Work stress, control beliefs and well-being in Greater China: An exploration...
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Work stress in Greater China

An exploration of sub-cultural differences between the PRC and Taiwan

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Abstract Towards the end of the twentieth century, the world has witnessed an amazing economic take-off in the East Asia, especially within the territory of so-called "Greater China", encompassing the PRC and Taiwan. Against this economic and cultural background, this study surveyed 258 and 189 employees respectively in Taiwan, and the PRC (Shanghai), to examine generalizability of a generic work-stress model to the Chinese societies. It further examined the sub-cultural differences in the work-stress processes, by drawing contrast of the PRC and Taiwan. In addition, roles of emic constructs of Chinese primary and secondary control beliefs were also examined. Results showed that the generic work-stress model could be reasonably applied to Chinese urban work contexts in the PRC and Taiwan. Work stress related as expected to strain effects. At a more refined sub-cultural level, it was found that different sources of work stress became salient contributors to strain outcomes in the PRC and Taiwan. These differences reflect the diverse political, social, and economic characteristics of the two Chinese societies. More importantly, emic constructs of Chinese control beliefs were found to have rather consistent direct effects on strain outcomes. However, indirect (moderating) effects of control beliefs were not strong and inconsistent.

A model of work stress for the Chinese
Work stress has become one of the most serious health issues in the modern world. Researchers have theorized detrimental effects of work stressors on

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well-being, and have accumulated a substantial and consistent body of research literature, especially in North America and Western Europe (House et al., 1986; Matteson and Ivancevich, 1987; Cooper and Payne, 1978).

However, the validity of a theoretical model has to be established through the process of repeated verification with heterogeneous populations of people, time, and culture. The fast emerging Greater China has provided a fertile test field for the work-stress model for three reasons. First, the problem of occupational stress is particularly relevant for the Greater China region, encompassing Taiwan and The People's Republic of China (PRC). Both Chinese societies across the Taiwan Strait are undergoing fundamental transformations of industrial structures from labor-intensive to high-tech, as well as rapid social modernization in both work and life styles. The average annual real growth in Taiwan in 1970-1993 was 8.6 percent; and in the same period the PRC achieved an astonishing 9.3 percent. If the costs of work stress estimated for other countries are equally high in Greater China, it represents a considerable loss of resources.

Second, only recently has attention be given to the application of the Western-originated work-stress model to societies of different cultural characteristics. Both the PRC and Taiwan are collectivistic societies, upholding values and ways of life very different from the individualistic West (Hofstede, 1980). The PRC, in particular, is in the midst of integration with the world since the economic reforms begun in 1978, and the work-stress research is still scant. As the population of Chinese in the world is nearly 20 percent of all humans, it is valuable to obtain data from Chinese workers in order to contribute to the generalization of theories and practices in organizational psychology.

Finally, work stress does not occur in vacuum. Work is embedded in the specific political, economic, and social realities (Hofstede, 1980; England, 1975). The Chinese culture is usually represented in a rather monolithic view, and the relatively rich scientific research in Taiwan and Hong Kong are often presumed to be generalizable to all Chinese, including the vast population in the PRC. However, there are rather substantial differences among these distinct Chinese societies, as there are also subtle differences within each of them. In the case of the PRC and Taiwan, although they share a common Confucian cultural heritage and a common Chinese written language, they each developed distinct political and economic systems over the 50-year separation after the civil war. As argued by Child (1996), these systems could then contribute towards shaping observable patterns of organizational behavior. In the case of work stress, salient components of the stress process may vary to reflect these sociocultural specificities in the two societies.

Greater China, then, offers one of the most important contexts for work stress in the world today. It also offers a unique context of a comparison on political, economic, cultural similarity and dissimilarity as reflected in the work-stress process. Based on the extensive review of Western theories and research on work stress, and incorporating salient sociocultural characteristics of a Chinese society
(Taiwan in this case), the first author proposed a generic integrative work-stress model for the Chinese (Lu, 1997). This multi-faceted model adopts an interactional view of stress (Cox, 1978; French et al., 1982; Sutherland and Cooper, 1990), and conceptualizes work stress as a personal, subjective, and dynamic process. As presented in Figure 1, the model includes potential sources of stress (stressors), factors of individual differences (moderators/mediators), and consequences of stress (strain) as main components of the work-stress process. As there is no space to go into details of the model, it will suffice to make three brief points regarding the theoretical meta-hypotheses underlying the model.

First, work stress is viewed here as a personal phenomenon, hence “perceived stress” is a necessary mediator linking potential sources of stress and various consequences of stress. Second, vast individual differences in vulnerability to stress mainly reflected in internal and external resources, contribute towards shaping observable patterns of the work-stress process. They may: alter an individual’s perception of a potential source of stress (direct effect); impact on the transformation of perceived stress into various consequences of stress (indirect effect); and ameliorate these stress consequences (direct effect). Third, this model takes a person-centered psychological perspective without pre-excluding important sociocultural influences on the work-stress process. Specifically, culture is viewed to shape the values, beliefs, and behaviors of its member through its core issues of concern as well as its distinct political, economic, and societal structures. These prevailing cultural influences are then reflected in the specificities of a particular phenomenon, such as the work-stress process.

To date, a series of empirical research conducted in Taiwan have already lent general support to this generic model of work stress. These studies include analyses focused on potential sources of work stress for employees of large structured organizations vis-à-vis small family-based enterprises (Lu et al., 1995, 1997a; Lu and Lo, 1995); direct and indirect effects of internal vis-à-vis external resources, such as work motivation (Lu, 1999), locus of control (Lu et al., 1999a), and work values (Lu and Lin, 2002); consequences of work stress for the individual vis-à-vis the organization (Lu et al., 1997a); individual, job, and occupational differences in the work-stress process (Lu and Kao, 1999; Lu et al., 1997b, 1999b). Although the main axis of potential sources of stress → perceived stress → consequences of stress, as well as direct/indirect effects of resources (Figure 1) have been repeatedly supported by empirical evidence from independent samples across a broad spectrum of organizational hierarchies (managers vs non-managers) and occupational background in Taiwan, a fine-grained analysis focusing on the prevailing influences of culture is still needed to enrich theoretical implications of the model. Such an effort can provide a more appropriate cultural context for applications of the model in organizational management, such as job relocation training (Lu and Cooper, 1995). Contrasting the PRC and Taiwan, and relating possible differences in
work stress to their distinct political, economic, and social characteristics is an appropriate starting point in the effort of "unpackaging" culture on work stress (Bond, 1998).

A theoretical framework for the present study
Considering the limited capacity of a single empirical investigation, a more concise theoretical framework (Figure 2) was devised based on the generic work-stress model (Figure 1). As can be seen in Figure 2, “demographics and job characteristics”, “sources of stress”, “control beliefs”, and “strain” are four major components of the model.

In Figure 2, “demographic and job characteristics” are treated as background variables to be controlled in analyzes, as all of these listed
factors have been shown to impact on the work-stress process (Lu and Kao, 1999; Cooper, 1983; Robbins, 1996; Ross and Altmair, 1994).

“Sources of stress” are construed as antecedents, including eight distinct aspects of the work life. Although different researchers developed or adopted different schemes to categorize sources of work stress, there are considerable commonalities. For instance, Burke (1988) provided a summary of findings for six categories of stressors: physical environment, role stressors, organizational structure and job characteristics, relationships with others, career development and work-family conflict. Recently, Cooper et al. (1988) identified six sources of stress at work: factors intrinsic to the job, management role, relationship with others, career and achievement, organizational structure and climate, home/work interface. Our eight categories of stressors (Figure 2) are construed as operational definitions of selected constructs under the headings of “factors within work” and “factors outside work” in the generic model (Figure 1). Specifically, “workload”, “managerial role”, “personal responsibility”, and “hassles” are indicators of “factors intrinsic to job”; “relationships” is an indicator of “work relationships”; “recognition” is an indicator of “career development”; “organizational climate” is an indicator of “organizational structure and climate”; and finally, “home/work balance” is an indicator of “personal factors/family problems”. The following section will present a detailed discussion on political, social, and economic characteristics in the PRC and Taiwan to derive hypotheses pertaining to the salient aspects of the work-stress process in the two societies.

“Control beliefs” are construed to represent “values/beliefs” under the heading of “internal resources” in the generic model, which have direct and indirect (moderating) effects on strain. A later section will discuss the role of control, especially those of Chinese primary and secondary control beliefs to derive specific hypotheses.

“Strain” is construed as outcome variables, including job satisfaction, mental and physical well-being corresponding to the first three constructs under the heading of “personal consequences” in the generic model. The strain effects of work stress are well established. Work stress has been found to relate to ill health and low job satisfaction for employees in the West (Cooper, 1981; Cooper and Payne, 1978; Quick et al., 1997), and in Chinese societies (Lu et al., 1997a, b, 1999b; Lu, 1999; Siu et al., 1997; Yu et al., 1998). We therefore hypothesized that work stress would be related to strain:

H1. Employees who report higher work stress would report lower job satisfaction, and lower well-being.

Political, economic, social differences in the PRC and Taiwan
It is a daunting practical and intellectual challenge to represent the PRC and Taiwan in their full flavor, especially because both of them have undergone dramatic changes over the twentieth century and new events still follow one
another rapidly in Greater China nowadays. However, interested readers can find some up-to-date in-depth discussions on that matter (Chu, 2001; Kelley and Luo, 1999; Nehru et al., 1997; Wang, 2000; Yang and Brown, 1998). Our following discussions are selective for the purpose of the present study.

Even though the PRC and Taiwan are the two largest Chinese societies in the world, there are substantial political, economic and social variations between them. Since the creation of the People’s Republic in 1949, the PRC has been a state socialist society, and remains so despite its spectacularly successful economic reforms. There are several key features of the political system in the PRC. First, since the creation of the PRC, the political dominance of the Communist Party of China (CPC) has never been challenged. As observed by the World Bank report (Nehru et al., 1997), China’s economic reforms in 1978 were triggered by neither economic crises nor ideological epiphany. Indeed the swift growth achieved with political and social stability is the essence of China’s success story which sets it apart from other developing countries such as members of the former Eastern Block. However, as pointed out by Child (1996), the government and the party are still inextricably linked in a system of state socialism. The structure of China’s industrial governance therefore contains two parallel hierarchies, that of administration and that of the party. The powers and direct managerial involvement of the party have waxed and waned at different times since the 1949 revolution. The responsibility systems introduced under the economic reforms have been intended to shift the balance of power from the party towards management. The party though, continues to have a formal role within state-owned enterprises and increasingly more enterprises in the private sector (Child, 1996; Wang, 2000). There is no doubt that party officials have withdrawn from the day-to-day management, but they still oversee the implementation of government and party policies. Furthermore, most managers are party members, and political loyalty is an important factor in personnel promotion.

Second, in the PRC since 1949, the society’s institutions have been given a strong political character to reflect the new socialist ideology and to bring people’s value into line with the ideology. However, both scholarly analysis (Redding, 1990) and personal observations suggest that the political ideology may not have taken roots in people’s minds and handed on to the succeeding generation as part of the culture. Despite the periodic political upheavals, the Chinese people have experienced the longest span of homogeneous cultural development of any society in the world. Chinese culture and tradition, most notably Confucianism, is therefore particularly deep-rooted and the Chinese people are very self-conscious of their cultural heritage. The strong re-bounce of the Chinese tradition following the so-called “open door policy” is a test to its extraordinary resilience and its continuing vitality. As Redding (1990, p. 41) contrasts the persistence of traditional Chinese culture with the “the communist veneer of the People’s Republic”, we prefer to treat the socialist ideology as an
aspect of the institutions of the foregone political economy rather than as an indigenous part of the culture. After all, through pragmatism and incrementalism, the stated goal of reforms has now evolved to be the creation of a “socialist market economy with Chinese characteristics”. The notion of Chinese characteristics in this context signifies the recognition of the society’s indispensable link with its past; it also expresses the political aspiration to pursue modernization within a framework of socialist objectives and institutions.

Finally, since the creation of the PRC, a new system of social stratification has been in place with a small, overpowered party elite at the top, and the mass assuming equal social status below (Wang, 2000). Relative social mobility is freely available through education attainment, however, penetration of the elite circle is almost impossible. The current reformed reward systems now stress material benefits after the “post-plus-skills” formula was introduced in 1992, resulting in a widening of wage differentials. More important, the fast expanding private sector, which has been the driving force of China’s most recent wave of industrialization, contributes towards one of the most vibrant periods of social mobility China has seen in recent history.

Across the strait, the Nationalist government expelled from the mainland established their anti-Communist base in Taiwan in 1949, and the two sides are officially still at war with each other. The war of guns has ceased for many decades, but the one with competing ideologies and fierce rhetoric still prevails across the Taiwan Strait. The political system in Taiwan has three key features, each in sharp contrast to that of the PRC system described above. First, in the past two decades, Taiwan has transformed its autocratic one-party political system into a multi-party democracy (Chu, 2001). The free presidential election in the spring of 2000 set a milestone when the long-governing Nationalist Party handed power over to its young rival, the indigenous Democratic Progressive Party. In the domain of work, political parties are independent of social and economic institutions. Ironically, the only area where politics influences economic activities is the cross-strait trade with the PRC. For instance, the so-called “three direct dealings” (San Tong) concerning direct transportation, direct postal service and direct commerce is still a thorny issue for the Taiwanese government due largely to political, ideological and sovereignty reasons.

Second, the historical anti-communist stance of the ex-governing Nationalist Party has resulted in a mixture of traditional Confucianism and Western capitalism (Chu, 2001). Inwardly, the Nationalist government orchestrated a political campaign to preserve Chinese cultural heritage, in order to rival the Communists’ anti-tradition stance. This political engineering has far-reaching influences and consequently core Confucian values such as filial piety still pervade through every aspect of life in Taiwan. Outwardly, the help and alliance of the Western world, especially the USA, secured the safety and
survival of the early exiled government. Consequently, Western influences are welcome and profound, which laid the ground for later industrialization and democratization.

Finally, the policy of enriching the people resulted in a stable, long-term government, which at first waited for a ripe opportunity to reclaim the Mainland, later shifted to the more realistic vision of sustaining a high quality of life for its people (Chu, 2001). Consequently, people's creativity and enthusiasm were unlocked, and a new class of self-made, hard-driving, adventurous entrepreneurs flourished. The Confucian values of hard work and achievement for the family coupled with the capitalistic spirit of free competition have created a vibrant society with open doors for social mobility through career successes. These political and social differences in the PRC and Taiwan are summarized in Table I for easy reference.

Economically, Taiwan along with the other three Dragons (Hong Kong, Korea, Singapore) created an Asian miracle in the 1980s, and is now approaching a developed status according to the GNP per capita. Its economic practices are closely linked to the political features outlined above. A state capitalism was first pursued, and later mechanisms of free-market economy have been reinforced when state-owned major enterprises are privatized. With governmental intervention of various incentive schemes, private enterprises, especially the small- to medium-sized, family-based enterprises thrived and formed the backbone of the Taiwanese economy. Some researchers attribute the economic take-off in the 1980s to this government-guided development

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**Table I.**
Political, social and economic variations in the PRC and Taiwan
strategy (Gold, 1986). As export orientation is the key to the survival and expansion of the Taiwanese economy, organizations are highly conscious of their competitiveness, efficiency and success (Tung, 1989). Profit is the ultimate goal of any business organizations in Taiwan. Entrepreneurship is highly valued in the society.

Economically, the PRC is in the midst of two transitions: from a command economy to a market-based one and from a rural, agricultural society to an urban, industrial one. So far both transitions have been spectacularly successful. China is the fastest-growing economy in the world, with per capita incomes more than quadrupling since 1978. In two generations it has achieved what took other countries centuries. An even more remarkable accomplishment is that the sustained swift growth has been achieved with minimal political and social unrest (Nehru et al., 1997). Although the economic scene changes almost daily in China, some features of the underlying economic structure and systems can be noted, which have important implications for observable organizational behaviors.

First, scholars have noted that China’s reforms have three features: decentralization, incrementalism, and pragmatism (Nehru et al., 1997). There is no doubt that these reforms will continue and develop to meet new challenges and sustain rapid growth, but the official watchword has always been that China will remain a socialist market economy, in contrast to the Western examples of capitalism.

Second, owing to the so-called “open door policy”, there has been a rapid growth of China’s international trade. Ongoing economic reforms begun in 1978, have advanced China’s integration with the world economy, liberalized markets, intensified competition, and introduced macroeconomic management. Although China has been a magnet for foreign investment, including Taiwan at the top of the list (Child, 1996), recent tightening of policies towards foreign-funded firms seems to suggest that China’s long-term aim is to establish internationally competitive indigenous industries under Chinese control.

Third, China’s industrial population divides into relatively few large and medium-size enterprises (less than 5 percent of the total), and an overwhelming number of small firms (Child, 1996). Larger firms are generally state owned, and they are the dinosaurs of Chinese industry and the main thrust of the economic reform has been directed primarily towards their revitalization. Although the state-owned enterprises are still the dominant ownership type, privately and individually owned enterprises, supplemented by joint ventures and foreign-funded enterprises have been the driving force behind a new wave of industrialization and economic growth in recent years (Nehru et al., 1997). Unlike their private competitors, state enterprises required to provide job security and “cradle-to-grave” social services, languished with slow growth, declining profits, and underemployment (Lin and Lai, 1995). Their gloomy state
however has prompted new approaches to enterprises reform. The hope is that a more concentrated number (about 1/100) of state industrial firms can be revitalized to form the core of China's modern enterprise system. Again, these economic differences in the PRC and Taiwan are summarized in Table I.

In short, the PRC is a socialist society undergoing transition towards a market economy. Taiwan is a new democracy continuing its rapid industrialization and is economically more Americanized. Although economic ties across the strait are tightening irrevocably, politically, the PRC and Taiwan have fundamental and thorny grievances to reconcile, and the cross-strait relation is at a record low point presently. It is true that people in Greater China are facing ever greater political, economic, and social challenges in recent years, especially in the wake of successful entry into the WTO by both the PRC and Taiwan. Nonetheless, economic progress with political and social stability has been the guiding principle for both governments. Consequently, our discussions pertaining to similarities and dissimilarities between the PRC and Taiwan are still relevant.

However, it is certainly not our intention to present a monolithic view of the PRC or Taiwan. In the PRC, there are identifiable differences both in people's mentality and ways of life across the broad divide of north-south, and also the emerging divide of coastal-inland regions. The north-south or east-west differences in Taiwan are subtler. Although these within-country differences are fascinating, they are outside the scope of this study. As culture can be studied at various levels, we contrasted cultures at the broad East (Asia)-West (Europe/North America) divide and the more specific PRC-Taiwan divide within the East.

Against the background of rapid economic growth and the concomitant social changes, it is not surprising that studies have reported high levels of stress among workers and managers in both the PRC (Jamal and Xie, 1991; Siu et al., 1997; Yu et al., 1998), and Taiwan (Lu, 1997, 1999; Lu et al., 1997b, 1999a, b; Lu and Kao, 1999). However, a quantitative comparison of the absolute level of work stress in the PRC and Taiwan may not be very informative theoretically and practically, it is more interesting to look at the most salient aspects of work stress in the two Chinese societies, as these should reflect the larger political-economic-social contexts as outlined in Table I. As there are similarities and dissimilarities between the PRC and Taiwan, we therefore hypothesized that some predictors of strain would differ in the two societies (H2). Previous research has found that Chinese factory workers regarded factors "intrinsic to job" being the most stressful, e.g. "having to work very long hours" (Siu et al., 1997). However, Taiwanese industrial workers regarded "role conflicts and lack of support" being the most stressful, e.g. "a lack of encouragement from superiors" (Lu et al., 1995, 1997a). Although there have been no empirical studies examining the PRC-Taiwan differences in work
stress, tentative hypotheses could be developed following the above discussions outlined in Table I.

First, the continuing dominance of the CPC, the existence of the impermeable circle of party elite, and the history of centralized decision making may have contributed to the great concentration of power in superiors and dutiful deference in subordinates. Although the Chinese in both the PRC and Taiwan share the same traditional value of respect for age, authority and hierarchy, it is nevertheless reasonable to assume that these cultural characteristics and the hierarchical centralized command structure of the PRC economy under socialism have been mutually reinforcing each other. The result is a high value being placed on social control. Collaborating with this analysis, a recent study using Hofstede’s (1980) value scheme found greater power distance in the PRC than in Taiwan (Cheng and Chow, 1995). In the context of work stress, recognition by superiors is important in a hierarchical bureaucracy system with large power distance that has characterized state socialism in China:

**H2.1.** “Recognition” by superiors would be a more salient predictor of strain for the PRC than the Taiwanese workers.

Second, the PRC’s open door policy and integration with the world economy have brought about the dynamic contact between traditional and foreign approaches to management. With progressive reforms, administrative and party functions are being separated, and professional management is gradually being put into place. Unlike the traditional Chinese approach which was largely shaped under the pre-reform centrally-planned economy, the market economy based professional management emphasizes competence for the job, devolved strategy-formulation, formalized organizational procedures, and financial performance criteria (Child, 1996). Today it remains a major challenge to integrate the two approaches to the benefit of effective enterprise management. It could be expected that stress related to management practices and accountability at work would be higher for the PRC employees caught in a changing time than their Taiwanese counterparts:

**H2.2.** “Personal responsibility” would be a more salient predictor of strain for the PRC than the Taiwanese workers.

Third, the not-so-distant history of class struggle, especially during the Cultural Revolution, has resulted in a general sense of interpersonal distrust in the PRC. Researchers have noted that *guanxi* is one of the particularly significant concepts in Chinese culture, which refers to the quality of a personal relationship outside an individual’s immediate family (Lockett, 1988). The management of Chinese enterprises in the PRC is located within a network of interlocking relationships (Henley and Nyaw, 1986). This is especially true for state enterprises and many larger collective firms. When there are shortages of supplies, the cultivation and use of *guanxi* by managers can make the
difference between continuity and disruption of production. Within Chinese organizations continuing relationships are also of great importance. As the Chinese put it, the use of *guanxi* to "go through the back door" often secures personal advantages such as favorable conditions of work or promotion:

H2.3. Work-related "relationships" would be a more important predictor of strain for the PRC than Taiwanese workers.

In sum, the general work stress-strain relationship should hold for both the PRC and Taiwanese employees, however, the relative significance as empirical indicators of this relationship may vary across these two societies.

**Control beliefs and work stress**

Recently, there has been a growing amount of research on individual differences factors involved in the work-stress process. Locus of control (LOC) was originally conceptualized as a generalized expectancy of the contingency between one’s action and consequences of an event (Rotter, 1966). This dimension of individual differences is perhaps the most extensively researched moderator in the general stress literature (Cohen and Edwards, 1989). In the domain of work, internal control has been found to help people to adapt successfully to stressful work settings (Parkes, 1986), to achieve better job performance (Peterson and Albrecht, 1996), to retain higher job satisfaction (Rees and Cooper, 1992). Perceived control is found to relate to less physical and psychological strain as shown in Spector’s (1986) meta-analysis. Other studies have also revealed that internal locus of control was related to a lowered perception of work stress (Lu et al., 1999a; Siu and Cooper, 1998). A recent international collaborative project has found that at both the individual employee level and ecological group mean level, work LOC was related to job satisfaction, physical and psychological well-being across most of the 24 nations/territories (Spector et al., 2001, 2002).

However, there is an ongoing debate on the dimensionality of the LOC construct (Levenson, 1974; Paulhus, 1983; Furnham and Steele, 1993). Other more fundamental theoretical problems also beset the LOC construct. For instance, whether the source of control equates the motivation for control is debatable. In other words, we may retain the motivation for control even if the source of control is ostensibly external. The question is how.

Rothbaum et al. (1982) distinguished two general paths to a feeling of control. In primary control, individuals enhance their rewards by influencing existing realities, attempting direct control over situations through personal action. In secondary control, individuals enhance their rewards by accommodating existing realities and maximizing satisfaction or goodness of fit with things as they are. In other words, the individual experiences control indirectly. This two-process model of perceived control has moved beyond the discussion of sources of control (i.e. LOC), and proposed a dichotomy on the
direction of control (internal/external or self/the world) instead. According to this model, one may retain the motivation for control and achieve a sense of control through changing oneself even if the source of control is ostensibly external. Hence human agency is emphasized, and perceived control is more closely linked to coping efforts and consequences of adaptation.

However, culture prescribes different desired ways in which a person can exercise control (Weisz et al., 1984). Individualist cultures stress self-actualization and self-resilience, whereas the collectivist ones stress fitting in with the social environment and harmonious interpersonal relationships (Hofstede, 1980; Triandis, 1994). Therefore, it is generally viewed that in the West, primary control is more heavily emphasized whereas in the East, secondary control assumes a more central role. A recent study indeed found that the Chinese Americans scored lower on primary control but higher on secondary control than Americans (Peng, 1995).

However, we believe that it is too simplistic to label Chinese as passive and pessimistic. In fact, the Chinese conception of control is closely linked to the sophisticated Chinese cosmology. According to Confucius and his most influential successor Mencius, humans as biological beings have to face the inescapable fate of living, aging, illness and death. However, as a moral being, “ren” (man) must practice the transcendental “moral principles” to fulfill his “destiny” (Lao, 1968). Morality is the defining feature of the Confucian ideal of personhood (Bauer, 1976), and practicing the “heavenly fate” is to do everything according to “yi” (righteousness), and only to “yi” (wei yi shi chong) (Tang, 1986). The Confucian idea of separating “yi” (righteousness) and “ming” (fate) has profoundly influenced traditional Chinese attitudes towards the outer world. Confucius regarded affairs out of human control as the realm of “ming” (fate), whereas those under the human control as the realm of “yi” (righteousness). It is clear that the separation the “yi” and “ming” has left ample space for human agency to operate, albeit the Confucian style human agency has a clear boundary and a heavy moral tone unlike the almost unrestrained human agency nurtured in Western cultural traditions. The Chinese proverbs such as “Man should do his work first, then leave the rest to Heaven” and “It is up to man to strive, but up to Heaven to grant” reflect a rather proactive attitude towards life in general.

In sum, the Chinese cultural tradition does emphasize a harmonious relation between humans and Nature. However, a certain form of primary control beliefs are also fostered and even emphasized in the traditional Chinese culture. The Chinese primary control beliefs refer to a set of general convictions that individuals should achieve their goals by influencing existing realities, attempting direct control over situations through personal action. The Chinese secondary control beliefs refer to a set of general convictions that individuals should achieve their goals by accommodating existing realities and maximizing the goodness of fit with the environment. It must be said that
the Chinese notion of human agency is fundamentally different from that advocated in the Western culture, and is pre-determined by fate. The Chinese strategies of executing human agency are also different from the Western ones, as they focus on accepting and coming to terms with the results, no matter how good or bad (Lu, 2001a, b). We therefore hypothesized that the Chinese primary control beliefs would be protective in the work-stress context, demonstrating both direct and indirect effects (H3):

H3.1. Employees with high Chinese primary control beliefs would report higher job satisfaction, mental and physical well-being.

H3.2. Chinese primary control beliefs would moderate (buffer) the stress-strain relationship.

For some time now there have been suggestions and various pieces of empirical evidence showing that the Chinese are becoming increasingly self-assertive as a result of societal modernization (Yang, 1996; Lu and Kao, 2002). A recent cross-cultural study (Taiwan-UK) examining roles of primary and secondary control beliefs found that whereas primary control promotes SWB, secondary control is detrimental to SWB (Lu, 2001a, b). It seems that the current social milieu of cultural fusion and societal modernization have on the one hand provided Chinese with a stronger impetus to exercise more primary control over the surrounding environment, on the other hand, de-valued and rendered secondary control as over-pessimistic and maladaptive. Therefore, we hypothesized that the Chinese secondary control beliefs would be a vulnerability factor in the work-stress context, demonstrating both direct and indirect effects (H4):

H4.1. Employees with high Chinese secondary control beliefs would report lower job satisfaction, mental and physical well-being.

H4.2. Chinese secondary control beliefs would moderate (exacerbate) the stress-strain relationship.

Methods
Participants
Taiwan. We intended to recruit a heterogeneous sample of Taiwanese employees working for various types of organizations, and ranked at different levels within the organizations. Participants were drawn from trainees of courses offered by Municipal Human Resources Development Center in Kaohsiung, southern Taiwan. These participants worked in various sectors of the economy, including manufacturing, energy, communication, finance, and social services. Questionnaires were mailed to participants after securing their consent to take part. A total of 226 questionnaires were mailed and 212 returned (response rate = 94 percent).
The other samples of participants were recruited from three computer and software companies based in the Science and Technology Park in Hsin Chu, northern Taiwan. Participants were given a questionnaire to complete at their leisure, and returned them anonymously to a contact person within their companies. A total of 100 questionnaires were distributed and 71 returned (response rate = 71 percent). After discarding questionnaires with excessive missing data, the final sample consisted of 258 employees, and the overall response rate was 87 percent.

PRC. The data were collected in Shanghai, PRC. Again, a heterogeneous sample of employees was targeted. Participants worked in various sectors of the economy, including manufacturing, printing and packaging, trade and commerce, and social services. Each participant was given an anonymous questionnaire by a contact person in the organization and asked to return it in a sealed envelope. A total of 260 questionnaires were distributed and 190 returned (response rate = 73 percent). Participants worked in companies of various ownership, including state-owned (n = 75 among 94 sent out), private-Chinese-owned (n = 50 among 71 sent out), foreign-owned (n = 25 among 34 sent out) and joint-venture (n = 40 among 61 sent out) companies. Analysis revealed no significant differences on research variables among samples from various ownership types, hence the four subsamples were pooled in further analyses. After discarding one questionnaire with excessive missing data, the final sample consisted of 189 respondents from both public and private sectors.

Preliminary analyses were conducted to check potential influences of industries in the present study. First, within-sample analysis showed no significant differences on research variables among the five and four industries surveyed in the PRC and Taiwanese samples respectively. Second, pooled-sample analysis also revealed no significant differences on research variables among manufacturing, energy, printing and packaging, communication, trade and commerce, finance, and social services industries in the combined PRC and Taiwanese sample. Therefore, the somewhat different distribution of industries in the present study should not be a serious concern.

As all the questionnaires were anonymous to encourage participation and offset social desirability effects, there is no way to check potential differences between respondents and non-respondents. However, as the average response rate was as high as 73 percent for the PRC and 91 percent for the Taiwanese sample respectively, well above the reported average for survey studies in the organizational context (36 percent ± 13 percent) (Baruch, 1999). Therefore, the volunteer bias in the present study should not be a serious concern.

Due to practical difficulties in obtaining random representative samples in both places, researchers made the best use of their personal contacts and interpersonal networks to achieve reasonable size and heterogeneity of the
study samples. Hence, our results should be generalized to the vast populations of employees in the PRC and Taiwan with due caution. However, our heterogeneous composition of samples cutting across a wide range of industries and ownership types should help to offset some of the sampling limitations.

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Instruments

Four scales from the occupational stress indicator-2 (OSI-2) (Cooper et al., 1988) were used in the present study. Reliability, validity and usability of the Chinese version OSI have been established previously with Taiwanese workers (Lu et al., 1995, 1997a, 1997b), managers (Lu et al., 1999b), and the PRC workers (Yu et al., 1998):

1. **Job satisfaction scale (12 items):** two subscales measuring “satisfaction towards the job itself” and “satisfaction towards the organization”. Higher scores indicate greater satisfaction.

2. **Mental health scale (12 items):** three subscales measuring “contentment”, “resilience” and “peace of mind”. Higher scores indicate better mental health.

3. **Physical health scale (six items):** two subscales measuring “calmness” and “energy”. Higher scores indicate better physical health.


To measure Chinese control beliefs, we devised a new “Chinese primary and secondary control beliefs scale”. A distinctive part of cultural beliefs comes to us in the form of pithy oral expressions: proverbs, idioms, and adages. These “popular sayings” represent succinct formations of experience and cultural wisdom. Collectively therefore, they constitute a crystallization of cultural beliefs. The Chinese culture is particularly rich in such sayings. In accordance with our definitions of the constructs, we selected eight idioms to represent Chinese primary control (CPC, mastery over the environment) and Chinese secondary control (CSC, merging with the environment) beliefs. These popular sayings are often used in everyday speech and thus have contemporary significance.

To ascertain the content validity of the scale, a group of four Taiwanese judges (two social and two organizational psychologists) independently categorized these eight items as either depicting primary control or secondary control beliefs. Inter-judge agreement was 100 percent as uniformity of opinions was achieved. A similar sorting procedure was conducted with our Chinese colleagues in the PRC, and they concurred with the conclusion reached by the Taiwanese group. Sample items in the final version are: “Man can
overcome the fate" (CPC subscale), and "Man should submit to the fate" (CSC subscale).

Construct validity of the scale was explored through factor analysis using component principle technique with varimax rotation in the PRC and Taiwanese sample separately. In both samples, the Bartlett's test of sphericity reached significance ($p < 0.001$), and the KMO value was acceptable (PRC: 0.67, TW: 0.71). Scree plot suggested a two-factor solution for both samples. For the PRC sample, the two factors had eigenvalues of 2.45 and 1.94, accounted for 54.4 percent of the total variance. For the Taiwanese sample, the two factors had eigenvalues of 2.68 and 2.24, accounted for 59 percent of the total variance. The two factors contained exactly the items from the two subscales, with average loadings of 0.74 (PRC) and 0.75 (TW) for the CPC subscale, and 0.70 (PRC and TW) for the CSC subscale. Thus, in both the PRC and Taiwanese samples, the factor structure perfectly corresponded to theoretical constructs of CPC and CSC.

Additional information regarding the reliability and validity of the scale can be found in a recent study with three independent Chinese samples ($n = 740$) (Lu et al., 2001a, b). The average internal consistency reliability coefficient is 0.73 for the CPC subscale, and 0.67 for the CSC subscale. Furthermore, CPC positively correlated with the LOC subscale in the OSI-2 ($r = 0.15, p < 0.001$). CSC on the other hand, negatively correlated with LOC ($r = -0.26, p < 0.001$). However, CPC and CSC were two distinct constructs with no correlation between them ($r = 0.05$, ns). This evidence also corroborates the above factor analysis results.

Finally, demographic information such as age, gender, education, marital status, years in the current job, position in the organization, size and ownership of the organization were collected.

The questionnaires were written in Chinese. The wording and expressions were somewhat different in the PRC and Taiwan versions, to reflect their individual historical development. All the measures used six-point Likert scales.

Results
Sample distributions
Table II shows some of the demographic and job characteristics for the two samples from Greater China. Age was similar in the two groups, but there were 13 percent more males in the PRC group. In the Taiwanese group there were substantially more employees accomplished postgraduate level education, and more were still single. In terms of job characteristics, seniority and weekly working hours were similar in the two groups. However, in the PRC group there were more managers and more worked in medium sized organizations with 100-500 employees.
<table>
<thead>
<tr>
<th></th>
<th>Taiwan (n = 258)</th>
<th>PRC (n = 189)</th>
<th>t/$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (in years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>38.88</td>
<td>38.42</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>9.12</td>
<td>9.70</td>
<td>t = 0.48 (df = 399)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>129 (50.00)</td>
<td>79 (41.80)</td>
<td>$\chi^2 = 8.72^*$ (df = 1, 442)</td>
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<tr>
<td>Female</td>
<td>128 (49.61)</td>
<td>106 (58.20)</td>
<td></td>
</tr>
<tr>
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<td>1 (0.39)</td>
<td>4 (2.12)</td>
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<tr>
<td>Educational level</td>
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<tr>
<td>Secondary</td>
<td>29 (11.24)</td>
<td>37 (19.58)</td>
<td>$\chi^2 = 21.94^{**}$ (df = 2, 441)</td>
</tr>
<tr>
<td>College</td>
<td>175 (67.83)</td>
<td>136 (71.96)</td>
<td></td>
</tr>
<tr>
<td>Postgraduate</td>
<td>53 (20.54)</td>
<td>11 (5.82)</td>
<td></td>
</tr>
<tr>
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<td>5 (2.65)</td>
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<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Single</td>
<td>71 (27.52)</td>
<td>32 (16.93)</td>
<td>$\chi^2 = 7.45^*$ (df = 1, 411)</td>
</tr>
<tr>
<td>Married</td>
<td>165 (63.95)</td>
<td>143 (75.06)</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td>9 (3.49)</td>
<td>2 (1.06)</td>
<td></td>
</tr>
<tr>
<td>Did not answer</td>
<td>13 (5.04)</td>
<td>12 (6.35)</td>
<td></td>
</tr>
<tr>
<td>Years with present company</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>11.19</td>
<td>11.61</td>
<td>t = -0.45 (df = 429)</td>
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<tr>
<td>SD</td>
<td>8.90</td>
<td>10.19</td>
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<td>Level of job</td>
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<td></td>
<td></td>
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<tr>
<td>Management</td>
<td>68 (26.36)</td>
<td>129 (68.25)</td>
<td>$\chi^2 = 81.21^{**}$ (df = 1, 408)</td>
</tr>
<tr>
<td>Non-managers</td>
<td>166 (64.34)</td>
<td>45 (23.81)</td>
<td></td>
</tr>
<tr>
<td>Did not answer</td>
<td>24 (9.38)</td>
<td>15 (7.94)</td>
<td></td>
</tr>
<tr>
<td>Working hours per week</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td>45.06</td>
<td>45.97</td>
<td>t = -1.09 (df = 421)</td>
</tr>
<tr>
<td>SD</td>
<td>6.94</td>
<td>10.16</td>
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<tr>
<td>Size of company</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 100</td>
<td>88 (34.11)</td>
<td>61 (32.28)</td>
<td>$\chi^2 = 13.49^{**}$ (df = 2, 444)</td>
</tr>
<tr>
<td>100-500</td>
<td>67 (25.97)</td>
<td>77 (40.74)</td>
<td></td>
</tr>
<tr>
<td>Over 500</td>
<td>102 (39.53)</td>
<td>49 (25.93)</td>
<td></td>
</tr>
<tr>
<td>Did not answer</td>
<td>1 (0.39)</td>
<td>2 (1.06)</td>
<td></td>
</tr>
</tbody>
</table>

**Table II.**
Sample distributions in the PRC and Taiwan

**Notes:** *p < 0.01; **p < 0.001*

Overall, compared with their Taiwanese counterparts, the PRC employees in this study were mostly male, married, college-educated, managers serving in medium-sized public or foreign companies. However, both groups were mainly composed of middle-aged, senior employees.

As there were disparities in education level and management status between the two groups, preliminary analyses were conducted to clarify their possible effects. In the case of education attainment, analyses revealed no significant correlation with research variables in either the PRC or the Taiwan group. In the case of management status, again there was no significant correlation with
research variables in the PRC group. However, Taiwanese managers did report higher overall work stress ($r = 0.23, p < 0.05$). Although any potentially distorting effects of education and management status seemed negligible, we took a cautious stance to enter them first into multiple regression equations when predicting strain. Neither education nor management status emerged as a significant predictor of any of the strain variables for the PRC or Taiwanese workers. They therefore were excluded from the regression models to be presented later in the paper.

Reliability of scales
On diagonals of Table III reliability of scales measured in Cronbach's alphas is presented. In both samples, "CPC" or "CSC" had the lowest alpha of 0.66 whereas "work stress" had the highest alpha of 0.93. Researchers don't yet agree on an acceptable band for reliability coefficients. For instance, Nunnally (1978) suggested $\chi$ higher than 0.4 as acceptable, whereas Royle (1991) advocated a range of 0.3-0.7 as good indicators of reliability. We concluded that the reliability for work stress, job satisfaction and well-being scales are adequate, whereas that for control beliefs is marginal ($\chi = 0.66$). This marginal reliability may be attributed to fewer items (four each) in both the CPC and CSC subscales.

However, a closer examination of the work-stress subscales revealed that three of them had low alpha coefficients ($\chi < 0.60$ in at least one group). These were "managerial role", "hassles" and "organizational climate". Further

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
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<tr>
<td>Taiwan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Work stress</td>
<td>156.57</td>
<td>21.50</td>
<td>(0.93)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Job satisfaction</td>
<td>45.38</td>
<td>9.88</td>
<td>-0.12</td>
<td>(0.93)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Mental well-being</td>
<td>47.04</td>
<td>8.75</td>
<td>-0.26***</td>
<td>0.19**</td>
<td>(0.83)</td>
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<tr>
<td>4. Physical well-being</td>
<td>25.61</td>
<td>5.22</td>
<td>-0.14*</td>
<td>0.17**</td>
<td>0.60***</td>
<td>(0.79)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Primary control beliefs</td>
<td>16.83</td>
<td>2.73</td>
<td>-0.01</td>
<td>0.27***</td>
<td>0.13</td>
<td>0.23***</td>
<td>(0.76)</td>
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<tr>
<td>6. Secondary control beliefs</td>
<td>15.05</td>
<td>2.46</td>
<td>0.22**</td>
<td>-0.07</td>
<td>-0.25***</td>
<td>-0.25***</td>
<td>0.03</td>
<td>(0.66)</td>
</tr>
<tr>
<td>PRC</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Work stress</td>
<td>154.65</td>
<td>20.11</td>
<td>(0.93)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2. Job satisfaction</td>
<td>46.74</td>
<td>10.00</td>
<td>0.05</td>
<td>(0.93)</td>
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<tr>
<td>3. Mental well-being</td>
<td>47.02</td>
<td>7.65</td>
<td>-0.31***</td>
<td>0.20**</td>
<td>(0.72)</td>
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</tr>
<tr>
<td>4. Physical well-being</td>
<td>22.47</td>
<td>5.58</td>
<td>-0.07</td>
<td>0.24**</td>
<td>0.56***</td>
<td>(0.78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Primary control beliefs</td>
<td>15.99</td>
<td>2.26</td>
<td>0.07</td>
<td>0.18**</td>
<td>0.07</td>
<td>0.05</td>
<td>(0.66)</td>
<td></td>
</tr>
<tr>
<td>6. Secondary control beliefs</td>
<td>14.32</td>
<td>2.46</td>
<td>-0.27****</td>
<td>-0.08</td>
<td>-0.22**</td>
<td>-0.11</td>
<td>0.12</td>
<td>(0.73)</td>
</tr>
</tbody>
</table>

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Cronbach's $\chi$ values are shown in parentheses along diagonals

Table III. Reliability of scales and relationships among work stress, strain and control beliefs
analyses thus used the entire "work-stress" scale and the remaining five subscales: "workload", "relationships", "home/work balance", "personal responsibility" and "recognition". More importantly, the patterns of reliability across scales were similar in the two groups. This similarity ascertained the reproducibility of constructs of work stress, job satisfaction, well-being, and control beliefs in the two Chinese societies.

Demographics and strain
Using Pearson's correlation, the relationships among demographic variables (age, gender, education, marital status, seniority, working hours) and strain indicators including job satisfaction, mental and physical well-being were examined. No significant relationships were found in the PRC sample. In the Taiwan sample, age and seniority positively correlated with mental well-being ($r = 0.26$, $p < 0.001$ and $r = 0.16$, $p < 0.05$ respectively), and physical well-being ($r = 0.21$, $p < 0.001$ and $r = 0.15$, $p < 0.05$ respectively). Gender (coded 1 = male, 2 = female) negatively correlated with physical well-being ($r = -0.22$, $p < 0.001$). These results showed that among Taiwanese employees, older and more senior ones tended to report better mental and physical well-being. Males also reported better physical well-being. Genders and age were then included in further regression analysis to control for their effects on strain.

Testing hypotheses
Work stress-strain relationship. A series of Pearson correlation analyses were conducted to test the relationship between work stress and strain outcomes (see Table III). Table III shows that in both the PRC and Taiwanese samples, employees who reported higher work stress reported worse mental well-being. For Taiwanese employees, those who reported higher work stress also reported worse physical well-being. However, work stress was only marginally correlated with job satisfaction in the Taiwanese sample. Therefore, $H1$ was partially supported.

Direct effects of control beliefs. Table III also shows the correlation analyses testing the direct relations of CPC and CSC on strain outcomes. In both samples, employees avowed higher CPC reported higher job satisfaction. For Taiwanese employees, they also reported better physical well-being. Yet, CPC was not related to mental well-being in either sample. Therefore, $H3.1$ was partially supported.

In both samples, employees avowed higher CSC reported worse mental well-being. For Taiwanese employees, they also reported worse physical well-being. Yet, CSC was not related to job satisfaction in either sample. Therefore, $H4.1$ was partially supported.

Indirect effects of control beliefs. To test the moderating effects of CPC on the work stress-strain relationship, the procedure suggested by Cohen and Cohen (1983) was used to demonstrate the statistical significance and form of the main
and interaction terms. Using hierarchical regression, the following variables were entered in the sequence indicated:

1. work stress;
2. CPC;
3. the product term representing work stress × CPC.

Dependent variables were job satisfaction, mental and physical well-being. As suggested by Cohen and Cohen (1983), unstandardized regression coefficients \( B \) were quoted when interactive effects were involved in the equations. \( B \) and \( F \) values were taken from the final equations and \( R^2 \) values were cumulative.

Results showed that for Taiwanese employees, CPC significantly moderated the relationship between work stress and job satisfaction \((B = 1.31, p < 0.05; F = 8.15, p < 0.001; R^2 = 0.11)\). This interaction is a buffering effect and plotted in Figure 3(a).

Following this comprehensive analysis, a further series of analyses were then carried out to investigate the moderating effects of CPC on five of the specific work stress-strain relationship. The same procedure was repeated with each of the five sources of work stress in equations. Results showed that for Taiwanese employees, CPC moderated the “recognition” job satisfaction relationship \((B = 1.37, p < 0.01; F = 10.26, p < 0.001; R^2 = 0.12)\). This interaction is again a buffering effect and plotted in Figure 3(b).

There was no moderating effect found on the work stress-physical/mental well-being relations in either sample. Neither was there significant moderating effect on the work stress-job satisfaction relations for the PRC sample. Therefore, \( H3.2 \) was partially supported.

These above procedures were repeated using CSC as the potential moderator. However, no moderating effects were found on any of the work stress-strain relations in either sample. Therefore, \( H4.2 \) was not supported.

**Predicting strain.** A series of hierarchical multiple regression analyses were conducted to test the relative importance of various aspects of work stress on

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**Figure 3.**
Effects of primary Chinese control on the work stress-job satisfaction relationship in Taiwan.
strain. In addition, direct effects of CPC and CSC were tested again in these regression analyses. Age and gender were first entered into the equation to control for their effects on strain outcomes. Five work-stress aspects (workload, relationships, home/work balance, personal responsibility and recognition) along with CPC and CSC were then entered into the equation. Table IV shows the summary of results with non-significant variables omitted. Beta coefficients and $F$ values were taken from the final equations, and $R^2$ values were cumulative.

Predictors for each strain effect in the two groups were generally different. For Taiwanese employees, (older) age was a predictor for better mental well-being. Gender (male) could predict better physical well-being. “Recognition” was a predictor for job satisfaction, whereas “personal responsibility” was a predictor for physical well-being. “home/work balance” was a common predictor for both mental and physical well-being. For the PRC sample, “personal responsibility” and “recognition” were predictors for physical well-being. “Relationships” was a predictor for mental well-being. In addition, CPC predicted job satisfaction in both groups, and further predicted physical well-being in the Taiwan group. CSC predicted mental well-being in both groups, and further predicted physical well-being in the Taiwan group.

In general, significant predictors of work stress for strain outcomes were different for the PRC and Taiwanese employees. Therefore, $H2$ was supported. More specifically, “recognition” was a significant predictor for both the PRC and Taiwanese employees. Therefore, $H2.1$ was not supported. “Personal responsibility” was a significant predictor for both the PRC and Taiwanese employees. Therefore, $H2.2$ was not supported. “Relationships” was a predictor for only the PRC employees. Therefore, $H2.3$ was supported. Furthermore, $H3.2$ (direct effects of CPC) and $H4.2$ (direct effects of CSC) were partially supported.

**Discussions**

*Cultural differences in work stress: East vs West*

The present study surveyed two samples of Chinese employees from two political, social and economically diverse societies: the PRC and Taiwan. Results showed that in Greater China work stress was negatively related to mental and physical well-being, and was marginally negatively related to job satisfaction. These results lend support to our $H1$ and corroborated previous studies in the West (e.g. Quick *et al.,* 1997; House *et al.,* 1986; Spector *et al.,* 1988), and some pioneering work in Chinese societies (Jamal and Xie, 1991; Lu, 1997; Lu *et al.,* 1997b, 1999b). These results are also consistent with the generic work-stress model (Figure 1). We can now be reasonably confident to claim cross-cultural universality in the work stress-strain relationship.

However, this universality does not logically imply uniformed underlying mechanisms. There may be different paths linking perceived work stress to
<table>
<thead>
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<th>Strain variables</th>
<th>Taiwan</th>
<th>PRC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Predictors</td>
<td>Predictors</td>
</tr>
<tr>
<td></td>
<td>$\beta$</td>
<td>$F$</td>
</tr>
<tr>
<td>Job satisfaction</td>
<td>+ Recognition</td>
<td>-0.17*</td>
</tr>
<tr>
<td></td>
<td>Primary control beliefs</td>
<td>0.27**</td>
</tr>
<tr>
<td>Mental well-being</td>
<td>+ Age</td>
<td>0.17*</td>
</tr>
<tr>
<td></td>
<td>+ Work/home balance</td>
<td>-0.25**</td>
</tr>
<tr>
<td>Physical well-being</td>
<td>Secondary control beliefs</td>
<td>-0.19*</td>
</tr>
<tr>
<td></td>
<td>+ Gender</td>
<td>-0.20*</td>
</tr>
<tr>
<td></td>
<td>+ Work/home balance</td>
<td>-0.28**</td>
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<td>Personal responsibility</td>
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<tr>
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<td>0.19*</td>
</tr>
<tr>
<td></td>
<td>Secondary control beliefs</td>
<td>-0.18*</td>
</tr>
</tbody>
</table>

Notes: * $p < 0.01$; ** $p < 0.001$. + indicates a new step in a hierarchical regression. Gender: 1=male, 2=female

Table IV. Predictors for strain effects
reported strain effects. Results concerning control beliefs in the present study are worth commenting here. In many psychological and organizational theories developed in the West, beliefs and feelings of control have often been conceptualized as a key factor in mitigating the effects of stress (Spector, 1982; Steptoe and Appels, 1989). However, crossing the East-West divide, culture construes quite different ways of viewing and achieving personal control (Lu, 1997; Weisz et al., 1984). In the collectivist East, the conception of control as an aggressive and persistent battle in achieving and maintaining mastery over the external environment may be viewed as rather restrictive, narrow-minded and immature (Markus and Kitayama, 1991; Weisz et al., 1984).

In fact, in the present study, a measure of perceived control developed according to the Western conception (OSI-2 control scale) was administered but achieved very low reliability coefficients in both Chinese samples (PRC: \( \chi = 0.38 \), TW: \( \chi = 0.51 \)). Nonetheless, the same scale yielded a Cronbach's \( \chi \) of .86 for a UK sample (Lu et al., 2000). This poor psychometric quality with the Chinese samples therefore is not likely due to innate weaknesses or fragility of the scale, rather it may imply that this Western idea of control at work is foreign and not salient in the Chinese mentality. The OSI-2 control scale mainly measures control as perceived personal influence at work. For instance, "performance assessment should reflect personal efforts", and "employee participation in organizational life is desirable" are beliefs underlying this conception of control. These views are indeed important and relevant in the Western work life, and hence scale has demonstrated good reliability and validity (Rees and Cooper, 1992). Nonetheless they are largely irrelevant in a Chinese work context.

In the Confucian collectivist Chinese organization, authoritarian rather than democratic, paternalistic rather than egalitarian managerial culture still prevails. Furthermore, a certain amount of autocratic management is accepted and expected as authoritarian control is a legitimate paternal attribute, and may even be interpreted as signs of care and compassion (Cheng, 1995). It is thus not surprising that perceived control at work may not be a useful concept in understanding the work-stress processes for the Chinese people.

Although the autocratic feature of Chinese organizations renders both objective and subjective control at work almost irrelevant, being able to do the job as one wants to could be independent of believing that one has control over life at large. There are so many subtle and delicate processes that the Chinese culture has construed and sanctioned to facilitate personal well-being in the face of unbearable loss of control viewed by a Western eye (Kojima, 1984). In the present study, it was indeed found that primary control as a general control belief conceptualized from a Chinese culture vantage point was related to job satisfaction in both Chinese groups, as well as physical well-being in the Taiwanese sample (see Table IV). Chinese primary control beliefs were also
found to buffer the work stress-job satisfaction relationship in general, and “Recognition”-job satisfaction relationship in particular (see Figure 3(A) and (B)). These results should alert us that although the Western etic model of work stress can be applied to a Chinese context in general, emic constructs such as Chinese control beliefs need to be incorporated to help us achieve a deeper and fuller understanding of the work-stress process as embedded in a particular cultural context (Figure 1).

The different roles played by Chinese primary and secondary control beliefs in the work-stress process are intriguing. As we hypothesized, primary control is generally a stress resistance factor whereas secondary control is a stress vulnerability factor (see Table IV). These results corroborated recent findings pertaining to general subjective well-being for both Chinese and British (Lu et al., 2001a, b; Lu, 2001a, b). This convergence of evidence has further supported our notion that for contemporary Chinese people, an autonomous, initiating, striving, and achieving attitude fits well with the efficiency-emphasizing, achievement-orienting and competition-based urban existence. In contrast, a traditional attitude of submission, withdrawal, and apathy toward life can be maladaptive in modern, vibrant Chinese societies. This disparity of control beliefs should be even more pronounced in the urban work contexts, as our present study has demonstrated.

Sub-cultural differences in work stress: the PRC vs Taiwan

The process of work stress is culture-specific, just like many other human behaviors and adaptation. In addition to the East-West cultural differences outlined above, only a handful of studies devoted to the sub-cultural differences in organizational behaviors (Kirkcaldy and Cooper, 1992; Siu et al., 1999; Huang, 1994). As outlined in Table I, although the PRC and Taiwan are both collectivist societies with Confucian traditional roots, and economically as well as socially undergoing enormous transformations, they nonetheless possess diverse social institutions and systems, have different regional development histories, and are influenced to rather different extent by foreign cultures and powers. As predicted by the generic work-stress model (Figure 1), the present study found substantial sub-cultural differences in work-stress processes in the two Chinese groups.

There were different predictors of work morale and personal health in the two Chinese groups. For Taiwanese, “recognition” was the most important source of work stress to affect work morale, and “home/work balance” to affect personal well-being. Taiwan has been free of major political or ideological upheavals since 1949, and Confucianism has remained a dominant philosophical system and guiding ethics in daily life, Confucianism advocates that one should be benevolent to others in a hierarchical order, depending on the intimacy of one’s relationship with the other. This kind of structured intimacy is viewed as “hierarchical benevolence” in anthropological
studies (Hsu, 1988). Furthermore, once a social position is prescribed to a Chinese person, he/she must show respect and unconditional obedience to his/her superior. Therefore, the Confucian “righteousness” for ordinary people is very different from the Western concepts of “democracy” and “justice” which are highly valued in Christian civilization. These Confucian ethics is still prevailing in contemporary Taiwanese organizations (Walder, 1983; Cheng, 1995).

For most Taiwanese institutions, the organizational culture is characterized by paternalistic and autocratic values, metaphoric to a Chinese family: there is a hierarchically organized rigid power structure, with the boss assuming the role of the head (usually father) of the family and employees the role of sons; resources are centrally concentrated at the top of the corporate level and distributed according to the “principle of favoring the intimate”; corporate decisions are made behind closed doors, with almost no consultation of the employees; promotions are largely based on seniority and personal favoratism instead of job performance; group harmony and group productivity are emphasized instead of individual striving and personal achievement. In Hofstede’s (1980) seminal work, Taiwan was represented as a society with great power distance. Against this cultural backdrop and organizational reality, it is then clear that recognition by one’s superior or boss actually determines one’s prospect of the job and one’s status in the organization. Being seen as shin fuh (heart and belly) of the superior, is a coveted status for trusted subordinates, which opens the door to the inner circle of the hierarchical benevolence, and which also implies various material, psychological and social rewards. Therefore, the demoralizing effects of lack of it should be easy to imagine.

In the PRC, as predicted in our H2.1, “recognition” was also salient in the work-stress process. However, its main detrimental effect was on personal well-being (see Table IV). Whether the same source of stress manifests its effects on different strain indicators in different populations is an issue of stress specificity (Lu, 1997). Further in-depth probing is needed on this matter.

In Chinese societies, the Confucian ethics puts family right at the center of personal existence. An individual is seen as only a link in that person’s family lineage and a continuation of his/her ancestors. For Chinese people, the most intimate and important relationships are those within one’s family. The Confucian ethics advocates that one should strive to expand and preserve the prosperity and vitality of his/her family. The Chinese-style collectivism is thus dubbed “familism” (Hsu, 1988; Cheng, 1995). In the Confucian Taiwan, people place family ahead of work, status before worth, courtesy before frankness, harmony over competition, and value loyalty more highly than merit. In short, people in a collectivist society work to live, whereas those in an individualist society live to work. Recently, Taiwan has witnessed a new social movement of returning to the family and behaving like a “new good man”, partly as a
response to curb the over-working tendency following the economic miracle, and to restore warm and caring family life. Embedded in this historical and contemporary social context, it is understandable that juggling between work and family may have significant effects on one’s personal well-being (see Table IV).

In the PRC, “personal responsibility” seemed to be an important factor uplifting personal well-being (see Table IV). This may seem contradictory to our earlier prediction (H2.2) that the pressure of professional management and work accountability would be an important depressing factor to work morale and well-being. Enterprise management in the PRC has changed dramatically after the “open door policy” in 1979. As the PRC attracts more and more capital investment from the West and other more advanced economies in the East Asia, such as Taiwan, Hong Kong and Singapore, its old socialist-style management is giving way to the Western-style professional management. In this process of managerial transformation a high level of personal responsibility is almost inherent to a high level position on the professional management ladder, hence an indication of one’s success and social prestige. Such career and social advancement would no doubt enhance one’s well-being.

As predicted in our H2.3, “relationships” at work was an important aspect of work stress affecting well-being in the PRC. This is concordant with the revival of Confucianism in the PRC, which emphasizes heavily on interpersonal relationships and role obligations. Relationship harmony has been found to be an important contributor to subjective well-being among the Chinese (Kwan et al., 1997; Lu et al., 2001a, b; Lu, 2001a, b). Relationships or guanxi in a Chinese work context is therefore a vital aspect of human resources management, especially in the uprisin economy of the PRC.

Limitations and conclusions
It should be kept in mind that these data came from a cross-sectional self-report design. One cannot draw causal conclusions, and there is the concern about possible percept-percept bias. Arguing against this possibility are the findings that over a third of the correlations across the two samples were non-significant (see Table III). This suggests that there was no pervasive underlying bias inflating these correlations. Nonetheless, one should still be cautious in interpreting these data, as well as data from other studies using similar designs.

The other limitation of the present study pertains to the representativeness of our samples. As we have pointed out earlier in this paper, both the PRC and Taiwan are heterogeneous societies with rich albeit subtle regional differences within their territories. Shanghai may be a good counterpoint, but by no means representative of the enormous PRC. Similarly, samples drawn from a booming metropolitan southern city and a prestigious hi-tech industrial park in northern Taiwan could not be regarded as representative either. Further research needs
to target other distinctive groups in these Chinese societies, such as rural populations in search of convergence or divergence of evidence.

Our results showed that the generic work-stress model (Figure 1) can be applied to a Chinese urban work context in the PRC and Taiwan. Work stress related as expected to strain effects. At a more refined sub-cultural level, we have found that different sources of work stress became salient contributors to strain outcomes in the PRC and Taiwan. These differences reflect the diverse political, social, and economic characteristics of the two Chinese societies. More importantly, emic constructs of Chinese control beliefs were found to have rather consistent direct effects on strain outcomes, with the exception of physical well-being in the PRC. However, moderating effects found were not strong and consistent. In the future, more studies should be conducted in Chinese societies in order to contribute more to occupational health and cross-cultural psychology literatures.

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