


1996

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Siu, O. L. (1995). Stress at work, coping, and workers' health of an acquired firm in Hong Kong (CPPS Working Paper Series No.30). Retrieved from Lingnan University website: <http://commons.ln.edu.hk/cppswp/22/>

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No. 30 (2/96) CPPS

**STRESS AT WORK, COPING,
AND WORKERS' HEALTH OF AN
ACQUIRED FIRM IN HONG KONG**

by

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Hong Kong
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Stress at work, coping, and workers' health of an acquired firm in Hong Kong

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Abstract. The structure of the Occupational Stress Indicator (OSI) was adopted as the model to investigate the impact of acquisition stress on workers' health effects. Data were obtained from 101 employees of an acquired firm in Hong Kong. Workers' perceived work pressure was negatively related to job satisfaction, and positively related to mental ill-health, and physical ill-health. Hierarchical moderated regression analyses were employed to study the stressor-strain relationship, and the extent coping strategies moderate this relationship. The results showed that a combination of stressors related significantly to the strain effects, but only a few individual stressors were strong predictors. Coping strategies had direct effect on the strain variables; and also moderating effect on the stressor-strain relationship. Further analyses revealed that only a few individual coping skills were particularly useful in buffering some of the stressor-strain relationship. The results of the study provide some validation data of the OSI in a Chinese sample.

In the past decade, merger and acquisition has become a worldwide growth industry, and this merger wave is still prevailing in the UK, USA, and Europe in the mid 1990s. Yet more than half of all mergers and acquisitions are proved to be financially unsuccessful (Business Week, 1985; Marks, 1988). It has been argued that the human aspects are neglected in the attribution of merger failures (Hunt, 1987; Levinson, 1970). Davy, Kinicki, and Scheck (1988) even attributed 'employee problems' as being responsible for between one-third to one half of all merger failures. Napier (1989) proposed that in future research on mergers and acquisitions, the areas of both financial measures and measures of reactions of employees should be expanded.

In psychological terms, mergers and acquisitions represent a major life event as conceptualized by Holmes and Rahe (1967). This sudden and major organizational change is believed to be associated with lowered morale, job dissatisfaction, unproductive

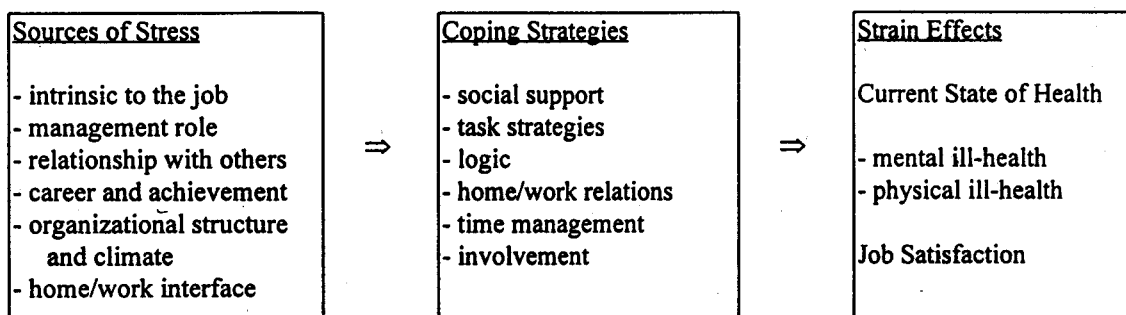
behaviour, increased staff turnover and absenteeism rates (Hall and Norburn, 1987; Schweiger and Ivancevich, 1985; Sinetar, 1981; Walsh, 1988). In other words, all mergers and acquisitions are stressful (Ashford, 1988; Cartwright and Cooper, 1990, 1993; Cooper, Cooper and Eaker, 1988).

Most important of all, the stress effects are likely to exert a long-term adverse impact on the physical, psychological and mental well-being of employees. These long-term effects can continue up to six months (Ashford, 1988), and even four years (Cooper and Payne, 1988). There are several merger stress impact models proposed so far (Bruckman and Peters, 1987; Cooper and Marshall, 1978; Cooper, Sloan and Williams, 1988; Schweiger and Ivancevich, 1985).

It has been proposed that the merger and acquisition stress level can be moderated by individual characteristics, such as Type A/B behaviour, locus of control, and coping resources employed (Ashford, 1988; Cartwright and Cooper, 1992; Schweiger and Ivancevich, 1985).

This paper reports the results of a study of employees' stress and health effects in a media company in Hong Kong, which has been acquired after about 18 months. The rationale behind the study is based on the structure of the Occupational Stress Indicator proposed by Cooper, Sloan and Williams (1988). They devised the Occupational Stress Indicator (OSI) as a diagnostic instrument, and it was originally standardized on a population of white collar workers in industry in the U.K.. The instrument has also been widely used in the U.K. and some other European countries, and has established reliability and both predictive and criterion oriented validity (Cooper and Bramwell, 1992; Rees and Cooper, 1991; Robertson, Cooper and Williams, 1990). A simplified version of which is depicted in Figure 1.

Fig. 1. A simplified structure of the Occupational Stress indicator.



SOURCE: Adapted from Sloan, Cooper and Williams (1988).

In this model, sources of stress affect workers' mental health, physical health, and job satisfaction. Coping strategies has both a direct effect and a moderating effect that buffers the stressor-strain relationship.

The objectives of the study are:

1. To measure the stress-strain relationship.
2. To measure the relationship between sources of stress and strain effects.
3. To test the moderating effect of coping strategies on the stressor-strain relationship.
4. To provide some validation data on the OSI.

The hypotheses of the study are:

1. Work pressure is negatively related to job satisfaction, and is positively related to mental ill-health and physical ill-health.
2. Sources of stress are negatively related to job satisfaction, and are positively related to mental ill-health and physical ill-health.
3. Coping strategies moderate the stressor-strain relationship.

Method

Sample

Out of 1,209 staff, 101 employees (40.6% men, 59.4% women) of different nationalities (mainly Chinese and British (Hong Kong), the rest were American, Australian, British, Canadian, Indian and Singaporean) from different ranks (34.7% management level, 65.3% operational level) of a firm, which was merged in July 1993 and then fully acquired by an Australian corporation in July 1995, were selected for study in the sample.

The respondents were quite young, 56.4% of them were between 21 and 25 years old, and 33.7% were between 26 and 30. As far as educational level is concerned, 79.3% of them have attained tertiary or above qualifications. Mostly, the respondents' current job experience was less than one year (38.6%), and between one to two years (49.5%).

Measures

Five areas of the OSI were used as the instrument for the study. The items were translated into Chinese by the Chinese author. One of the managers in the firm was asked to send 150 self-completion questionnaires to the selected sample through internal mails in the middle of October 1995. After several follow-up telephone contacts, 101 completed questionnaires were returned by the end of October of the same year. The descriptions of the dependent and independent variables are given below.

Dependent variables

The dependent variables include measures of job satisfaction, mental and physical health symptoms. All items are of a six-point Likert-type scale, with high scores representing high levels of job satisfaction and high levels of symptoms respectively.

Job satisfaction. 22 items from the OSI were used to measure job satisfaction.

Mental health. 18 items from the OSI were used to measure workers' mental ill-health.

Physical health. 12 items from the OSI were used to measure workers' physical ill-health.

Independent variables

The independent variables include sources of stress and coping strategies. All items are of a six-point Likert-type scale, with high scores representing higher potential sources of stress and coping skills.

Sources of stress. 61 items from the OSI were used to measure six sources of stress as depicted in Figure 1, and the definitions of the stressors are presented in the Appendix.

Coping strategies. 28 items from the OSI were used to measure six coping skills as depicted in Figure 1, and the definitions of the coping skills are presented in the Appendix.

The questionnaire also includes measures of background variables and a single item asking the respondents how often they perceived work pressure in the past 12 months by choosing 'almost never', 'seldom', 'occasionally' or 'often' as scored 1 to 4. Questions concerning absenteeism, turnover, smoking and drinking habits were also included.

Results

There was no significant absenteeism, turnover rate, severe smoking or drinking problems detected among the respondents. In response to the question of perceived work pressure, 68.3% of the respondents chose either 'always' or 'occasionally' in the past 12 months. The correlations between work pressure and strain effects are presented in Table 1. Work pressure was found to be negatively related to job satisfaction, and positively related to mental ill-health physical ill-health. Therefore the first hypothesis depicted on p. 3 can be supported.

Table 1. Zero-order Pearson Product-moment Correlations for Work Pressure and Strain Effects.

	<u>Job Satisfaction</u>	<u>Mental ill-health</u>	<u>Physical ill-health</u>
Work Pressure	-.20*	.25**	.27**

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

In order to verify the second and third hypothesis of the study, moderated multiple regression analyses were conducted to investigate the relationship between the sources of stress and the strain variables, and the extent to which coping strategies moderate the stressor-strain relationship. Table 2 provides the zero-order intercorrelations, means, and standard deviations for all variables used in the regression analyses. The scales are reliable enough to allow interpretation (Cohen & Cohen, 1975). A series of t-tests of the means of each variable between sex, and that between rank (managerial or operational level) did not reveal any significant difference. The results in Table 2 also show that sources of stress were negatively related to job satisfaction, and positively related to mental ill-health, and physical ill-health. Therefore, the second hypothesis depicted on p.3 was supported.

Table 2. Means, Standard Deviations, Reliabilities and Zero-order Pearson product-moment correlations for the variables used in regression analysis.

	Sources of Stress	Job Satisfaction	Mental ill-health	Physical ill-health	Coping Strategies
Sources of Stress					
Job Satisfaction	-.32**				
Mental ill-health	.40***	-.40***			
Physical ill-health	.41***	-.17	.51***		
Coping Strategies	-.04	.22*	-.27**	-.21*	
Mean	203.31	86.01	55.84	35.59	114.39
SD	38.67	11.33	7.89	8.22	11.43
Reliability(α)	.96	.94	.80	.85	.84

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

Note. The score of sources of stress is the total score of all six stressors, and the score of coping strategies is the total score of all coping skills.

A hierarchical regression analysis (Aiken and West, 1991; Stone and Tollenberg, 1989) was performed to test the main and interaction effects of coping on sources of stress and strain variables: all sources of stress were entered first, followed by coping, and then stressor x coping. A negative interaction term reflects the buffering effect, whereas a positive one indicates an "opposite buffering" (Ganster, Fusiler, and Mayes, 1986). Table 3 presents the significant R^2 showing the sources of stress accounted for statistically significant portion of variance in the strain variables, and their interactions. These promising results justify the procedures of examining the individual effects. Table 4 to 6 present the detailed regression analyses for each stressor-strain relationship.

In Model 1 of Table 4, 'relationships with others' and 'organizational structure/climate' were predictors of job satisfaction. In Model 2, coping strategies were positively related to job satisfaction. In Model 3, when the interaction variables (sources of stress x coping strategies) were entered into analyses, coping strategies only buffered significantly the relationship between 'career and achievement' and job satisfaction.

Table 3. The Effects of Sources of Stress, Coping Strategies, and their Interactions on the Strain Variables.

	<u>Job Satisfaction</u>			<u>Mental Health</u>			<u>Physical Health</u>		
	Adjusted R ²	F	R ²	Adjusted R ²	F	R ²	Adjusted R ²	F	R ²
Sources of Stress	.07	8.17**	.08	.21	28.90***	.23	.14	15.90***	.15
Coping Strategies	.05	6.20*	.06	.03	4.11*	.04	.03	4.08*	.04
Interactions	.01	2.39	.02	.10	12.09***	.11	.04	4.80*	.05

* p < .05 ** p < .01 *** p < .001

Note. The score of sources is the total score of all six stressors, and the score of coping strategies is the total score of all coping skills.

Table 4. Hierarchical Regression of Job Satisfaction on Sources of Stress and Coping Strategies.

	Model 1		Model 2		Model 3	
	Beta	T	Beta	T	Beta	T
Sources of Stress:						
(1)intrinsic to the job	-.03	-.16	-.07	-.40	-1.85	-1.01
(2)management role	.21	.85	.24	1.02	.61	.25
(3)relationship with others	.37	2.14*	.32	1.95 ^a	-.70	-.32
(4)career and achievement	-.16	-.97	-.17	-1.08	3.36	1.86 ^a
(5)organizational structure and climate	-.74	-3.53***	-.72	-3.55***	1.06	.51
(6)home/work interface	.03	.16	.05	.27	-1.17	-.53
(7) Coping Strategies	_____	_____	.25	2.94**	.92	2.09*
Interactions:						
(1) x (7)	_____	_____	_____	_____	1.95	.99
(2) x (7)	_____	_____	_____	_____	-.39	-.14
(3) x (7)	_____	_____	_____	_____	1.03	.42
(4) x (7)	_____	_____	_____	_____	-3.92	-2.00*
(5) x (7)	_____	_____	_____	_____	-1.85	-.80
(6) x (7)	_____	_____	_____	_____	1.39	.58
Constant	16.33		7.06		.11	
F	6.56***		7.34***		5.55***	
R ²	.30		.37		.47	
N	101		101		101	

^aSignificant at less than the .10 level

* p < .05

** p < .01

*** p < .001

Note. The score of coping strategies is the total score of all coping skills.

In Model 1 of Table 5, a combination of the sources of stress had significant predictive power for mental ill-health, but no specific stressor as strong predictor. In

Model 2, when coping entered the equation, it explained a significant portion of the variance for mental ill-health. The more frequent use the coping strategies, the less the mental ill-health symptoms. In Model 3, when the interaction terms entered the equation, two more predictors emerged: 'career and achievement' appeared to be a predictor of mental ill-health marginally; whereas coping buffered the relationship between 'career and achievement' and mental ill-health in an opposite way. The positive term in this interaction implies that when the respondents faced this stressor, upon the use of coping strategies, they had more mental ill-health symptoms.

Table 5. Hierarchical Regression of Mental Health on Sources of Stress and Coping Strategies

	Model 1		Model 2		Model 3	
	Beta	T	Beta	T	Beta	T
Sources of Stress:						
(1)intrinsic to the job	.09	.49	.12	.71	-.01	-.05
(2)management role	.19	.73	.15	.63	3.79	1.42
(3)relationship with others	.09	.49	.14	.79	-1.46	-.63
(4)career and achievement	.07	.43	.08	.52	-3.20	-1.64 ^a
(5)organizational structure and climate	.09	.40	.06	.31	-1.36	-.60
(6)home/work interface	.01	.08	-.01	-.03	.97	.41
(7) Coping Strategies	—	—	-.24	-2.71**	-1.20	-2.53*
Interactions:						
(1) x (7)	—	—	—	—	.34	.16
(2) x (7)	—	—	—	—	-4.14	-1.39
(3) x (7)	—	—	—	—	1.91	.74
(4) x (7)	—	—	—	—	3.68	1.73 ^a
(5) x (7)	—	—	—	—	1.53	.61
(6) x (7)	—	—	—	—	-1.14	-.44
Constant		7.82		6.79		3.46
F		4.65***		5.31***		3.75***
R ²		.23		.29		.36
N		101		101		101

^aSignificant at less than the .10 level

* p < .05

** p < .01

*** p < .001

Note. The score of coping strategies is the total score of all coping skills.

Table 6. Hierarchical Regression of Physical Health on Sources of Stress and Coping Strategies

	Model 1		Model 2		Model 3	
	Beta	T	Beta	T	Beta	T
Sources of Stress:						
(1)intrinsic to the job	-.04	-.20	-.04	-.22	.08	.04
(2)management role	.22	.85	.19	.72	5.93	2.01*
(3)relationship with others	.05	.26	.08	.43	-.82	-.31
(4)career and achievement	-.04	-.24	-.04	-.24	-.78	-.35
(5)organizational structure and climate	.11	.50	.11	.53	-1.37	.50
(6)home/work interface	.13	.70	.12	.71	-2.54	-.95
(7) Coping Strategies	_____	_____	-.20	-2.02*	-.02	-.02
Interactions:						
(1) x (7)	_____	_____	_____	_____	-.06	-.03
(2) x (7)	_____	_____	_____	_____	-6.49	-1.95*
(3) x (7)	_____	_____	_____	_____	.99	.33
(4) x (7)	_____	_____	_____	_____	.79	.31
(5) x (7)	_____	_____	_____	_____	1.75	.58
(6) x (7)	_____	_____	_____	_____	2.95	1.00
Constant		3.17		3.53		.25
F		2.65*		2.93**		1.98*
R ²		.16		.20		.25
N		101		101		101

*Significant at less than the .10 level

* p < .05

** p < .01

*** p < .001

Note. The score of coping strategies is the total score of all coping skills.

In Model 1 of Table 6, no specific stressor was a significant predictor of physical ill-health, but a combination of the stressors accounted for a significant portion of variance for physical ill-health. In Model 2, coping was only a mild predictor of physical

health, it even disappeared in Model 3 when all the interaction terms entered the equation. In Model 3, 'management role' was found to be significantly and positively related to physical ill-health; and coping helped in buffering this relationship. In other words, for those respondents who faced this stressor, upon the use of coping strategies, they experienced less physical symptoms.

In sum, coping strategies only buffered some of the stressor-strain relationship. Therefore, the last hypothesis depicted on p.3 can only be partially supported. In order to find out which particular coping skill is more effective as a predictor or moderator for the strain effects, further hierarchical regression analyses were performed. The results showed that there was no particular coping skill as strong predictor of job satisfaction, but 'home/work relations' was a significant predictor of mental health ($T=-2.04, p < .05$), and 'logic' was a strong predictor of physical health ($T=-2.94, p < .01$). Table 7 presents the results when the interaction terms were put into the equations.

Table 7. Hierarchical Regression of the Strain Effects on Stressors and Coping Skills.

	<u>Job Satisfaction</u>		<u>Mental ill-health</u>		<u>Physical ill-health</u>	
	Beta	T	Beta	T	Beta	T
(1)Stressors	.57	.55	.35	.37	1.05	1.17
Coping Skills:						
(2)social support	.88	1.19	1.05	1.59	1.37	2.13*
(3)task strategies	-.14	-.18	-.98	-1.42	1.61	2.25*
(4)logic	-.50	-.63	.69	.94	-1.81	-2.32*
(5)home/work relations	.33	.56	-1.00	-1.82 ^a	-.86	-1.31
(6)time management	-.31	-.43	1.14	1.73 ^a	-.05	-.08
(7)involvement	.79	.85	-1.30	-1.56	-.35	-.37
Interactions:						
(1) x (2)	-1.28	-1.04	-1.72	-1.58	-1.94	-1.92 ^a
(1) x (3)	.20	.13	1.77	1.30	-3.05	-2.31*
(1) x (4)	.52	.40	-1.25	-1.04	2.29	1.96 ^a
(1) x (5)	-.32	-.35	1.28	1.55	1.35	1.47
(1) x (6)	.85	.64	-2.04	-1.66 ^a	-.16	-.14
(1) x (7)	-1.10	-.71	2.11	1.51	.60	.41
Constant	.42			1.47		.02
F	2.47**			4.09***		4.81***
R ²	.28			.39		.45
N	101			101		101

^aSignificant at less than the .10 level

* p < .05

** p < .01

*** p < .001

Note. The score of stressors is the total score of all sources of stress.

In Table 7, none of the individual coping skills buffered the effects of stressors on job satisfaction. As far as mental health is concerned, only two coping skills were significant predictors of this strain effect: 'home/work relations' reduced mental health symptoms, whereas 'time management' increases these symptoms. Among the interaction terms, only 'time management' buffered marginally the effects of stressors on mental health symptoms.

There were more significant predictors of physical health. The respondents' physical health was positively related to 'social support' and 'task strategies'; but was negatively related to 'logic'. These coping skills also buffered the effects of stressors on physical health. The positive term for the interaction of 'logic' and the stressors suggests that the more frequent use of 'logic' as coping, the more the physical ill-health symptoms. Again, this is another example of 'opposite buffering'.

In sum, some coping skills were more effective for different strain effects. These results further demonstrated that the last hypothesis depicted on p.3 was only partially supported.

Discussion

The impact of acquisition

The results of this study did not show consistently that this acquired firm had some stressful impact on the workers. On one hand, the problems of absenteeism, smoking and drinking habits were not so significant. On the other hand, quite a high percentage of staff perceived work pressure, and this perception was related to job dissatisfaction, mental ill-health, and physical ill-health. These results are consistent with previous studies (Sinetar, 1981). As far as turnover rate is concerned, most of the staff's current job experience was between one to two years, that means there were personnel losses right after the organizational transition - what has been called 'the haemorrhage effect' (Cartwright and Cooper, 1992; Walsh, 1988).

Relationship between stressors and strain effects

The findings suggest that a combination of six stressors explained significantly the strain effects of job dissatisfaction, mental ill-health, and physical ill-health. Yet there were not many particular stressors as strong predictors of the strain variables. In

specific terms, 'relationship with others' and 'organizational structure and climate' were stronger predictors of job satisfaction; 'career and achievement' and 'management role' were marginal predictors of mental health and physical health respectively. Therefore, to a certain extent, these results corroborate some previous findings (Ashford, 1988; Schweiger and Ivancevich, 1985).

Effect of coping

In this study, coping strategies were proved to be having a direct effect on the strain variables; and they were somewhat useful in buffering the effects of the stressors on the strain variables. Even though the effects are small, the results obtained from this study give us some sight that different coping skills have different relative importance in moderating the stressor-strain relationship. A combination of the six coping skills buffered the effect of 'career and achievement' on job satisfaction (Table 4); and it buffered the effect of 'management role' on physical health (Table 6); but it buffered the effect of 'career and achievement' on mental health in an opposite way (Table 5). These results are inconclusive, that means when staff faced with the problem of career and achievement prospect, upon the use of coping strategies, they became more satisfied with the job, but had more mental ill-health symptoms. This area needs to be clarified by future research.

As far as individual coping skill is concerned, 'time management' buffered the effects of stressors on mental health; 'social support' and 'task strategies' buffered effects of stressors on physical health (Table 7). In addition, 'logic' demonstrated an opposite buffering in the stressor-physical health relationship. It seems that when staff faced the stressors, logical thinking was associated with more physical ill-health symptoms. It may be due to the fact that those respondents only relied on the use of a rational approach without an emotional outlet developed physical ill-health symptoms.

Based on these findings, employees should be encouraged to use more coping skills, in particular, 'social support', 'task strategies' and 'time management', in order to cope with acquisition stress (such as 'management role', 'relationship with others', 'career and achievement' and 'organizational structure and climate').

Validation data of the OSI

The reliabilities of the scales used in this study are as high as, for some scales even higher than, those obtained from previous studies (Cooper, Sloan and Williams, 1988; Nelson, Cooper and Jackson, 1995; Robertson, Cooper and Williams, 1990). The predictive validity of the strain components is also high: there were significant correlations among the variables of job satisfaction, mental health, and physical health, except that between job satisfaction and physical health (Table 2). These results corroborate previous studies (Cooper and Bramwell, 1992; Rees and Cooper, 1991). The high correlation between mental health and physical health (0.51), as suggested by Robertson et al. (1990), may imply some overlap between these two scales. In future research, it is better to re-examine and re-construct the items of these scales before use.

Limitations

Although the return rate of the questionnaires was quite high (67.3%), and the sample was about eight per cent of the whole population of the acquired firm, it was not randomly selected. Therefore it was not a representative sample. In fact, the questionnaires were sent by a young manager, he might have sent to staff more or less of his age that made up a sample of young respondents. In addition, the sample was multi-national, therefore both the original OSI instrument and a Chinese version of the OSI were used for the study. Some variations due to translation may have aroused errors in the data. Perhaps, in-depth interviews should be conducted at different rank level, age level, and nationalities in order to achieve a higher reliability and validity of the results. Moreover, there was only one item used to measure work pressure in the instrument. It is

better to devise more items to measure level of perceived work pressure in future research.

Conclusion

This study demonstrated that the impact of acquisition stress can last for even two years after the initial transition. This study also provided some support for the hypotheses devised from the structure of the Occupational Stress Indicator, in that sources of stress were related to strain effects of job dissatisfaction, mental ill-health, and physical ill-health. In addition, coping strategies had a direct effect on the strain variables, and a moderating effect on some of the stressor-strain relationships. Last but not least, it is justified to conclude that the OSI is a reliable instrument to be used in a Chinese sample, and it should be more widely used in academic arena and industries for diagnostic purposes. As Cooper and Cartwright (1994) concluded, "... the diagnostic stress audit is a potentially more cost-effective and more focused way of reducing stress in the workplace.", we believe by reducing employees' stress problems, in turn, would reduce acquisition failures accordingly.

Acknowledgement. I gratefully thank Professor Cary L. Cooper for giving me advice on the use of the Occupational Stress Indicator. I also thank Kent Wong for his assistance in data collection.