



Cross-cultural variations in climate for autonomy, stress and organizational productivity relationships: A comparison of Chinese and UK manufacturing organizations

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Abstract

Cross-cultural researchers have questioned the extent to which European–American management practices can be transported to major markets in Asia, such as the People’s Republic of China. Applying employee involvement theory, we examined the relationships between climate for autonomy, work demands climate, employee stress and organizational productivity in a cross-national study of 51 UK and 104 Chinese manufacturing organizations. We predicted and found that climate for autonomy was positively and negatively related to stress in the Chinese and UK contexts, respectively. The interaction of climate for autonomy and work demands climate was significant: climate for autonomy was positively related to organizational productivity only when work demands climate was low.

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INTRODUCTION

Autonomous management practices provide employees’ discretion and control to determine how to perform their work, encouraging them to develop ownership of their work (Spector, 1986). This simple idea has been heralded and embraced by consultants, managers and unions alike as a powerful means to enhance employee involvement (Wagner, 1994), commitment, well-being, and in turn organizational performance (Forrester, 2000). Moreover, the globalization of business has led to these European–American management approaches being exported to an array of different cultures (e.g., Lam, Chen, & Schaubroeck, 2002; Robert, Probst, Martocchio, Drasgow, & Lawler, 2000; Welsh, Luthans, & Sommer, 1993).

Unfortunately, despite much enthusiasm, consistent research evidence is somewhat elusive. Although European–American studies have tended to observe weak positive associations between autonomy, satisfaction and performance (Spector, 1986), some have observed non-significant (Man & Lam, 2003; Parker, 2003)

and even negative associations (Langfred, 2004). Of greater concern, however, a long-standing but often neglected body of cross-cultural research (e.g., Child, 1991; Tannenbaum, Kavcic, Rosner, Vianello, & Wieser, 1974) has pointed to the cultural relativism of autonomous management practices. These studies highlight the fact that autonomous and participative management practices are not always well received by cultures that emphasize hierarchical ways of working, and collective effort as opposed to individualistic goals. Acknowledging the previously mixed results, researchers have increasingly sought to identify potential moderators of autonomous practices (Langfred & Moye, 2004). In this respect, theory and research are consistent. Both work design theory (Hackman & Oldham, 1980) and the participation literature (Vroom & Jago, 1988) suggest that the success of employee involvement initiatives depends on whether these practices are seen as motivating, and employees are not overloaded with complex work, perceiving that they have sufficient time and resources to benefit from greater decision latitude and responsibility (Wagner & Gooding, 1987). Central to these arguments is the notion that autonomous practices motivate people to invest in and develop a greater understanding of how to perform their work (Hackman & Oldham, 1980). Thus employees must not just complete their work but also monitor how they perform (Rubinstein, Meyer, & Evans, 2001). This latter process in particular is cognitively demanding, and therefore relies on both the motivation and the time resources to leverage these opportunities for learning.

While cross-cultural research and work design theory highlight promising – and sometimes inter-related – directions for investigation, there have been few attempts to integrate and learn from the combined lessons of the two research streams. As a consequence, while we know it is important to consider employees' workload when implementing autonomous work practices, we know little about how the cultural context may interact with these decisions. This research adopts a multilevel approach to integrate work design and cross-cultural research, providing a more complete understanding of how autonomous climates relate to employee health and organizational productivity in different cultural contexts. Consistent with employee involvement theory (Vroom & Jago, 1988) and research (Wagner & Gooding, 1987) we propose that work demands will impinge on

employees' time and cognitive resources, and so on their capacity to respond and leverage the additional flexibility afforded by autonomous working. Further, drawing upon cross-cultural research (e.g., House, Hanges, Ruiz-Quintanilla, Dorfman, Javidan, Dickson & Gupta, 1999; Javidan & House, 2001; Schwartz, 1999) we predict that the national context will influence the extent to which autonomous climates are motivating and so reduce employee stress. We propose that hierarchical and collectivistic cultures (Triandis & Gelfand, 1998) will show a greater tendency to adhere to rules and therefore perceive autonomous and potentially individualistic practices as unclear and potentially stressful. Thus we compare two cultural contexts studying manufacturing organizations: the one within the United Kingdom, as an exemplar of a European-American culture, and the other within the People's Republic of China – a country that has been described as a vertical, hierarchical culture (Chen & Li, 2005; House et al., 1999; Schwartz, 1999). By performing this research we provide greater insight into the potential benefits of climates for autonomy, and also help in understanding whether management practices transported from European-American countries deliver similar results in East Asian Confucian cultures.

Climate for Autonomy

An organization's climate has been described as employees' perceptions of the social context (Taguiri & Litwin, 1968) and the meaning that employees ascribe to the activities that an organization rewards, supports and expects (Denison, 1996; James, Joyce, & Slocum, 1988). Autonomous climates are those where management practices encourage employees to engage in greater levels of decision-making, enhancing discretion and control (such as providing flexibility to determine work scheduling, or prioritization of key activities).

An assumption of our research is that autonomous climates such as aspects of job discretion and control depend on similar processes for employees to leverage the additional flexibility afforded by autonomous working. Employee involvement theory (e.g., Langfred & Moye, 2004; Vroom & Jago, 1988) illustrates that employees' responses to control and discretion can be understood according to the relation with motivational and cognitive processes. Thus the benefits of autonomous practices can be gleaned by examining not just whether employees perceive greater discretion and control to be motivating, but also whether they possess the



cognitive resources to leverage additional flexibility and responsibility for task performance. Consistent with this theoretical representation, we first outline our hypotheses describing employees' motivational response to autonomous practices according to whether their cultural background encourages them to view these practices favorably. Subsequently, we discuss how work demands interact with autonomous practices to predict whether employees possess the cognitive resources to take advantage of additional decision-making flexibility, or whether, in a climate of high work demands, autonomous practices are perceived as stressful. We describe these work demands as climates that are created by managerial practices that seek to increase organizational productivity by setting elevated production targets, increasing employees' workloads. In turn, targets that pressure employees to produce more in less time may be discussed and interpreted by employees as evidence of managers' intentions to drive employees to work harder, resulting in a climate of high work demands.

Cultural and Contextual Interactions

A long-standing body of cross-cultural research (e.g., Haire, Ghiselli, & Porter, 1966; Tannenbaum et al., 1974) points to the need to consider how management practices align with employees' cultural values to understand the effectiveness of these practices. Management initiatives that promote autonomous working assume that employees' cultural values encourage them to seek greater control over their work environment, and that freedom to modify work processes is motivating, satisfying and stress reducing. A by-product of autonomous climates is a reduction in rules and procedures, making it easier for employees to alter and modify work practices. These assumptions appear particularly appropriate in moderate to low power distance cultures, such as the US and UK, where individuals expect to have some responsibility for setting their individual work goals and determining the work they do (Smith, Peterson, & Wang, 1996). Thus, when faced with uncertain situations, individualistic employees will prefer to rely on their own judgments rather than those of their managers, or on formalized rules. They will experience such autonomous climates as satisfying, low in stress and intrinsically motivating. Moreover, they are likely to interpret this managerial approach as efficient and empowering, because it provides front-line employees with the ability to make quick decisions based on their "hands-on" experience and

information (Chen, Kirkman, Kanfer, Allen, & Rosen, 2007).

The question arises, however: how do the aforementioned practices align with the cultural values of Chinese employees? To answer this question we refer to cross-cultural research that has sought to map the values of different cultures. Large and independent programs of research (e.g., GLOBE: Ashkanasy, 2002; House et al., 1999; Javidan & House, 2001; cultural values studies: Schwartz, 1999; Smith, Peterson, & Schwartz, 2002; Triandis & Gelfand, 1998) have reliably and consistently found that Chinese employees tend to place greater emphasis on hierarchy and on respect for societal and managerial rules than their European American counterparts. These values are often described as emphasizing verticalism (Triandis & Gelfand, 1998) – that is, hierarchy (Schwartz, 1999), power distances between managers and employees (House et al., 1999) and rule following (Ashkanasy, 2002). As such, we might expect that autonomous working may be less favorably perceived in Chinese than UK settings, as these practices are inconsistent with vertical cultural values that encourage managers to make decisions and employees to follow them. Further, while there are some exceptions (e.g., Chen & Li, 2005), by and large researchers tend to conclude that Chinese employees place greater emphasis on group goals than on individual ones (Lam et al., 2002; Triandis & Gelfand, 1998), unlike their Anglo-American counterparts. As a consequence, autonomous practices that encourage individual behavior over those of the collective may be perceived as unsettling and stressful (Child, 1991; Triandis & Gelfand, 1998).

While empirical research testing the association between autonomous working and employee well-being in Chinese is rare, considerable research evidence indicates that autonomous practices are not embraced, and are even resisted, by vertical cultures. Researchers have found that employees who are higher in uncertainty avoidance prefer greater standardization (Newbury & Yakova, 2006). Moreover, a series of studies conducted by Hui, Kevin, and Fock (2004) found that employee empowerment practices had no association with job satisfaction of Chinese participants, whereas a strong positive association was found for Canadian respondents, characteristic of low power distance cultures. These findings correspond with recent studies showing positive effects for empowerment in Mexico, Poland and the US, but negative outcomes in vertical cultures (Robert et al., 2000)

and managerial reluctance to empower subordinates in these cultures (Ayca et al., 2000). Further, Kirkman and Shapiro (2001) found that employees whose cultural values led them to believe they were subject to rules with limited personal discretion actively resisted self-management. Thus we propose:

Hypothesis 1: Nationality will moderate the relationship between climate for autonomy and individual stress, such that climate for autonomy will display a negative and positive relationship with stress in the UK and Chinese samples, respectively.

Consistent with previous research (Chen et al., 2007; Hui et al., 2004), we suggest that employees in European–American cultures will perceive management practices that encourage flexibility and individual responsibility favorably. High levels of autonomy will be seen as evidence of positive and trusting management practices, in turn enhancing employees' intrinsic motivation, and optimizing group and organizational processes (Forrester, 2000), leading to enhanced organizational productivity.

In contrast, Chinese cultures tend to emphasize hierarchical decision-making (Ashkanasy, 2002), and therefore autonomous climates are unlikely to be perceived as motivating, as they are inconsistent with culturally established ways of working. Power distance expectations have been found to be negatively associated with participative leadership in a sample of more than 17,000 middle managers representing 54 countries at both societal and organizational levels (House et al., 1999). These cultural expectations encourage employees to anticipate and be accustomed to managers providing precise directions and guidance on how to perform work tasks (Child, 1991; Robert et al., 2000), and as a consequence autonomous working may be perceived as stressful, and illustrative of poor planning and organization. Reinforcing these cultural expectations, Chinese organizations have often been described as hierarchical, emphasizing positional power as well as formalized and documented procedures. These practices discourage managers from taking responsibility, so as to avoid being "singled" out for mistakes or poor decisions (Child, 1991). Moreover, hierarchical ways of working are often formalized and embedded in organizational and government regulations. For example, China has a residence registration system that requires government employees to obtain their

superior's permission to switch jobs (Liu, Spector, & Shi, 2007). These conditions in concert are likely to discourage employees from embracing autonomous working. Rather, high power cultural values and hierarchical organizational practices (Child, 1991; Yongsun & Tung, 1999) collectively encourage employees to seek greater structure by adhering to rules, established procedures and supervisory direction (Smith et al., 1996). As a consequence, management strategies that emphasize individual control and responsibility may be perceived by Chinese employees as confusing (Child, 1991), and inconsistent with their cultural values and work experiences. In turn, interactions with peers are likely to reinforce these less than favorable appraisals, and as a consequence, autonomous climates will be perceived as evidence of poor organizational practice, which will have negative effects on employee motivation and, in turn, organizational productivity. To the authors' knowledge, Newman and Nollen (1996) conducted the closest test of the hypothesized association finding that work units in high power distance cultures, such as China, were higher performing if they were *less* participative. Conversely, participative work units in low power contexts were more effective. Thus we predict.

Hypothesis 2: Nationality will moderate the relationship between climate for autonomy and organizational productivity, such that climate for autonomy will display a stronger positive relationship with organizational productivity in the UK than China.

Employee involvement approaches (e.g., Vroom & Jago, 1988; Wagner & Gooding, 1987) suggest that the effectiveness of autonomous working depends both on employees' motivation and on their cognitive resources. Having considered whether autonomous practices motivate employees according to their cultural values, we now describe the potential moderating influence of the work environment and, in particular, work demands climate. Workloads impinge on employees' cognitive and time resources (Peterson et al., 1995), and so on their capacity to invest time in determining how to enhance work practices (Langfred & Moye, 2004). Work demands climates are therefore likely to undermine employees' responsiveness to autonomous climates as they drive employees to focus on task completion as opposed to knowledge acquisition. Further, high work demand climates may be perceived as stressful environments, reducing

employees' resources and capacity to cope with cognitive decision-making requirements (Hobfoll, 1989). In the following section we describe these predictions.

Autonomous practices seek to enhance organizational productivity by motivating people to complete their work activities as well as monitor task performance to identify errors and opportunities for improvement (Langfred & Moye, 2004). These climates provide employees with the ability to engage in complex, time-consuming, but potentially rewarding innovative processes. Accordingly, based on employee involvement research (e.g., Vroom & Jago, 1988), we suggest that the question of whether these managerial processes are likely to be perceived as empowering or a burden depends on employees' time and workload. When employees are under work pressure, a lack of direction or formalization will be viewed by employees as an added burden to their already high workload. Further, shifting cognitive resources from task performance to monitoring and evaluation impairs the speed of information processing, leading to cognitive degradation. As a consequence, high levels of pressure may result in poor decision-making (Rubinstein et al., 2001) and stress. In comparison, reduced pressures provide greater options for employees to identify and implement new approaches, increasing satisfaction and reducing stress. Previous research, conducted in both American-European and East Asian contexts, has observed that high work demands have a negative association with employee well-being (e.g., Foley, Hang-Yue, & Lui, 2005; Jones, Chonko, Rangarajan, & Roberts, 2007; Liu et al., 2007), and work demands are thought to interact to diminish the benefits of autonomous management practices in different cultures (Teo & Waters, 2002). We propose that similar effects will be present for the two cultural contexts.

Hypothesis 3: Work demands climate will moderate the relationship between climate for autonomy and individual stress, such that climate for autonomy will display a negative and positive relationship with stress when work demands climate is low and high, respectively. This interaction will be observed in both the UK and the Chinese sample.

Employee involvement theory (e.g., Vroom & Jago, 1988) suggests it is essential to match employee control and aspects of work demands in order to

stimulate organizational effectiveness. According to this theorizing, climates for autonomy will be most useful when employees perceive they have sufficient time and support to modify practices as appropriate. Employees who work in organizations with modest work demands will be more able and likely to engage in extra-role behaviors improving and streamlining organization practices and routines (Vroom & Jago, 1988). In contrast, employees who are under high work demands will find managerial initiatives that fail to provide direction or structure an added burden. In this context, management policies espousing autonomous working will have few positive benefits for organizational productivity, as limited time opportunities will be present to innovate or alter organization practices. As research conducted in a range of cultures has observed that high work demands reduce employee well-being (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Ramudu & Fish, 2004; Spector et al., 2004), and interact to influence the association with between employee autonomy and job commitment (Schaubroeck & Fink, 1998), and as we have no particular basis to suggest cultural differences, we propose that such effects will be found for the two cultural contexts.

Hypothesis 4: Work demands climate will moderate the relationship between climate for autonomy and organizational productivity, such that climate for autonomy will display a positive and negative relationship with organizational productivity when work demands climate is low and high, respectively. This interaction will be observed in both the UK and the Chinese sample.

METHOD

Two parallel questionnaire surveys (one each in the UK and China) were distributed to manufacturing organizations having 60 or more employees in predominantly engineering and electronics industries. The respondents were operational-level employees (i.e., shop floor, line managers and middle management) from each organization. Table 1 presents the descriptive statistics of the two samples.

UK Procedure and Sample

The UK data reported are part of a large research program examining strategic and human resource predictors of organization and industry competitiveness (Neal, West, & Patterson, 2005; Patterson, Warr, & West, 2004; Patterson et al., 2005). Data

Table 1 Comparison of the demographics and management practices of the UK and Chinese samples

	<i>UK sample</i>	<i>Chinese sample</i>
Data collection period	1997–1998	1999–2002
Mean (s.d.) unit annual revenue	£18.4 (32.5)	£28.5 (81.5)
Mean (s.d.) employees	256 (286)	738 (1098)
% holding company owned	70	88
Primary sector	66.4% electronics or engineering	42.5% engineering and production
Respondents	Shop floor, line managers, middle management	Shop floor, line managers, middle management
Collection of data	Mail-out and on-site administration	On-site administration
% Surveyed according to organization size	≤500 employees 100% >500 employees 60%	≤500 employees 100% 501–1000 employees 60% >1000 employees 40%
% Organizations conducting formal performance appraisals of management	79.5	63.3
% Organizations conducting annual career development reviews	8.2	29.4

were collected from 1997 to 1998. The size of the companies ranged from 60 to 1929 employees, with an average of 256 employees. In organizations with less than 500 employees, all employees were asked to complete questionnaires. In six of the organizations with more than 500 employees a random sample of 60% of the workforce was selected to complete the questionnaire. Two methods were used to administer the questionnaire. Seventeen companies administered the questionnaires on site. In the remainder, a postal survey was carried out. Questionnaires were sent out to employees at their place of work in personally addressed envelopes, which also contained a pre-paid return envelope.

Overall, completed questionnaires were received from 6869 participants, including managers and shop floor employees, constituting a 57.0% response rate across the sample. Of these questionnaires, 8% contained missing data. As the percentage of missing responses for each question varied from only 1 to 2.5%, there appeared to be no “favored” or “unfavored” items, which suggests that systematic non-response patterns for individual questions are not a serious concern for data analyses.

This procedure provided data for 51 UK companies with an average annual revenue of £18.4 million. About a third of the organizations were in engineering (34.8%), and another third in electronics (31.6%). Eleven percent of the organizations were manufacturing plastics, and 6% were manufacturing food and drinks. The remaining 16% were engaged in a range of diverse industry

sectors. About a quarter of the organizations were from the North (24%), the Midlands (28.7%) or the South (including London; 28.6%) of England. Seven, 10 and 2% of the organizations were from Wales, Scotland and Northern Ireland, respectively.

Chinese Procedure and Sample

Data were collected from 1999 to 2002. Back-translation of the questionnaire was conducted using the procedures outlined by Brislin (1980). As with the UK survey, if the company had less than 500 employees, questionnaires were distributed to all respondents. For companies with between 500 and 1000 employees, questionnaires were mailed to a stratified sample of 50% of the workforce. For companies with more than 1000 employees, questionnaires were mailed to a stratified sample of 40% of the workforce. This procedure provided 6748 usable individual responses from managers and shop floor employees.

One hundred and four Chinese manufacturing organizations participated, with an average annual revenue of £28.5 million. Eighty-eight percent of companies were owned by a parent organization (either public, private or state controlled). Thirty percent of these companies were state-owned enterprises, another quarter were joint venture companies, with Chinese and multinational enterprise (MNE) ownership, or owned by MNE (26.1%). Five percent were owned by Chinese cooperatives. The remaining 11% were privately owned. Seven percent of the organizations were in the manufacturing food, drinks and tobacco sector. About a fifth

(22.4%) produced textiles and packaging, and over a quarter of the organizations (28.3%) were engaged in chemical production. The remaining were engaged in engineering and production (i.e., engine manufacturing, transportation vehicle manufacturing). Seventy-one percent of the organizations were from the Wuxi province; the remainder were from Yancheng.

Measures

Organizational climate was measured using the organizational climate measure developed by Patterson and West (Neal et al., 2005; Patterson et al., 2004; Patterson et al., 2005). The response scale for all items ranged from 1 (“definitely false”) to 4 (“definitely true”). The four-item climate for autonomy scale assessed the extent to which employees perceived that management provided them with the scope and flexibility to determine work procedures and processes (e.g., “People at the top tightly control the work of those below them” – reverse scored; “Management let people make their own decisions most of the time”). The four-item work demands climate scale assessed employees’ perceptions of pressures due to management practices, policies or procedures (e.g., “Management require people to work extremely hard;” “People here are under pressure to meet targets”). Concurrent and construct validity of these scales was high. In the UK sample, the autonomy scale correlated positively and highly with independent ratings of operator responsibility on the factory floor ($r=0.46$; $p<0.001$); the work demands scale correlated negatively with managerial ratings of operator responsibility.

Stress was measured using the 12-item General Health Questionnaire (GHQ) developed by Goldberg (1972). The GHQ is a self-administered screening measure for the detection of minor psychiatric

disorder (i.e., non-psychotic psychological impairment) in community and non-psychiatric settings. The questionnaire is designed to be maximally sensitive to changes in normal functioning, and to differentiate psychiatric cases from non-psychiatric cases (Hardy, Shapiro, Haynes, & Rick, 1999). The GHQ items assessed the levels of anxiety and tension that employees perceived in their work lives (e.g., “Lost much sleep over worry?”; “Felt that you couldn’t overcome your difficulties?”; “Been losing confidence in yourself?”). The response scale ranged from 1 (“better than usual”) to 4 (“much less than usual”).

Confirmatory factor analyses (CFAs) were conducted to assess whether the three-factor model, comprising climate for autonomy, work demands climate and stress, was an appropriate fit for the proposed model. We ran CFAs separately for the two datasets using individual-level data. We constructed all variables as separate factors (i.e., climate for autonomy, work demands climate and stress). We compared the three-factor model with the more parsimonious two-factor (grouping the climate constructs onto one factor) and single-factor models (with all variables grouped together). The fit statistics are reported in Table 2. For both samples the three-factor model provided an adequate and best fit for the data.

Having established the adequacy of the three-factor model, we examined whether questionnaire measures behaved in a comparable way across samples, establishing measurement equivalence (Mullen, 1995). As only shop floor employees reported stress, managers’ perceptions of climate were not included in the analyses. We conducted a two-group CFA (using the same measurement models as the previous CFAs) with each country representing a group to determine the extent to which the measurement model was equivalent in

Table 2 Confirmatory factor analyses for the UK and Chinese samples

Factors	Separate data						Multi-group					
	UK sample			Chinese sample			Constrained factor			Constrained construct		
	1	2	3	1	2	3	1	2	3	Auto climate	Work demand	Stress
χ^2	775	674	338	5540	4324	2003	7567	4622	2564	6.86	209	884
d.f.	190	188	186	190	188	186	398	397	393	3	15	120
CFI	0.44	0.53	0.85	0.70	0.77	0.90	0.89	0.93	0.96	1.00	0.93	0.98
RMSEA	0.14	0.13	0.07	0.11	0.09	0.06	0.12	0.09	0.06	0.03	0.10	0.07

Individual-level analyses (listwise deletion). UK shop floor employees $N=3387$, Chinese shop floor employees $N=5569$, and total number of employees = 8956.

the two samples (Steenkamp & Baumgartner, 1998). We reported the results of multigroup analyses for three different models using the same three-, two- and single-factor models described previously (see Table 2). While the three-factor cross-group CFA displayed acceptable, and the best fit, indices of the three models (e.g., CFI=0.96, RMSEA=0.06), a significant change in the chi-square for all three models (single-factor $\Delta\chi^2_{(20)}=94.33$, $p<0.05$, two-factor $\Delta\chi^2_{(19)}=785.70$, $p<0.05$, three-factor $\Delta\chi^2_{(18)}=104.62$, $p<0.05$) comparing constrained and unconstrained models demonstrated that the factor structure was not invariant across groups. To understand whether these differences reflected different factor loadings of the constructs in the final section of Table 2, we report multigroup analyses for each of the scales. A significant change in the chi-square for climate autonomy ($\Delta\chi^2_{(2)}=6.29$, $p<0.05$), work demands climate ($\Delta\chi^2_{(4)}=70.16$, $p<0.05$) and stress ($\Delta\chi^2_{(11)}=20.06$, $p<0.05$), comparing constrained and unconstrained models, demonstrated that the factor loadings were not invariant across groups. Thus, while the measurement model was a good fit to the data (for each separate sample), the multigroup CFA analyses illustrate that the separate scales displayed differing factor loadings and the interrelationship between variables differed, and so the model was not metrically equivalent in the UK and China. Based on these results, when our theoretical predictions suggest consistent patterns of relationships across the UK and China, we also checked these predictions analyzing the data separately for the two countries.

While we did not measure cultural values, instead hypothesizing national differences based on these, we conducted a secondary analysis including a measure of employees' preferences to adhere to rules and established procedures, using this as an indicator of cross-cultural differences. This rule adherence construct is similar to the uncertainty avoidance and power distance constructs developed by GLOBE researchers (e.g., Ashkanasy, 2002; House et al., 1999; Javidan & House, 2001) and the Smith et al. (2002) verticality measure of national culture, especially power distance, that is, reliance on formal rules and one's superior. The measure of rule adherence relates to whether employees prefer to rely on formal rules and procedures, conferring decision-making authority to superiors and established organizational practices. Items were as follows: "People can ignore formal procedures and rules if it helps to get the job done" (reverse scored);

"Everything has to be done by the book"; "It's important to check things first with the boss before taking a decision." Reliability for the scale was low (UK sample $\alpha=0.60$) to adequate (Chinese sample $\alpha=0.77$). Previous research (e.g., Ashkanasy, 2002; House et al., 1999) using the similar rule adherence index found that East Asian employees have a greater propensity to adhere to rules than European-American employees. UK employees reported a significantly lower tendency to adhere to formal rules ($M=2.67$, $s.d.=0.46$) than Chinese employees ($M=2.85$, $s.d.=0.88$), $F(1, 6146)=47.02$, $p<0.01$, providing inferred support for the presence of cultural value differences between the two countries and the use of cross-national comparisons.

In the UK sample, productivity data (the logarithm of revenue divided by the number of employees within the regional organization, i.e., within the UK) were collected from company accounts lodged in the UK's Companies House database. In the Chinese sample, productivity data (the logarithm of revenue divided by the number of employees employed within China) were provided by the Chief Financial Officer of each company.

RESULTS

Aggregation of individual data to the organizational level requires both a theoretical basis and empirical justification (Kozlowski & Klein, 2000). Consistent with referent shift models of climate (Chan, 1998) that describe climate as the shared assignment of meaning among individuals within an organization, we conceptualized climate as employees' shared representation of organizational practices and processes. To empirically justify aggregation, we computed within-group agreement coefficients to demonstrate consensual validity ($Rwg(j)$; James, Demaree, & Wolf, 1984). Average Rwg 's are reported in Table 3, providing a summary of the mean levels of within-group agreement across organizations. To test discriminant validity between organizations we computed intraclass correlation coefficients (ICC1, ICC2). Table 3 presents the descriptive statistics, correlations and ICCs for the two samples. The Chinese means were significantly higher than the UK means on climate for autonomy ($t=7.54$, $p<0.01$), work demands climate ($t=7.48$, $p<0.01$) and stress ($t=8.70$, $p<0.01$). There were no significant differences across countries in the organizational productivity measures.

Table 3 Descriptive statistics and organizational-level correlations between variables in the UK and Chinese samples

	UK sample					Chinese sample					1	2	3	4
	Mean (s.d.)	α	ICC1	ICC2	Mean Rwg	Mean (s.d.)	α	ICC1	ICC2	Mean Rwg				
1. Climate for autonomy	2.31 (0.19)	0.67	0.08	0.89	0.84	2.91 (0.58)	0.67	0.36	0.96	0.76	—	0.55**	0.12	0.00
2. Work demands climate	2.91 (0.30)	0.79	0.22	0.96	0.83	3.37 (0.43)	0.67	0.22	0.92	0.81	-0.54**	—	-0.21*	0.03
3. Stress	1.74 (0.54)	0.88	0.03	0.74	0.91	2.36 (0.44)	0.85	0.28	0.94	0.69	-0.30*	0.42**	—	0.13
4. Organizational productivity	2.93 (0.50)	—	—	—	—	2.82 (0.97)	—	—	—	—	0.23	-0.11	0.12	—

UK organizational-level sample correlations below diagonal, N=51. Chinese sample N=104 comprising shop floor employees only.

* p<0.05 level, ** p<0.01 level (two-tailed).

Table 4 Multilevel tests of employee stress hypotheses

Variable	Parameter estimate	s.e.	t	p
Controls: Individual level (intercept)	1.96	0.09	20.62	0.00
Job tenure	0.02	0.01	1.98	0.05
Gender	0.00	0.02	0.05	0.98
Hypothesis 1				
Main effects: Organizational level				
Climate for autonomy (A)	0.10	0.04	2.39	0.02
Nation (N)	-0.82	0.04	-19.21	0.00
Interaction: Organizational level A × N	0.18	0.07	2.39	0.01
Hypothesis 3				
Main effects: Organizational level				
Climate for autonomy (A)	0.25	0.07	3.35	0.00
Work demands climate (W)	-0.13	0.08	-1.70	0.09
Nation (N)	-0.87	0.04	-19.64	0.00
Interaction: Organizational level A × W	0.03	0.33	0.10	0.92

Criterion: Employee stress. Combined UK and Chinese sample, N=155 organizations, N=3413 shop floor employees.

Note: Split sample analysis and listwise deletion of data provided reduced sample size.

Multilevel modeling was used to examine the association between organizational climate and individual stress. Tenure, gender and stress were entered as individual-level (β or level 1) variables. Consistent with Hofmann and Gavin's (1998) recommendations, tenure was grand mean centered. Nation was entered as a dummy variable (0=China, 1=UK). We entered organizational climate as an organizational-level (γ or level 2) variable. To account for same-source response bias across levels of analysis (i.e., to ensure that the associations between climate and employee stress could not be due to the same respondents), we adopted the split sample analysis strategy described by Ostroff, Kinicki, and Clark (2002). According to this strategy we randomly selected 50% of respon-

dents within each organization. This half of the sample was used to compute mean climate values for each of the organizations. The remaining cases provided the individual-level data (i.e., the measure of stress). Thus a mean set of scores were computed for climate constructs from one half of the sample, and respondents from the other half rated stress, ensuring independent measurements. Listwise deletion was used for individual data.

Hypothesis 1 predicted that nationality would moderate the relationship between climate for autonomy and individual stress, such that climate for autonomy would display a negative and a positive relationship with stress in the UK and Chinese samples, respectively. Table 4 summarizes these results. In the first step, control variables of

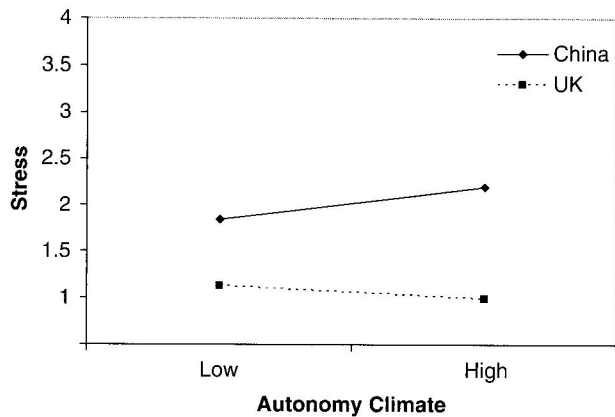


Figure 1 Climate for autonomy and nation interaction on individual stress.

job tenure and gender were entered. In the second step, climate for autonomy and nation were entered as main effects, and in the third step the interaction of autonomy and nation was included. The interaction term of nation and climate for autonomy was statistically significant ($\gamma=0.18$, $p<0.05$). Figure 1 illustrates the interaction plotted according to the directions of Aiken and West (1991). We also ran analyses separately for the two samples. Climate for autonomy had a significant negative relationship ($\gamma=-0.21$, $p<0.05$) with stress in the UK sample and a significant positive relationship ($\gamma=0.42$, $p<0.01$) with stress in the Chinese sample. We also computed a quadratic term testing whether climate for autonomy had an inverted U-shaped relationship with stress in the UK, Chinese, and combined samples. No significant results were observed.

As all variables in the climate productivity analyses, that is, examining the relationship between climate and organizational productivity, were operationalized at the organizational level, we tested these relationships using ordinary least squares regression analyses. For all of the analyses, independent variables (i.e., climate for autonomy, work demands climate) were mean-centered (Aiken & West, 1991), including data from both countries. Thus standardization retained country-level effects. Company size, industry sector, ownership (public or private), year founded and number of hierarchical levels in the organization were entered first as control variables. Industry sector was coded as two dichotomous variables. For the first variable, organizations performing electrical, mechanical or instrument engineering were coded as 1 and the

remaining sectors were coded as 0. For variable 2, organizations producing synthetic products, for example, rubber, plastics and chemicals, were coded as 1 and the remaining sectors 0. The main effects for climate for autonomy and work demands climate were entered next. The two-way interaction of climate for autonomy and work demands climate was entered in the third step. Because some of the predictors were correlated (see Table 3), we checked for variance inflation factors (VIF). Stevens (1992) suggests that these VIFs should not exceed 10.00. Because all VIFs were less than 3.60, the results indicated that multicollinearity was not a serious concern for data analysis.

Hypothesis 2 predicted that nation would moderate the relationship between climate for autonomy and productivity, such that climate for autonomy would display a stronger positive relationship with organizational productivity in the UK than China. Table 5 illustrates the regression results. Hypothesis 2 was not supported. The interaction term was not significant.

Hypothesis 3 predicted that work demands climate would moderate the relationship between climate for autonomy and employee stress. We entered the control variables and main effects, followed by the interaction term. The interaction term was significant ($\gamma=-0.14$, $p<0.05$), but when we controlled for nationality (as reported in Table 4) the interaction was no longer significant ($\gamma=0.03$, $p=n.s.$). This is possibly due to the differing nature of the relationship between autonomy and stress in the two countries. Since we have established that there is a positive relationship between autonomy and stress in China, but a negative relationship in the UK, it could be that the effect of work demands (which is higher on average in China) varies from nation to nation. Therefore we are unable to tell whether the real moderator is really work demands or nation, or a combination of the two. When we ran analyses separately for the two samples the interaction term was not significant in the UK ($\gamma=0.00$, $p=n.s.$), nor in the Chinese sample ($\gamma=0.08$, $p=n.s.$).

Hypothesis 4 predicted that climate for autonomy and work demands climates would interact to predict organizational productivity. The last section of Table 5 illustrates these results. Neither of the main effects was significant. The interaction term was significant ($\beta=-0.36$, $p<0.05$), explaining an additional 5% of the variance in organizational productivity. This interaction is illustrated in Figure 2. The figure illustrates that high climate for

Table 5 Multiple regression tests of climate-productivity relationships

	Step and independent variables				
	β	R^2	ΔR^2	F	d.f.
Step 1					
		0.04		0.89	6, 149
Company size (no. employees)	0.05				
Sector (engineering)	-0.02				
Sector (synthetics)	0.06				
Public/private	-0.03				
Foundation year	-0.14				
No. of production levels	0.12				
Hypothesis 2					
Step 2					
		0.04	0.00	0.63	8, 147
Climate for autonomy (A)	0.02				
Nation (N)	-0.02				
Step 3					
A × N	-0.05	0.04	0.00	0.54	9, 146
Hypothesis 4					
Step 2					
		0.04	0.00	0.63	9, 146
Nation	0.01				
Climate for autonomy (A)	0.03				
Work demands climate (W)	-0.03				
Step 3					
		0.09	0.05	1.20*	10, 145
A × W	-0.36*				

Criterion: Organizational productivity. Combined UK and Chinese sample N=155 comprising shop floor employees only.
*p<0.05 level, **p<0.01 level (two-tailed).

autonomy had a positive relationship with organizational productivity only when work demands climate was low. To assess whether this finding was evident for both nations we ran analyses separately for the two datasets. The interaction was significant in the Chinese dataset ($\beta=-0.17$, $p<0.05$), and non-significant but consistent with predictions in the UK sample ($\beta=-0.27$, n.s), providing further partial support for Hypothesis 4. We also tested the three-way interaction of climate for autonomy work demands climate, and nation. This interaction was not significant.

DISCUSSION

Despite substantial enthusiasm for employee empowerment initiatives in European-American countries, similar results have not always been achieved in other cultures. The present research sought to shed light on whether autonomous work practices have similar associations with employee and organizational outcomes in a UK and Chinese

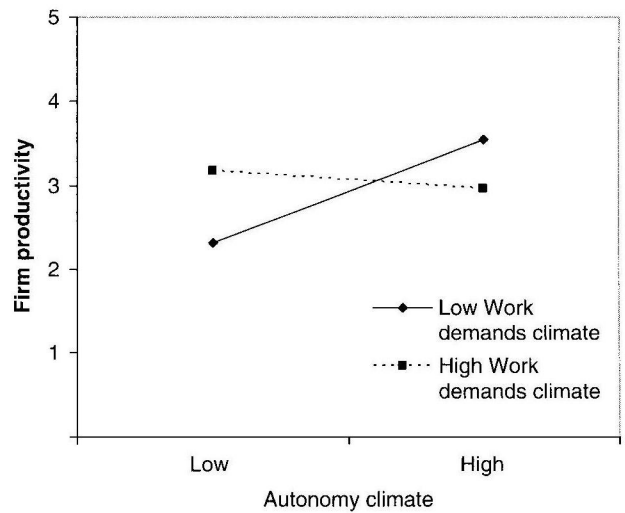


Figure 2 Climate for autonomy and work demands climate interaction on organizational productivity.

sample. Applying the prescriptions of employee involvement theory (e.g., Vroom & Jago, 1988), we proposed that employees' cultural context, namely European-American as opposed to East Asian Confucian country, would interact to determine whether autonomous climates were perceived favorably and so reduced stress and enhanced organizational productivity. Further, applying the same theory and related research (e.g., Wagner & Gooding, 1987), we proposed that work demands climate would moderate the association between both autonomous climate and employee stress and organizational productivity. Consistent with theory and predictions, climate for autonomy displayed a differing pattern of relationships with employee stress across contexts. Climate for autonomy was negatively related to stress in the UK sample and positively related in the Chinese sample. Using combined data from the UK and Chinese samples, we found the interaction of climate for autonomy and work demands climate explained significant variance in organizational productivity. When analyses were run separately for the two countries, the aforementioned interaction was non-significant but in the predicted direction for the UK sample, and significant for the Chinese sample. For both samples, climates for autonomy were most positively related to organizational productivity when work demands climate was low.

Consistent with Hypothesis 1, climate for autonomy displayed a negative relationship with employee stress in the UK sample and a positive relationship in the China sample. We proposed that

these differential relationships reflect underlying differences in people's values that themselves are rooted in country cultures. Western individualistic cultures emphasize the virtue of autonomy at work since this provides opportunities for self-determination and individual control over the environment. Climates for autonomy are therefore closely aligned with these values, and are likely to be seen as empowering and supportive of individual growth and development in European-American industry. In contrast, climate for autonomy is poorly aligned with the vertical values of Chinese employees, and so may be perceived as evidence of managerial inadequacy. Managers are expected to give clear directions, and decisions are taken in the best interests of the collective rather than those of individual employees. These findings contribute to the long-standing body of research examining participative management practices (Haire et al., 1966; Kerr, Dunlop, Harbison, & Myers, 1971; Tannenbaum et al., 1974), and suggest that self-determination theory (cf. Ryan & Deci, 2000) and Hackman and Oldham's (1980) job design model may be more culturally specific than previously thought. Thus the benefits of autonomous practices depend considerably on the cultural context. In Western cultures, autonomy may be perceived as offering opportunities to express personal preferences and a chance to emphasize unique self-identities (Iyengar & Lepper, 2000). For East Asian cultures, high levels of autonomy, particularly in uncertain situations, may be perceived as reducing the support and harmony provided by clear specified collective norms and codes of behavior.

This interpretation is tentative, however. While we found suggestive evidence of the presence of cultural differences, notably Chinese employees reported a higher preference to adhere to rules than UK employees, we did not actually measure cultural values. Thus we do not know whether the differences are due to Chinese managerial practices, which traditionally may have been more directive and hierarchical (e.g., because of labor market factors and government regulations), and that a move away from this approach is experienced as stressful and inefficient simply because it is different. Future research examining these issues could measure cultural values to test whether these beliefs underpin the effects we observe.

Hypothesis 3 proposed that the interaction between climate for autonomy and work demands would predict employee stress. Previous studies

(e.g., Schaubroeck, Lam, & Xie, 2000; Wall, Jackson, Mullarkey, & Parker, 1996) have failed to find the two-way interaction between autonomy and work demands predicted by Karasek's (1979) stress model. We did find a weak relationship. Since we have established that there is a positive relationship between climate for autonomy and stress in China, but a negative relationship in the UK, it could be that the effect of work demands (which is higher on average in China) varies from nation to nation. The interaction term was significant, but when we controlled for country the effect was no longer significant.

Consistent with Hypothesis 4, the interaction of climate for autonomy and work demands climate explained significant amounts of variance in productivity. We found that climate for autonomy was positively related to productivity only when work demands climate was low. When the organization is generally characterized as low pressure, a climate that encourages freedom in setting work targets and deciding on work procedures is associated with relatively high levels of organizational productivity. This finding approached significance in the UK sample, and it was the only circumstance in which autonomy had a positive relationship in the Chinese sample with the outcome variables. Thus the data suggest that a climate of autonomy should not be seen as inappropriate in Chinese organizations *per se*; rather, pressured work environments (which may be more characteristic of Chinese industry, given the large mean differences across the samples) are not the appropriate environments for encouraging employees to take responsibility for setting work targets and determining work procedures. The data suggest that, in both cultural contexts, an organizational climate that conveys a sense of autonomy and does not communicate high levels of pressure to produce may lead to higher productivity.

Practical Implications

The interaction between climate for autonomy and work demands climate illustrates that climates that support autonomy have favorable outcomes for organizational productivity only if they are matched with the appropriate conditions of relatively low work demands. Indeed, this was the only condition where climate for autonomy had a positive association with organizational productivity in the Chinese sample. Thus the benefits of employee control and discretion are evident only when employees are free from high levels of work

demands that consume their attention and capacities for information processing and decision-making.

While we highlight that under certain conditions autonomous climates may enhance productivity, our strongest implication is that these approaches have culturally specific effects. Thus MNEs seeking to export common management practices are unlikely to achieve consistent positive results across different cultures. Climates for autonomy enhance employee well-being in individualistic Anglo-American countries, yet these approaches have opposite effects in vertical East Asian Confucian cultures. Hence it is in Chinese contexts that managers must pay particular attention to workload demands that diminish the productive benefits of autonomous working.

Limitations and Future Research

While we sought to recruit comparable samples in the two countries, they varied in relation to organization size, sector, public/private and year founded. However, the inclusion of these aforementioned variables as controls in regression analyses indicated that they did not systematically influence the results. The data reported for the Chinese sample were cross-sectional (the UK productivity data were gathered for the period after the climate data were collected), so it is not possible to infer causality.

A second limitation of this research stems from the difficulties in obtaining validated productivity measures in emerging economies. While the UK data were based on financially audited measures, the Chinese data do not include this validation, reflecting national accountancy standards at the time of data collection. In order to increase the accuracy of reports, and to ensure the data were from a reliable, validated source, we gathered financial data from each firm's chief financial officer. Thus the data come from the most senior knowledgeable person in each firm. A further limitation of the study pertains to issues of statistical power. In the UK sample climate for autonomy was positively but not significantly related to productivity ($r=0.23$, $p=0.10$); likewise, the interaction of autonomy and work demands climate approached significance. These non-significant effects may have been a consequence of the small UK sample size ($N=51$) and consequent power considerations (McClelland & Judd, 1993). Future research would be valuable to replicate these hypotheses using a larger sample.

The measures of climate were based upon traditional European–American management concepts. We did not identify or seek to measure aspects of climate that would be especially pertinent in a Chinese context. Thus the research does not offer new understanding about climate factors that may be particularly central to China. Further, the CFAs illustrated that the scales behaved differently in the two cultural contexts. Instead, we focused on whether autonomous management approaches common to European–American economies were similarly related to individual and organizational outcomes in China. We therefore sought to identify whether the pattern of relationships suggested a convergence or divergence of autonomy climate–outcome relationships across national contexts. In performing this research we recognize that culture is a multilayered construct that evolves and changes over time (Tung, 2008). Thus, while we have studied trends across organizations in the UK and China, important topics for further investigation are the malleability of cultural assumptions over time, and intra-national organizational differences in the effectiveness of autonomous practices.

CONCLUSION

MNEs often seek to apply practices that have previously been successful in the company's country of origin. Unfortunately, these results are not always replicated. Moreover, failure to pay attention to cultural and contextual effects can lead to unintended, even negative, effects. The present study provides insight to tackle this challenge. Applying employee involvement theory, our research predicted and found that autonomous climates were negatively and positively related to employee stress in the UK and Chinese samples, respectively. Also consistent with theory, we found that climate for autonomy was positively related to organizational productivity only when the work demands climate was low. These findings extend and support employee empowerment theory, illustrating that climates for autonomy influence both individual and organizational outcomes in different cultural contexts.

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