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## Perceived Work Stress and Locus of Control: A Combined Quantitative and Qualitative Approach

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### Abstract

This study set out to examine perceived work stressors of internals and externals, combining quantitative and qualitative analyses, as well as relationships between locus of control and a wide array of job strain indicators. A sample of 1,054 industrial workers in Taiwan was surveyed. Results showed that, compared with the internals, the externals tended to perceive more sources of stress; moreover, they reported more stressors, which seemed to be outside their direct control. On the other hand, internals were more satisfied with their jobs, suffered fewer physical and psychological symptoms, and exerted more coping efforts. The role of control was discussed in the context of the Chinese work settings.

### INTRODUCTION

Rotter (1966) originally formulated “locus of control” (LOC) as a generalized belief about contingency between one’s action and actual outcome, brought about through social learning mechanisms. The internal locus of control refers to the conviction that outcome of events in life are contingent upon one’s own behavior, whereas the external locus of control refers to the conviction that outcome of events are not contingent upon one’s action, but upon luck, chance, fate, or powerful others. Researchers have agreed that LOC is an important individual difference factor, and can be regarded as a stable personality trait (e.g. Levenson, 1974; Paulhus, 1983).

Over the last 20 years, it has been hotly debated whether the construct of LOC is unidimensional or multidimensional (Phares, 1978; Strickland, 1977). Some researchers have assumed that Rotter’s I-E scale (1966) circumscribed the entire domain and proceeded by breaking down factors contained therein (e.g. Zuckerman & Gerbasi, 1978). Others choose to develop subscales based on theoretical deliberation of the underlying structure, albeit with different emphases. Levenson (1973) stressed sources of perceived control, as her delineation of chance, powerful others, or the self. Lefcourt and his colleagues (Lefcourt et al., 1979) emphasized targets of perceived control, specifically, academic achievement and affiliation; they also noted valence of perceived control, namely, success versus failure experiences.

Another approach by Paulhus and Christie (1981) emphasized spheres of perceived control and distinguished three behavioral domains therein: achievement, interpersonal and socio-political. These domains are conceptualized as concentric spheres: the central sphere represents control with the nonsocial environment in situations of personal achievement, termed “personal efficacy”; the second sphere is formed when the individual interacts with others in dyad or group situations, termed “interpersonal control”; the outermost sphere represents the wider behavioral context of socio-political activities, termed “socio-political control”. Reliability, divergent, discriminant, predictive and construct validity of the “Spheres of control” (SOC) scale based on this three-fold formulation of locus of control have been very high in previous research (e.g. Paulhus, 1983; Parkes, 1988).

Although the specificity concern has led to a proliferation of measures, many multidimensionally constructed scales used Rotter’s original scale to test concurrent validity and in every instance the result was positive and significant (Furnham & Steele, 1993). Furthermore, after examining over 50 self-report measures, Furnham and Steele went on to question the incremental validity of those specific LOC measures. Despite the heuristic value of adopting a specific LOC scale, it was actually difficult to find any statistically significant evidence in the increase of incremental validity. It seems sensible, then, to adopt a measure which strikes a balance between simple dimensionality and comprehensive domain coverage, with broader theoretical underpinnings, such as the SOC.

From a different theoretical perspective, Markus and Kitayama (1991) proposed a theory of self-construal. They maintained that each individual might, theoretically speaking, possess two construals of self, namely independent and interdependent. Furthermore, these two self-construals are believed to be the co-determinants of individual

thoughts, feelings and action across cultures (Markus & Kitayama, 1991; Singelis, 1994; Triandis, 1994). However, the self-construals emphasize different values and goals in life: the independent self-construal stresses self-actualization and self-resilience, whereas the interdependent self-construal stresses fitting in with the social environment and harmonious interpersonal relationships. In the context of perceived control, the intrapsychic “personal efficacy” would be mainly the realm of independent self-construal, whereas the “interpersonal control” would be mainly the realm of interdependent self-construal. In a Chinese society, the realm of socio-political activities has been traditionally reserved for a small class of elite, whereas democratization is still in process in Taiwan. Against this cultural backdrop, in this present study of perceived work control, only the “personal efficacy” and “interpersonal control” subscales of the SOC were used.

In the stress-distress area, LOC is perhaps one of the most extensively researched variable (Cohen & Edwards, 1989), and evidence concerning its relationship with various kinds of pathology is almost unequivocal. Research has generally suggested a linear relationship between LOC and self-reported psychopathology (Joe, 1971; Levenson, 1973; Wallston & Wallston, 1982; Lu, 1990). Moderating effects of LOC have also been reported. Johnson and Sarason (1978) found that internal locus of control moderated the relationship between stressful life events and illness among college students. Evidence also showed that internal locus of control alleviated emotional distress following a cancer diagnosis (Marks et al., 1986), and helped people to adapt successfully to stressful work settings (Parkes, 1986). Internal locus of control was strongly related to job performance (Peterson & Albrecht, 1996), and job satisfaction (Lu, 1997). In a meta-analysis, Spector (1986) also confirmed that locus of control is related to job strain, indicated by job satisfaction, symptoms and emotional distress.

Regarding LOC as a personality factor and a moderator in alleviating harmful effects of stressful life events, earlier research was in a quandary deriving from the unproductivity of its basic paradigm (Swindle, Jr. et al., 1988), such as Lazarus’ conceptualization of stress and coping process (Lazarus, 1966; Lazarus & Folkman, 1984). However, after circumventing some of the theoretical and methodological pitfalls, recent evidence did show that internal locus of control was related to a lowered perception of work role stress (Spector, 1988) and general life stress (Lu, 1994a). Emergent evidence from a well-controlled prospective longitudinal study demonstrated that LOC was not related to the subsequent encountering of desirable or undesirable life events, further clarifying that the impact of LOC was not on selective exposure to life events, rather on personal perception or interpretation of these events (Lu, 1999).

So far, although the link between LOC as a personality trait and well-being as an adaptational state has been firmly supported by empirical evidence, in both work and non-work contexts, a more detailed delineation of work stressors perceived by internals and externals was not to be found in the literature. Bridging this knowledge gap could have theoretical as well as practical implications. Unraveling the types and nature of work stressors perceived by internals and externals could shed more light upon the LOC-adaptation relationship. On the other hand, managers and practitioners could also use this phenomenological information to develop better individual-tailored employees assistance programs.

As aforementioned, LOC is a worldview about where influence over the environment rests. Therefore, a person who believes that as a human agent, he/she can influence events in his/her environment will be more likely to expect the environment to be predictable and controllable; in other words, to expect the environment to be contingent upon his/her own action. In contrast, externals will be more likely to expect the environment to be unpredictable and uncontrollable. This general expectation may have developed through repeated experiences of lack of controllability or predictability in the course of life, such as major disasters or personal psychological traumas.

Due to this pessimistic worldview and its resultant general negative expectancies, externals may actually perceive the environment as not amenable to personal control. Furthermore, they may also perceive more potential sources of stress, consequently, constructing a representation of the environment as threatening and frightening.

The purpose of this paper, therefore, was to compare the level of perceived work stress and work adjustment between internals and externals, and to further explore the profiles of reported work stressors for the two groups. Two specific hypotheses were then empirically tested in the present study. It was hypothesized that externals would report more sources of stressors at work (Hypothesis 1). It was further hypothesized that externals would also report a larger proportion of uncontrollable sources of stressors at work (Hypothesis 2). This study also combined traditional quantitative research methods with detailed qualitative analysis of contents and meanings of reported work stressors. Albeit a small step, moving beyond the aggregated comparisons of group levels of stress to qualitatively and systematically analyzing meanings and implications of stressors for internals and externals, was hoped to be more conducive to knowledge generation. Finally, this study also investigated relationships between locus of control and a wide array of job strain indicators, such as job satisfaction, symptoms, coping efforts and absenteeism.

## **METHOD**

### **Subjects**

Respondents in this study came from four major state-owned companies in manufacturing and power industries. All companies are located in the southern city of Kaohsiung, which is the biggest industrial center in Taiwan. Subjects were randomly selected from employee lists provided by the companies, and completed all measurements

at one time, either in-groups or individually.

The final sample of 1,054 workers was quite equally drawn from the four companies, with about equal numbers of white- and blue-collar workers. Over half of the sample were 36-45 years old, married, and had served at the same organization for 11-20 years, reflecting low labor turnover and high job security in the public sector. Nearly half of the sample had some college education, reflecting the high quality of this labor force. Finally, due to the nature of the industries under study, an overwhelming majority of our sample was males. Overall, this sample was quite representative of the public sector employees in Taiwan. Detailed sample characteristics are presented in Table 1.

Table 1  
Sample Characteristics (N=1,054)

Variables	Categories	N	%
Sources	Company A	333	31.6%
	Company B	275	26.1%
	Company C	217	20.6%
	Company D	229	21.7%
Age	under 25 yrs	7	.7%
	26 - 35 yrs	217	22.4%
	36 - 45 yrs	497	51.2%
	46 - 55 yrs	135	13.9%
	over 55 yrs	35	3.6%
Gender	male	858	88.4%
	female	66	6.8%
Work	white-collar	417	42.9%
	blue-collar	483	49.7%
Length of Service	under 1 yr	3	.3%
	under 2 yrs	28	2.9%
	under 5 yrs	93	9.6%
	5 ~ 10 yrs	83	8.5%
	11 ~ 15 yrs	198	20.4%
	16 ~ 20 yrs	270	27.8%
	21 ~ 25 yrs	101	10.4%
	over 25 yrs	61	6.3%
Education	illiterate	2	.2%
	primary school	27	2.6%
	junior school	22	2.1%
	senior school	413	39.2%
	colleger & university	523	49.6%
	graduate degrees	44	4.2%
Marital status	never married	98	9.3%
	married	912	86.5%
	widowed	7	.7%
	divorced	4	.4%
	separated	1	.1%

## MEASURES

**(1) Work stressors:** The “Stressors subscale” (61 items) in the Occupational Stress Indicator (OSI) developed by Cooper and his associates (1988) was implemented. Details of adaptation and transformation of the original OSI into a suitable Chinese version for research use in Taiwan have been reported elsewhere (Lu et al., 1995, 1997). Overall, the Chinese OSI has proven to have satisfactory reliability and validity. The particular “Stressors subscale” had a Cronbach’s alpha of .95, and good concurrent and predictive validity relating to physical health, mental health, job satisfaction, absenteeism, and industrial accidents. Six broad dimensions of stressors were covered by this measurement, they were: (a) factors intrinsic to the job; (b) the managerial role; (c) relationships with other people; (d) career and achievement; (e) organizational structure and climate; (f) home/work interface. Subjects were required to answer on a 6-point Likert-type rating scale whether a particular aspect of work was a source of stressor for him/her, ranging from “1” (Very definitely is not a source) to “6” (Very definitely is a source).

**(2) Locus of control (LOC):** This was measured by revising the SOC (Paulhus & Christie, 1981). The Chinese version has 15 items on 7-point Likert-type scales covering both personal efficacy (7 items) and interpersonal control (8 items). A higher total score indicates a higher level of internal locus of control. The cross-cultural

generality of the LOC construct measured by this condensed version of the SOC has been established in over ten studies involving community adults as well as college students in Taiwan (e.g. Lu, 1994a; 1994b; Lu & Hsieh, 1997). In general, internal consistency of the scale was quite good (Cronbach's alpha over .85), and the scale also demonstrated good concurrent and predictive validity.

**(3) Job satisfaction:** This was measured by the 22-item "Job satisfaction subscale" in the OSI. The scope covered achievement value and growth, job itself, organization design and structure, organization processes and personal relationships. This scale had a Cronbach's alpha of .93 in the present study.

**(4) Physical and mental health:** These were measured by the 12-item and 18-item "Physical health subscale" and "Mental health subscale" in the OSI respectively. The scopes covered minor somatic and psychological symptoms. These scales had Cronbach's alphas of .89 and .86 in the present study.

**(5) Coping efforts:** These were measured by the 21-item "Coping subscale" in the OSI. The scope covered social support, task strategies, logic, home and work relationships, time and involvement. This scale had a Cronbach's alpha of .95 in the present study.

**(6) Absenteeism:** This was indicated by the total number of days off work in the past year. The self-reported absenteeism was checked against the official company records whenever possible, and yielded a generally high agreement between the two sets ( $r=.65$ ,  $N=570$ ,  $p<.001$ ) confirming the acceptability of the self-report method used in the present study.

## RESULTS

### Control and Stressors: Quantitative Analysis

First, a correlation matrix containing all the variables reported in this paper was constructed using Pearson's correlation method. Results are presented in Table 2 along with means and SDs for each variable. A negative correlation was found between locus of control and aggregated perceived work stress, indicating that the stronger the external tendency of control, the more sources of stressors were perceived at work. Relationships between LOC and job strain and those among the various indicators of job strain will be further discussed in a later section.

Table 2

Means, SDs & Intercorrelation of All Variables in the Study

Vars	Mean	SD	N	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Control	77.27	12.11	886	1.00						
(2) Work stress	191.54	33.34	748	-.14**	1.00					
(3) Job satisfaction	80.78	14.99	875	.24**	-.29**	1.00				
(4) Physical symptoms	31.28	9.66	939	-.26**	.20**	-.19**	1.00			
(5) Mental symptoms	51.79	12.92	968	-.48**	.27**	-.32**	.54**	1.00		
(6) Coping	83.82	10.13	895	.38**	.13**	.06	-.09*	-.20**	1.00	
(7) Absenteeism	9.07	10.41	890	.03	.01	-0.7	.08*	.08*	.05	1.00

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

LOC in this study was measured as a continuous variable, and its empirical distribution roughly conformed to a normal distribution, it was then decided to further conduct a split-group analysis. With the allowance of a large sample, more extreme groupings other than median split could be afforded to avoid ambiguity in theoretical interpretation. Those people who scored above the top 25% of the entire group on SOC were then labeled "internals" (scored above 86,  $N=246$ ), whereas those who scored below the bottom 25% were labeled "externals" (scored below 69,  $N=226$ ). This grouping criterion was followed throughout this study.

A t-test was conducted to compare the two groups on perceived stressors. For internals, the mean level of stressors reported was 185.44, whereas for externals, the mean level of stressors reported was 195.01. The group means were statistically significantly different. Results are presented in the first row of Table 3.

To sum, quantitative analyses seem to support the hypothesis 1, that externals perceived more sources of stressors at work.

### Control and Stressors: Qualitative Analysis

In addition to the traditional quantitative analysis, a series of more detailed content analyses were carried out to look for any systematic differences or patterns in stressors perceived by the "internals" and the "externals".

First, two lists of the top five stressors were drawn up for the internals and the externals respectively. Since the OSI-Stressors scale used a 6-point Likert-type response format, a score of 4 ("Generally is a source"), 5 ("Definitely is a source"), or 6 ("Very definitely is a source") was interpreted as endorsement for a particular aspect of work as a source of stress. This criterion was followed throughout this study.

Table 3  
Work Stress, Job Satisfaction, Health, Coping & Absenteeism of Internals & Externals

Vars	Internals (N=246)		Externals (N=226)		t
	Mean	SD	Mean	SD	
Work stress	185.44	36.98	195.01	29.23	2.60**
Job satisfaction	85.51	15.29	76.81	15.17	5.71***
Physical symptoms	27.09	9.17	33.92	9.21	7.56***
Mental symptoms	43.69	11.94	58.87	12.17	13.04***
Coping	88.45	10.42	79.11	9.44	9.46***
Absenteeism	9.63	10.13	9.09	10.16	0.55

\*\*p<.01 \*\*\*p<.001

Table 4  
The Top Five Stressors for Internals and Externals

#### Internals

1. Keeping up with new techniques, ideas, technologies or innovations or new challenges (item 14)
2. Morale and organizational climate (item 53)
3. Lack of power and influence (item 2)
4. unclear promotion prospects (item 39)
5. Lack of consultation and communication (item 12)

#### Externals

1. Lack of power and influence (item 2)
2. Morale and organizational climate (item 53)
3. Lack of consultation and communication (item 12)
4. Inadequate or poor quality of training/management development (item 16)
5. Attaining your own personal level of performance (item 54)

Comparing the two lists in Table 4, we can see that three out of five stressors were the same for internals and externals, perhaps hinting that the major concerns for them were not that much different, at least in the work domain. However, the topmost stressor for externals was "lack of power and influence", which was very likely determined by organizational structure and practice, not easily altered by the individual. In contrast, the topmost stressor for internals was "keeping up with new techniques, ideas, technologies or innovations or new challenges", which could be interpreted as a requirement of, or a drive for self-perfection. Furthermore, for externals, only the last listed stressor "attaining your own personal level of performance" seemed to represent a stressor from within the individual, hence amenable to personal control.

In order to further reveal any meaningful patterns of perceived stressors for internals and externals, all stressors with an over 50% endorsement within each group were examined. There were 19 such stressors for the internals, and 22 for the externals, totaling 41. Comparing the two lists of stressors, 18 of them were the same, one stressor was endorsed only by internals (i.e. "Simply being 'visible' or 'available'"), and four were endorsed only by externals. These five "different" stressors were listed in the second part of Table 5.

Table 5  
Stressors with an Over 50% Endorsement by Internals and Externals.

Categories of stressors	Stressors reported by Internals N (%)	Stressors reported by Externals N (%)
Organizational climate & supervision practice	12 (63%)	16 (72%)
Self-expectations	4 (21%)	3 (14%)
Social support outside work	3 (16%)	3 (14%)
Total	19 (100%)	22 (100%)

#### Stressor reported only by Internals

1. Simply being "visible" or "available" (Item 45)

#### Stressors reported only by Externals

1. Covert discrimination and favouritism (Item 22)
2. Factors not under your direct control (Item 47)
3. Dealing with ambiguous or "delicate" situations (Item 50)
4. An absent of any potential career advancement (Item 52)

To facilitate systematic comparisons these 41 stressors were conceptually analyzed to reveal any underlying dimensionality. Four raters with master and doctorate degrees (3 psychologists and 1 sociologist) independently classified them into as many categories as they felt sufficient. The inter-rater congruence was 70%. A lengthy group discussion followed, three categories were unanimously agreed upon, and any disagreements in stressor

classifications were resolved in consensus. The three categories were (1) organizational climate & supervision practice; (2) self-expectations; and (3) social support outside work. Numbers (and percentages) of stressors classified in each category are presented in the first part of Table 5.

Judging from numbers and percentages, distributions of stressors across the three categories were not very different for internals and externals. This finding seemed to support the earlier tentative conclusion that internals and externals had much the same major concerns at work. However, the four stressors reported only by externals were concerned with “organizational climate & supervision practice”, whereas the stressor reported only by internals was concerned with “self expectations”. Here again, stressors for externals seemed to reside in the external environment, and largely determined either by the organizational practice, or by powerful others such as supervisors, whereas stressors for internals seemed to reside within themselves as results of self-expectations.

To further analyze differences in stressors reported by internals vis vis externals; those stressors with greater than 10% endorsement difference between the two groups were ranked in descending order and listed in Table 6.

Table 6

Stressors with an Over 10% Endorsement Difference Between Internals and Externals (ranked in descending order).

1. Keeping up with new techniques, ideas, technologies or innovations or new challenges (item 14) (I>E)
2. Covert discrimination and favouritism (Item 22) (E>I)
3. Threat of impending redundancy or early retirement (Item 25) (E>I)
4. Feeling isolated (Item 26) (E>I)
5. Insufficient finance or resources to work with (Item 42) (E>I)
6. Lack of practical support from others outside work (Item 46) (E>I)
7. Factors not under your direct control (Item 47) (E>I)
8. Dealing with ambiguous or “delicate” situations (Item 50) (E>I)
9. “Personality” clashes with others (Item 56) (E>I)
10. Implications of mistakes you make (Item 57) (E>I)

Externals reported nine out of ten stressors more often than internals. Moreover, the only stressor which seemed to distress internals more was “keeping up with new techniques, ideas, technologies or innovations or new challenges”, clearly an expectation for self-perfection, which was under the control of the person in question. In contrast, the other nine stressors, which seemed to distress externals more were all at the interpersonal or organizational level; in other words, (at least partly) outside the direct control of the person. So far, the second hypothesis seemed to be supported that externals reported more uncontrollable stressors at work.

## Control and Job Strain

As shown in Table 2 earlier, locus of control correlated positively with job satisfaction and coping efforts, negatively with physical ill-health and mental ill-health. In other words, people with higher internal control tended to be more satisfied with their jobs, suffered fewer somatic and psychological symptoms, and were more active and vigorous in coping with work stress. However, locus of control did not correlate with absenteeism significantly. Among the strain indicators, job satisfaction negatively correlated with physical and mental symptoms; physical symptoms positively correlated with mental symptoms and absenteeism, while negatively correlated with coping efforts; similarly, mental symptoms positively correlated with absenteeism while negatively correlated with coping efforts.

Following the same criterion of grouping, a further series of t-tests were conducted to contrast internals against externals. These results are presented in rows 2 to 6 of Table 3. Internals reported significantly higher job satisfaction than externals, and higher coping efforts. On the other hand, externals reported significantly more physical symptoms than internals and more psychological symptoms. Again, the total numbers of days off work were not different between the two groups. To sum, whether locus of control was statistically treated as a continuous or categorical variable, internals and externals did seem to have very different experiences of job strain on a wide range of indicators except their absent behaviour.

## DISCUSSION

This study set out to test two hypotheses in work contexts. Combining quantitative and qualitative analyses, both hypotheses were supported by empirical results. In a nutshell, comparing with internals, externals tended to perceive more sources of stress; moreover, they reported more stressors, which seemed to be outside their direct control. Externals also showed preponderance on job strain, including lower job satisfaction, more physical and psychological symptoms, as well as a lower level of coping efforts.

Rotter (1966, 1975) proposed that the generalized control expectancies would have their greatest influence when a situation is ambiguous or novel. This happens since under ambiguity, a generalized belief about control would be translated into an appraisal of controllability with respect to the specific situation. Thus, a person who has internal locus of control might appraise the situation as controllable, whereas a person with external locus of control might appraise it as uncontrollable. An appraisal of uncontrollability might be generalized to yield meaninglessness of life, which is the precursor of emotional distress. This process of expectancy – perception – action is also quite similar

to the model of learned helplessness (Seligman, 1975).

Although some people regard modern organizational life as a fairly structured existence, there are actually a lot of ambiguities and delicacies, which allow ample space for personality traits and personal explanatory styles to maneuver. In this study, additional analysis showed no differences between the kind of jobs internals and externals held ( $\chi^2=1.51$ ,  $df=1$ , ns.). Although exposed to the same work settings, people with different tendencies in locus of control did have different patterns of stress perception, very possibly derived from their corresponding expectancies. It is therefore possible that a generalized belief about the contingency of one's action and eventual outcome can be translated into a profound expectancy of controllability in the environment, which can further lead to a "real" perception of controllability in a particular situation.

However, the conceptualization of control is multi-faceted, especially in work settings. As identified by Parkes (1989), there are three ways of using control as a construct in work stress research: (a) control as an objective characteristic of the work situation, reflecting the extent to which work design and environment allow opportunities for control, such as flexible work time; (b) control as a subjective appraisal, reflecting the individual's judgement of the extent to which work is controllable, such as perceived autonomy; and (c) control as a generalized belief on the part of the individual about the extent to which important outcomes are controllable in life at large, such as locus of control.

However, research has shown that both (a) and (b) were unsuitable constructs applied to occupational contexts in Taiwan (Lu et al., 1995; 1997). In fact, in most Taiwanese organizations, traditional authoritarian rather than democratic culture still prevails. Workers, blue-collar and white-collar alike, have virtually no control and influence with regard to organizational processes: decisions are made at the top, implemented with top-down communication, and only very recently, some companies have opened channels for workers to express complaints and discontentment. There are also fixed salary scales in the public sector: workers' pay is unrelated to their actual performance. Also in accordance with traditional Chinese ethics of respect for the elder, job promotion is unrelated to performance, but rather to seniority within the organization.

This distinctively Chinese organizational feature actually makes actual and perceived personal control in terms of organizational processes rather ambiguous and almost irrelevant in a Chinese organizational life. However, viewing personal adaptation as an interaction and negotiation between the individual and the environment, appraisals of balance or imbalance between these two are essential to well being (Lazarus et al., 1985). It can be concluded that a generalized belief such as LOC, and its resultant patterns of expectancies, perception and response should be very relevant in the context of stress and well-being, especially in a Chinese society. Empirical evidence pertaining to the job strain reinforced the notion that people who firmly believe in internal control would engage more actively and vigorously in coping with work stress, and manage to remain healthier and happier, even in the authoritarian and control constricting Chinese work settings.

## Limitations of this Study

The strengths and weaknesses of a combined qualitative and quantitative approach deserve some discussion. Recently psychologists have shown a growing interest in qualitative methods (Schein, 1992; Banister et al., 1994; Smith et al., 1995), some have incorporated them with traditional quantitative methods in research (Debates et al., 1995). In fact, idiographic and nomothetic research methods need not be regarded as mutually exclusive, but can compliment each other to yield detailed vivid information, yet still retain the scientific rigor. Although it is arguable whether the content analysis used in this study was "qualitative" or merely additional analysis at the items level, it was nonetheless a small step towards correcting the one-sidedness of traditional positivists who have often reduced the abundance of real life information into numerical relationships and statistical significance. It was also felt that significant findings could be revealed through inductive analysis, which might shed light upon underlying meanings and implications of traditional correlation in the occupational stress area.

However, a major weakness of such a combined research approach relates to the fact that the information gathered gave but a limited impression of the true phenomenon. On a general level, all data are limited to what respondents articulate not what they leave out. This weakness, of course, applies to all research using verbal materials, whether structured or not. On a more specific level, this study used a standardized, structural instrument (OSI-Stressors scale) to measure perceived sources of work stress, further limiting the phenomenal information available for analysis, and perhaps contributing to the resultant small effect size. Although meaningful patterns were unraveled, congruent to theoretical predictions, they, nonetheless, should be regarded as tentative. More qualitative grounding is desirable for a truly scientific research, and should be the goal of future studies.

## References

- Banister, P., Burman, E., Parker, I., Taylor, M. & Tindall, C. (1994). *Qualitative methods in psychology: A research guide*. Buckingham: Open University Press.
- Cohen, S. & Edwards, J. R. (1989). Personality characteristics as moderators of the relationship between stress and disorder. In R.W.J. Neufeld (ed.) *Advances in the investigation of psychological stress* (pp 235-283). New York: John Wiley & Sons
- Cooper, C. L., Sloan, S. J. & Williams, S. (1988). *Occupational Stress Indicator Management Guide*. Windsor:

NFER-NELSON.

- Debates, D. L., Drost I. & Hansen, P. (1995). Experiences of meaning in life: A combined qualitative and quantitative approach. *British Journal of Psychology*, 86, 359-375.
- Furnham, A. & Steele, H. (1993). Measuring locus of control: A critique of general, children's health- and work-related locus of control questionnaires. *British Journal of Psychology*, 84, 443-479.
- Joe, V. C. (1971). Review of the internal-external control construct as a personal variable. *Psychological Reports*, 28, 619-640.
- Johnson, J. H. & Sarason, I. G. (1978). Life stress, depression and anxiety: internal- external control as a moderating variable. *Journal of Psychosomatic Research*, 22, 205-208.
- Lazarus, R. S. (1966). *Psychological stress and the coping process*. New York: McCraw-Hill.
- Lazarus, R. S., DeLongis, A., Folkman, S. & Gruen, R. (1985). Stress and adaptational outcomes: The problem of confounded measures. *American Psychologists*, 40, 770-779.
- Lazarus, R. S. & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer Publishing Company.
- Lefcourt, H. M., Von Baeyer, C. L., Ware, E. E. & Cox, D. J. (1979). The multidimensional-multiattributitional causality scale: The development of a goal specific locus of control scale. *Canadian Journal of Behavioral Science*, 11, 286-304.
- Levenson, H. (1973). Multidimensional locus of control in psychiatric patients. *Journal of Consulting and Clinical Psychology*, 41, 397-404.
- Levenson, H. (1974). Activism and powerful others: distinction within the concept of internal-external control. *Journal of Personality Assessment*, 38, 377-383.
- Lu, L. (1990). Adaptation to British universities: homesickness and mental health of Chinese students. *Counselling Psychology Quarterly*, 3, 225-232.
- Lu, L. (1994a). University transition: Major and minor life stressors, personality characteristics and mental health. *Psychological Medicine*, 24, 81-87.
- Lu, L. (1994b). Stressors, personality and mental health: A follow-up study. *Kaohsiung Journal of Medical Sciences*, 9, 492-496.
- Lu, L. & Hsieh, Y. H. (1997). Demographic variables, control, stress, support and health among the elderly. *Journal of Health Psychology*, 2, 97-106.
- Lu, L., Cooper, C. L., Chen, Y. C., Hsu, C. H., Li, C. H., Wu, H. L. & Shih, J. B. (1995). Chinese version of the OSI: A study of reliability and factor structures. *Stress Medicine*, 11, 149-155.
- Lu, L., Cooper, C. L., Chen, Y. C., Hsu, C. H., Wu, H. L., Shih, L. B. & Li, C. H. (1997). Chinese version of the OSI: A validation study. *Work & Stress*, 11, 79-86.
- Lu, L. (1997). The process of work stress: A dialogue between theory and research. *Chinese Journal of Mental Health*, 10, 19-51.
- Lu, L. (1999). Personal and environmental causes of happiness: A longitudinal analysis. *Journal of Social Psychology*, 139, 79-90.
- Marks, G., Richardson, J. L., Graham, J. W. & Levin, A. (1986). Role of health locus of control beliefs and expectations of treatment efficacy in adjustment to cancer. *Journal of Personality and Social Psychology*, 51, 443-450.
- Markus, H. R. & Kitayama, S. (1991). Culture and the self: Implications for cognitive, emotion, and motivation. *Psychological Review*, 98, 224-253.
- Parkes, K. R. (1986). Coping in stressful episodes: the role of individual differences, environmental factors, and situational characteristics. *Journal of Personality and Social Psychology*, 51, 1277-1292.
- Parkes, K. R. (1988). Locus of control in three behavioural domains: Factor structure and correlates of the "Spheres of Control" scale. *Personality and Individual Differences*, 9, 631-643.
- Parkes, K. R. (1989). Personal control in an occupational context. In A. Steptoc & A. Appels (Eds), *Stress, Personal Control and Health*. Chichester: Wiley.
- Paulhus, D. (1983). Sphere-specific measures of perceived control. *Journal of Personality and Social Psychology*, 44, 1253-1265.
- Paulhus, D. & Christie, R. (1981). Sphere of control: an interactionist approach to assessment of perceived control. In H.M. Lefcourt (Ed.) *Research with the locus of control construct*. Vol 1. (pp.161-188) New York: Academic Press.
- Peterson, L. W. & Albrecht, T. L. (1996). Message design logic, social support, and mixed-status relationships. *Western Journal Article*, 60, 291-309.

- Phares, E. (1978). Locus of control. In H. London & J.E. Exner (Eds.) *Dimensions of personality*, New York: Wiley.
- Rotter, J. B. (1966). Generalized expectancies for internalized versus externalized reinforcement. *Psychological Monographs*, 80, (1, Whole No. 609).
- Rotter, I. B. (1975). Some problems and misconceptions related to the construct of internal versus external control of reinforcement. *Journal of Counselling and Clinical Psychology*, 43, 56-67.
- Schein, E. H. (1992). *Organizational culture and leadership* (2nd Ed.) San Francisco: Jossey-Bass.
- Seligman, M. E. P. (1975). *Helplessness: On depression, development, and death*. San Francisco: Freeman.
- Singelis, T. M. (1994). The measurement of independent and interdependent self construals. *Personality and Social Psychology Bulletin*, 20, 580-591.
- Smith, J. A., Hare, R. & Van Langenhove, L. (1995). *Rethink methods in psychology*. London: Sage.
- Spector, P. E. (1986). Perceived control by employees: A meta-analysis of studies concerning autonomy and participation at work. *Human Relations*, 39, 1005-1016.
- Spector, P. E. (1988). Development of the Work Locus of Control Scale. *Journal of Occupational Psychology*, 61, 335-340.
- Strickland, B. R. (1977). Internal-external control of reinforcement. In T. Blass (Ed.) *Personality variables in social behavior*, Hillsdale, NJ: Erlbaum.
- Swindle, R. W. jr., Heller, K. & Lakey, B. (1988). A conceptual reorientation to the study of personality and stressful life events. In L.H. Cohen (ed.) *Life events and psychological functioning: Theoretical and methodological issues*. Newbury Park: Sage.
- Triandis, H. C. (1994). *Culture and social behavior*. New York: McGraw-Hill.
- Waliston, K. A. & Waliston, B. S. (1982). Who is responsible for your health? The construct of health locus of control. In G.S. Sanders & J. Suls (Eds.) *Social psychology of health and illness*. Hillsdale, NJ: Erlbaum.
- Zuckerman, M. & Gerbasi, K. R. (1978). Dimensions of the I-E scale and their relationship to other personality measures. *Educational and Psychological Measurement*, 37, 159-175.