.L., Yeh, A.G.O., & Cheng H.C.K. (2008). Informal social support and older persons' psycho- logical well-being in Hong Kong. *Journal of Cross Cultural Gerontology*, 23, 39–55.

Schwarzer, R., & Knoll, N. (2007). Functional roles of social support within the stress and coping process: A theoretical and empirical overview. *Internal Journal of Psychology*, 42, 243–252.

Schwarzer, R., Knoll, N., & Rieckmann, N. (2004). Social support. In A. Kaptein, & J. Weinman (Eds), *Health Psychology* (pp. 158–182). Oxford, UK: Blackwell.

Seligman, M.E.P. (2008). Positive health. *Applied Psychology: An International Review*, Special Issue on: Health and Well-being, 57, 3–18.

Seligman, M.E.P., & Csikszentmihalyi, M. (2000). Positive psychology: An introduction. *The American Psychologist*, 55, 5–14.

Semmer, N. (1996). Individual differences, work stress and health. In M. J. Schabracq, J.A.M.

- Winnubst, & C.L. Cooper (Eds), *Handbook of work and health psychology* (pp.51–86). Chichester: Wiley.
- Siu, O.L. (2002). Occupational stressors and well-being among Chinese employees: The role of organizational commitment. *Applied Psychology: An International Review*, 51, 527–544.
- Siu, O.L., & Phillips, D.R. (2002). A study of family support, friendship, and psychological well-being among older women in Hong Kong. *International Journal of Aging and Human Development*, 55, 299–319.
- Siu, O.L., Spector, P.E., & Cooper, C.L. (2006). A three-phase study to develop and validate Chinese coping strategies scales. *Personality and Individual Differences*, 41, 537–548.
- Siu, O.L., Spector, P.E., Cooper, C.L., & Lu, C.Q. (2005). Work stress, self-efficacy, Chinese work values and work well-being in Hong Kong and Beijing. *International Journal of Stress Management*, 12, 274–288.
- Sparks, K., & Cooper, C.L. (1999). Occupational differences in the work-strain relationship: Towards the use of situation-specific models. *Journal of Occupational and Organizational Psychology*, 21, 219–229.
- Spector, P.E. (1986). Perceived control by employees: A meta- analysis of studies concerning autonomy and participation at work. *Human Relations*, 39, 1005–1016.
- Stanton, A.L., Parsa, A., & Austenfeld, J.L. (2002). In C.R. Snyder, & S.J. Lopez (Eds), *Handbook of positive psychology* (pp.148–158). New York: Oxford University Press.
- Torkelson, E., & Muhonen, T. (2004). The role of gender and job level in coping with occupational stress. *Work and Stress*, 18, 267–274.
- Tsutsumi, A., Kayaba, K., Theorell, T., & Siegrist, J. (2001). Association between job stress and depression among Japanese employees threatened by job loss in a comparison between two complementary job-stress models. *Scandinavian Journal of Work, Environment & Health*, 27, 146–153.
- Tytherleigh, M. Y., Jacobs, P. A., Webb, C., Ricketts, C., & Cooper, C.L. (2007). Gender, health, stress in English university staff—exposure or vulnerability? *Applied Psychology: An International Review*, 56, 267–287.
- Widerszal-Bazyl, M., Cooper, C.L., Sparks, K., & Spector, P.E. (2000). Managerial stress in private and state organizations in Poland. *Stress Medicine*, 16, 299–314.
- Wong, Y.T., Wong, C.S., Ngo, H.Y., & Lui, H.K. (2005). Different responses to job insecurity of Chinese workers in joint ventures and state-owned enterprises. *Human Relations*, 58, 1391–1418.
- Xiao, S.Y. (1994). Theory and application of informal support questionnaire. *Journal of Clinical Psychological Medicine*, 2, 98–100.
- Xiao, S.Y. (1999). Informal support questionnaire. In X.-D. Wang, X.-L. Wang, & H. Ma (Eds), *Rating Scales for Mental Health* (suppl.) (pp. 127–131). Beijing: Chinese Mental Health Journal (in Chinese).
- Xu, D., Pan, Y., Wu, C., & Yim, B. (2006). Performance of domestic and foreign-invested enterprises in China. *Journal of World Business*, 41, 261–274.

Yip, B., Rowlinson, S., & Siu, O.L. (2008). Coping strategies as moderators in the relationship between role overload and burnout. *Construction Management and Economics*, 26, 871–882.

Zhang, M.Y., Gong, H.J., & Wu, W.Y. (1987). Validation the Center for Epidemiological Studies-Depression Scale (CES-D) in China. *Chinese Psychiatry Journal*, 20, 67–71.