



# A multi-society examination of the impact of psychological resources on stressor–strain relationships

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## Abstract

This paper sequentially addresses a conceptual and an empirical goal. Our conceptual goal was to develop a globally relevant model of the relationship between work role stressors and strain using conservation of resources (COR) theory as our foundation. Stressors included in the model are role conflict and role ambiguity, with three resources – mastery, optimistic orientation, and self-esteem – as moderators on the stressor–strain relationship. With this conceptual framework developed, we explored our empirical goal, a test of the model using both societal-level and individual-level indicators. First, we pan-culturally tested the model across our seven-society sample. Next, we split these societies into high and low gross national income categories. Likewise, we split the respondents in our sample, regardless of their country, into high and low idiocentrism/individualism and allocentrism/collectivism categories and tested at these group levels. Our findings showed that personal resources – mastery, optimistic orientation, and self-esteem – generally served to buffer the experienced strain due to work role ambiguity and conflict. This study provides specific information that can assist the global business community in understanding how stress pervades their workforces. Overall, our findings offer substantial evidence that a global model of stress is truly viable, providing direction for future research on stress in the global workforce.

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## INTRODUCTION

For many years, organizational research has focused on demonstrating relations between situational stressors, such as job demands and experienced strain (Beehr, 1995; Jex, Bliese, Buzzell, & Primeau, 2001). Indeed, such studies have provided insight into the types of stressors that have permeated organizations, resulting in losses due to reduced performance, absenteeism, turnover, medical expenses, and even death (World Health Organization, 2008). Research has more recently turned to an examination of how individual resources can increase stress resistance and well-being (Hobfoll, 2002). While a number of stress models have provided theoretical foundations for stressor–strain research (e.g., Lazarus & Folkman, 1984; Scheier & Carver, 1985), relatively less empirical work has been devoted to identifying relevant personal

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resources that may make individuals more resilient to stressors and more inclined to gain control over their environmental stressors (Hobfoll, 2002).

The goals of our study are twofold. Using conservation of resources (COR) theory as our theoretical foundation, our first goal is to examine the stressor–strain relationship, and the moderating roles of several key individual resources in an integrated cross-cultural model. The second goal is to test empirically whether these relationships are applicable across different cultures. Recent cross-cultural research has shown the importance of including societal-level factors to understand behavior across cultures (e.g., Ralston, 2008). To begin, we pan-culturally tested our hypotheses across seven societies (Brazil, China, Fiji, France, Germany, Hong Kong, and the US). Next, we split our sample to test our hypotheses by high and low levels of gross national income (GNI). In turn, we split our sample by level of idiocentrism and allocentrism. Thus we tested our hypotheses pan-culturally, with societal-level splits and with individual-level splits.

## GOAL 1: AN INTEGRATED MODEL OF STRESS

### COR Theory

COR theory integrates several stress theories (Hobfoll, 1989) and provides an integrated framework for understanding organizational stress through the management of resources. COR theory recognizes the complexity of the interaction between individuals and their situation (Hobfoll, 1989), and proposes that the strain experienced by individuals can be understood in relation to a potential or an actual loss of resources (Hobfoll, 1989).

According to COR theory, resources are essential elements of individuals' resistance armamentarium (Hobfoll, 2002). COR theory suggests that, once a stressor has been identified, individuals will strive to restore equilibrium within their lives. To do so, they will use their psychological resources, because these resources facilitate coping, general contentment, and adjustment during stressful life events (Aspinwall & Taylor, 1992; Taylor & Brown, 1988). In accordance with COR theory, psychological stress is "a reaction to the environment in which there is (a) the threat of a net loss of resources, (b) the net loss of resources, or (c) a lack of resource gain following the investment of resources" (Hobfoll, 1989: 516). Under stressful conditions, and as an ongoing process in anticipation of stressors

(Aspinwall & Taylor, 1992), individuals strive to retain, protect, and build resources (Hobfoll, 1989).

COR theory posits four principal resource categories that are valued by the individual and that serve as a means for the attainment of goals:

- object resources (e.g., home, vehicles);
- condition resources (e.g., socio-economic status, valued work role);
- personal resources (e.g., self-esteem, mastery); and
- energy resources (e.g., money, time, credit).

Thus events are stressful to the extent that they threaten or result in loss of critical individual resources. Resources will spiral, in that "those who possess strong resources should not only cope better than those who lack resources, but having one resource should increase the benefits of other" resources (Hobfoll & Shirom, 2000: 65).

Not all individuals are equally capable of acquiring resources. In fact, Hobfoll and Shirom (2000) called for further investigation into personal resources as they relate to COR theory. Hence one type of resource that is of particular concern to this research is personal resources. This study examines one of the resources (i.e., interpersonal resources) suggested by Hobfoll (1989) in the stressor–strain relationship. Thus we are only partially testing COR theory, as we do not examine all possible categories of resources. Investigations of various psychological (resistance) resources suggest that mastery, optimistic orientation, and self-esteem are valuable resources that aid stress resistance (Antonovsky, 1979; Hobfoll, 1989; Taylor, 1989) and/or help one through stressful circumstances (Pearlin, Lieberman, Menaghan, & Mullan, 1981). Further, Hobfoll (2001) noted that dispositions such as optimism–pessimism, self-efficacy (mastery), and self-esteem can be considered personal resources in reducing work stress.

### Role Stressors as Threat to Depletion of Resources

According to COR theory, situational circumstances that are work stressors can threaten or cause a depletion of individuals' resources (Hobfoll & Freedy, 1993). Role conflict (incongruent expectations between and within work roles) and role ambiguity (a lack of clarity about role expectations) are two commonly encountered situational work stressors. COR theory proposes that resources are depleted in the process of juggling competing roles or having unclear roles, which in turn leaves fewer resources available for other work demands. This loss of resources can lead to a negative "state of being,"



namely, strain. This study focuses on psychological strain, as role stressors are more strongly related to psychological strain than to physiological and behavioral strain (Jex & Bliese, 1999).

Role conflict and role ambiguity are unique constructs that occur independently of one another (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). From predictions based on COR theory and the previous work role literature, role stressors, such as conflict and ambiguity, are positively related to experienced strain (Hobfoll & Freedy, 1993). Although the relationships between role conflict and role ambiguity with psychological strain are expected to be in the same direction, conflict and ambiguity are also expected to be independent of one another, with the magnitude of the relationships with strain differing because of individual, organizational, and societal influences (Glazer & Beehr, 2005). Meta-analytic studies (Jackson & Schuler, 1985; Van Sell, Brief, & Schuler, 1981) have shown that role conflict and role ambiguity often operate in different manners from one another. Thus we propose the following two hypotheses:

**Hypothesis 1:** Work role conflict relates positively to psychological strain.

**Hypothesis 2:** Work role ambiguity relates positively to psychological strain.

### Psychological Resources as Moderators

Hobfoll (2002) argued that psychological resources give individuals a sense of resilience and control over their environment that can buffer the negative effects of stressors. COR theory stipulates that, once a stressor has been identified, individuals will strive to restore equilibrium within their lives by offsetting one resource loss with other resources. COR theory predicts that people with greater initial psychological resources will be able to mobilize them in a time of stress to affect a lesser net loss than those with fewer resources (Hobfoll, 1998). Investigations of various general resistance resources suggest that personal characteristics – specifically, mastery, optimistic orientation, and self-esteem – are valuable psychological resources that aid stress resistance (Antonovsky, 1979; Hobfoll, 1989) or facilitate coping, general contentment, and adjustment to stressful circumstances (Aspinwall & Taylor, 1992; Pearlin et al., 1981; Taylor & Brown, 1988). Thus, in this study, we extend the work on these individual resource-moderator theories in stressor-strain relationships

to a multiple-moderators theory (Hobfoll, 2002), by systematically investigating these three psychology resources as a comprehensive, integrated study of moderators using COR theory. Given the strength and consistency of findings regarding the relevance of these three key resources, it seems to be a natural next step to incorporate them into the same model.

Mastery is the perception that life and situations are under one's personal control. Individuals with high mastery have stronger adaptive functions under conditions of high threats (Cohen & Edwards, 1989), thus enhancing their ability to cope more successfully with stressors and strains (Karasek, 1979). For example, when faced with role conflict or ambiguity at work, people with a mastery resource may feel they can modify or reduce some aspects of a stressful situation, and perceive themselves to be less vulnerable in the face of stressful events (Thompson, 1981).

**Hypothesis 3a:** Under work environment conditions of high work role conflict, individuals with higher levels of mastery will report less psychological strain than will individuals with lower levels of mastery.

**Hypothesis 4a:** Under work environment conditions of high work role ambiguity, individuals with higher levels of mastery will report less psychological strain than will individuals with lower levels of mastery.

Optimistic orientation is the perception as to whether good things will happen to oneself (Scheier & Carver, 1985). Individuals high in optimistic orientation will tend to be those having more positive projections of the potential consequences of work role stressors. According to COR, individuals with a high positive outlook on life are more resilient in the face of stressful events, and they are less vulnerable and susceptible to resource loss. By contrast, individuals who are less optimistic are less resilient, and more likely to experience increased resource loss. Furthermore, such losses make individuals more vulnerable, because they have fewer resources available to deal with future work role conflicts and ambiguities that will inevitably occur.

**Hypothesis 3b:** Under work environment conditions of high work role conflict, individuals with higher levels of optimistic orientation will report less psychological strain than will individuals with lower levels of optimistic orientation.

**Hypothesis 4b:** Under work environment conditions of high work role ambiguity, individuals with higher levels of optimistic orientation will report less psychological strain than will individuals with lower levels of optimistic orientation.

Self-esteem is the perception of self-worth. Those who have self-esteem may have more “reserve” of confidence in themselves upon which they can draw when faced with problematic situations. Indeed, research (e.g., Hobfoll & Freedy, 1993) suggests that individuals with high self-esteem are expected to be “less shaken” by job stressors such as work role conflict and ambiguity, and accompanying consequences, because they believe they have the ability and resources to cope with such demands. As evidence, Ganster and Schaubroeck (1991) reported that low self-esteem firefighters who experienced role conflict had higher levels of somatic symptoms.

**Hypothesis 3c:** Under work environment conditions of high work role conflict, individuals with higher levels of self-esteem will report less psychological strain than will individuals with lower levels of self-esteem.

**Hypothesis 4c:** Under work environment conditions of high work role ambiguity, individuals with higher levels of self-esteem will report less psychological strain than will individuals with lower levels of self-esteem.

## GOAL 2: A MULTI-SOCIETY ASSESSMENT

As indicated by Hooker (2003) and Bhagat, Steverson and Segovis (2007), the kind of stressors that the industrialized world experiences tend to differ from those of the developing world. A general theory of stress must be able to account for the pan-cultural aspects of human stressor–strain relationships. Additionally, we should note that while the literature concerning COR theory and variations of psychosocial measures is reasonably extensive, the vast majority of this research has historically been conducted in Anglo societies, typically the US. Limited work has been done to examine the portability of COR theory to different countries, and especially to the industrially less developed or non-Anglo countries in Asia, Latin America, and Europe. While Glazer, Stetz and Izso (2004) have investigated individual differences in relation to job stress variables across nations, there has been limited work conducted on moderators such as

mastery, optimistic orientation, and self-esteem across non-Anglo countries. Research has shown that individual differences may be shaped by one’s socio-economic situation (e.g., GNI) and one’s individual-level values (e.g., idiocentrism) (Egri & Ralston, 2004; Ralston, Pounder, Lo, Wong, Egri, & Stauffer, 2006), which in turn may influence the role stressor–strain relationship differently in different societies.

Our multi-society study includes data from Brazil, China, Fiji, France, Germany, Hong Kong (SAR-China), and the United States. These societies are highly diverse economically, providing representation for major industrialized and industrializing economies. They are also highly culturally diverse, providing representation from Latin America, Latin Europe, Germanic Europe, Asia, and North America, as well as the Pacific Islands. This great diversity also provides the greater likelihood of societal-specific differences and therefore the lesser likelihood that we will find consistent relationships across these various societies. Thus, by using data from managers across diverse societies, we provide a rigorous test of the global robustness of these stressor–strain relationships.

## Combined Across-Societies Analysis

In this first step we combined the data for our seven-society sample ( $n=780$ ) and tested our hypotheses pan-culturally with this combined sample. This provided us with a multinational baseline; however, we also wanted to explore the hypotheses at logically segmented levels. We devised a two-prong strategy for segmenting the data based on literature indicating that both the socio-economic situation and individual-level values are important in understanding the attitudes and behaviors of individuals in the workforce (Inglehart, Basanez, Diez-Medrano, Halman, & Luijkx, 2004; Leung, Bhagat, Buchan, Erez, & Gibson, 2005; Ralston, 2008). Thus, for the next step in our analysis, we split our sample to create socio-economic and individual values categories. Our purpose for this multi-tiered approach was to test, thoroughly and rigorously, the global consistency of the relationships found among stressors and strain.

## Split Sample: Socio-Economic Analysis

Using World Bank (2004) data, we split our seven societies, by GNI per capita, into a high-GNI group (France, Germany, Hong Kong, and the US, which are defined by the World Bank as high-income

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economies), and a low-GNI group (Brazil, China, and Fiji, which are defined by the World Bank as lower-middle-income economies). We used GNI because it has been shown to be an important factor in understanding behavior differences across societies (Inglehart et al., 2004). GNI is also an inclusive surrogate for other indices, such as literacy, technological sophistication, and societal corruption level (Ralston et al., 2009). All four societies of the high-GNI group have a greater than 90% level of literacy, with “low on corruption” scores on the corruption index, and a high to very high level of technological sophistication. Conversely, all three of the low-GNI societies could be described as low to evolving in terms of technological sophistication, all have a literacy rate below 90%, and all are substantially higher on corruption than the high-GNI group (corruption level statistics were not available for Fiji).

#### **Split Sample: Individual-Level Values Analysis**

The individualism and collectivism constructs are among the most, if not the most, consistently recognized values for cross-cultural differentiation (Triandis, 1994). At the societal level, countries have been labeled individualistic or collectivistic based on the majority orientation of the individuals in that society (Hui & Triandis, 1986; Triandis, 1994). Yang and Bond (1990) noted that individualism indicates a focus on self-reliance, whereas collectivism indicates a focus on group interests. Further, Triandis, Bontempo, Villareal, Asai, and Lucca (1988) were the first to identify individualism and collectivism as two unique, albeit related, dimensions, contrary to the initial conceptualization of them as a single construct. Subsequent empirical research across diverse cultures has supported the Triandis et al. line of reasoning (e.g., Ralston, Holt, Terpstra, & Yu, 1997). Smith and Schwartz (1997) have shown that high individualism at the societal level correlates significantly (positively) with a high level of economic development (i.e., GNI). Therefore a societal-level analysis using secondary data predictors of individualism and collectivism would be somewhat redundant with the GNI per capita analysis. However, Triandis (1995) has identified idiocentrism and allocentrism as the individual-level equivalents of the societal-level individualism and collectivism constructs, respectively. Thus idiocentrism and allocentrism are the constructs’ comparison that we are making in this study. Thus our subsequent discussion will use the idiocentrism and allocentrism

terminology. And, following the Triandis et al. (1988) conceptualization that individualism and collectivism are separate constructs, we likewise treat their individual-level equivalents, idiocentrism and allocentrism, as separate constructs.

## **METHOD**

### **Sample and Procedure**

The sample consisted of 780 managers from seven societies: Brazil ( $n=161$ ), China ( $n=83$ ), Fiji ( $n=88$ ), France ( $n=113$ ), Germany ( $n=84$ ), Hong Kong ( $n=98$ ), and the United States ( $n=153$ ). The response rates ranged from 11.6% (France) to 17.3% (US). Data were collected from managers/professionals in a cross-section of organizations and industries during 1999–2001 using one of two methods: a mail survey or prior to a continuing education program. Consistent across both data collection procedures, respondents were voluntary participants, who were provided with anonymity. At least one member of our research team resided in the country when the data were collected. Women represented 41% of the sample, and the average age of the respondents was 40. The average work experience was 17 years. All subjects were professional or managerial-level employees, and there were no more than three respondents from any one company. Respondents worked in the private (non-government) sector across a wide range of industries. In Fiji and Hong Kong the samples were taken across the entire society. In Brazil the sample came from the southern region, including Porto Alegre. In China the sample came from the Shanghai–Pudong region. In France the sample came from the north-central region, including Paris. In Germany the sample came from the Frankfurt area, and in the US the sample came from the Northeast region. For these regional data collections, we wanted to be sure to collect data in economic centers of the country.

### **Measures**

Measures for all the constructs were pre-existing and validated. All measures were translated and back-translated from English to the language of each of the other six societies using standard procedures (Maxwell, 1996). The data collection process was managed by a member of the research team from the society in which the data were being collected. Members of the research team were all fluent in English.

**Role stressors.** The Rizzo, House, and Lirtzman (1970) scale measured role conflict and role ambiguity. Role conflict was an eight-item scale and role ambiguity was a six-item scale: both have responses ranging from strongly disagree (1) to strongly agree (7). A sample item for role conflict is: "I work under incompatible policies and guidelines." A sample item for role ambiguity is "I have clear, planned goals and objectives for my job" (reverse-scored). Reliability coefficients for role conflict and role ambiguity range from 0.72 to 0.83 and 0.71 to 0.88 respectively across the seven societies.

**Strain.** Strain was assessed by adapting six items from Cohen, Kamarck, and Mermelstein (1983). Responses ranged from never (1) to very often (5). A sample item is: "In the last month, how often have you felt nervous and stressed?" The reliability coefficients for this scale across the seven countries ranged from 0.70 to 0.87.

**Mastery.** Mastery was assessed using five items adapted from Pearlin and Schooler's (1978) seven-item mastery scale. The items in this scale tap a person's global or generalized tendency to feel personal control over life events. Responses ranged from strongly disagree (1) to strongly agree (7). A sample item is: "I can do just about anything I really set my mind to do." The reliability coefficients for mastery ranged from 0.70 to 0.84.

**Optimistic orientation.** Optimism was assessed by the two-item optimistic orientation scale of Pearlin and Schooler (1978). Responses ranged from strongly disagree (1) to strongly agree (7). A sample item is: "When I have difficulties in my work situation, I notice people who have more difficulties than I do." The reliability coefficients ranged from 0.53 to 0.68 across the seven societies.

**Self-esteem.** The self-esteem scale was assessed by Pearlin and Schooler's (1978) six-item self-esteem scale. Responses ranged from strongly disagree (1) to strongly agree (7). A sample item is: "I feel that I have a number of good qualities." The reliability coefficients ranged from 0.75 to 0.91 across the seven societies.

**Idiocentrism and allocentrism.** To determine the idiocentric and allocentric values of individuals, we used the Schwartz values survey (SVS) for data that we collected from the subjects in our study

(Schwartz, 1992). Of the 56 SVS items, 45 are used for multi-society research (Schwartz, 1992), such as this study. These items are combined to develop the instrument's 10 universal values (power, achievement, hedonism, stimulation, self-achievement, universalism, benevolence, tradition, conformity, and security). In turn, these 10 universal values can be used to form the overarching idiocentrism and allocentrism dimensions. Idiocentrism (18 items) is calculated as the average of power, achievement, hedonism, stimulation, and self-direction values, which reflects the self-enhancement and openness-to-change values types, whereas allocentrism (14 items) is calculated as the average of benevolence, tradition, and conformity values. As SVS is circumplex in nature, confirmatory factor analysis is not appropriate (see Steenkamp, Hofstede, & Wedel, 1999).

**Control variables.** Age, gender, and society of origin are used as control variables. In light of COR theory, it could be argued that those who are older would have more valued work resources, such as seniority, tenure, and status. Gender may also relate to one's resources, as it has been shown that women often have significantly lower levels of job tenure and salary than men (Parasuraman, Greenhaus, & Granrose, 1992). Gender was represented as a dummy variable, where male was coded 1 and female 2. Thus, based on the literature (e.g., Addis & Mahalik, 2003), we controlled for age and gender because of their potential to significantly affect strain. Similarly, because of the multiple societies in the sample, we dummy-coded our societies to control for the possibility of variation due to societal membership.

### Preliminary Analyses

**Correlational analysis.** We report the correlations and reliabilities for each scale in Table 1. The constructs demonstrated moderate to high levels of internal consistency, ranging from 0.63 to 0.91. Although one of the measures did not meet the traditional 0.70 level for acceptable reliability suggested by Nunnally (1978), he also stated (266) that alphas in the 0.50–0.60 range are acceptable in the early stages of theory testing. The use of US-developed scales in different cultural contexts does meet the criterion of early theory testing in a new context.

**Table 1** Standardized means, standard deviation, reliabilities, and intercorrelations between stressors, strain, psychological resources, and individual values for the overall sample

Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10
(1) Age	39.7	10.2										
(2) Gender			-0.19***									
(3) Role conflict	-3.3	1.35	-0.06	-0.00	<b>0.83</b>							
(4) Role ambiguity	-3.2	1.19	-0.04	0.04	0.41***	<b>0.77</b>						
(5) Strain	-1.9	0.62	-0.14***	0.10**	0.15**	0.09*	<b>0.83</b>					
(6) Optimistic orientation	-4.7	1.36	0.06	0.10**	-0.19***	-0.36***	-0.02	<b>0.63</b>				
(7) Mastery	-4.5	1.59	-0.04	0.00	-0.32***	-0.42***	-0.29***	0.20***	<b>0.84</b>			
(8) Self-esteem	-5.3	1.44	0.07*	0.04	-0.25***	-0.50***	-0.17***	0.16***	0.30***	<b>0.91</b>		
(9) Idiocentrism	-4.2	0.96	0.07*	0.11**	-0.08*	-0.21**	-0.08*	0.18***	0.12**	0.17***	<b>0.85</b>	
(10) Allocentrism	-4.4	1.07	-0.01	0.07*	-0.07*	-0.14***	-0.09**	0.15***	0.15***	0.27**	0.51***	<b>0.85</b>

Note: Intercorrelations among the study variables for each of the seven societies are available from the authors upon request.

**Inter-rater agreement.** Using the raw data, inter-rater agreement was measured to determine the degree of variance in responses. Inter-rater agreement was examined in order to establish the appropriateness of aggregating data from each society to form the overall sample. Using the inter-rater agreement index,  $r_{wg(j)}$  (James, Demarcee, & Wolf, 1984), we measured the degree of agreement across all the measures in each of the societies in the sample. The means of  $r_{wg(j)}$  for the seven societies for the respective constructs ranged from 0.72 to 0.90 for role conflict, from 0.73 to 0.91 for role ambiguity, from 0.83 to 0.90 for strain, from 0.70 to 0.78 for optimistic orientation, from 0.74 to 0.90 for mastery, and from 0.79 to 0.95 for self-esteem. The inter-rater agreement results indicate that there was high inter-rater agreement among the measures from the seven societies, and thus it was appropriate to aggregate the data.

To provide additional evidence of inter-rater agreement among the respondents for each society, we also performed a series of one-way ANOVAs using society membership as the grouping variable. A significant effect was found in role conflict ( $F(8, 780)=22.88, p<0.00$ ), role ambiguity ( $F(8, 780)=77.12, p<0.00$ ), strain ( $F(8, 774)=25.43, p<0.00$ ), optimistic orientation ( $F(8, 778)=58.31, p<0.00$ ), mastery ( $F(8, 776)=120.33, p<0.00$ ), and self-esteem ( $F(8, 780)=2328.48, p<0.00$ ). These analyses revealed that the variance between groups is significantly higher than the variance within groups for all the constructs in this study.

**Standardization of data.** Since there may be cultural differences in responses to questionnaire items that have been administered in different cultures/languages, this can bring into question the

comparability of respondent scores (Smith & Schwartz, 1997). To address this potential for cultural response bias, we used the Glass and Hopkins procedure (1970) to de-culture data of each observable variable by standardizing the response to within-subjects standard scores to eliminate possible cross-cultural differences in scale use. Standardized data were used for all hypothesis testing analyses.

### Construct Validity

**Principal components analysis.** We use principal components analysis to purify the scales and then assess scale unidimensionality through confirmatory factor analysis. We factor-analyzed these multi-items scales for each construct separately; across all samples a single factor emerged in each case. We retained only items that loaded at 0.65 or more on the proper latent factors and which loaded below 0.30 on the others to enhance the distinctiveness of the intended construct (Wulf, Odekerken-Schroder, & Iacobucci, 2001).

**Confirmatory factor analysis.** A series of confirmatory factor models, with covariance matrices as input, was estimated via LISREL VIII (Jöreskog & Sörbom, 1993) on each society sample and the combined sample. We treated the items from the constructs as empirical indicators of separate constructs. Each item was assigned a loading only on the factor representing its construct, with no cross-loadings estimated to inflate the model fit (MacCallum, 1986), and the error terms were specified as being uncorrelated among themselves or with the latent variables. The latent factors' correlations were freely estimated. These measurement results were acceptable in each

society sample and in the overall sample (comparative fit index [CFI] and non-normed fit index [NNFI] ranged from 0.85 to 0.91 for CFI and from 0.85 to 0.93 for NNFI), as shown in Table 3. All factor loadings were significant ( $p < 0.05$ ); the average standardized factor loadings in the seven societies ranged from 0.68 to 0.89.

In turn, convergent and discriminant validities of the measures were examined in the overall sample with a variance extracted test (Fornell & Larcker, 1981; Netemeyer, Durvasula, & Lichtenstein, 1991). Further, our measurement model exceeds the AVE estimate of 0.5, which, as Fornell and Larcker (1981) have noted, is a compelling demonstration of convergent validity. The shared variances between all possible pairs of constructs were calculated to determine whether they were lower than the average variance extracted for the individual constructs. The results show that, for each construct, the average variance extracted was much higher than its highest shared variance with other constructs, demonstrating discriminant validity (see Appendix A). The composite reliability, ranging from 0.69 to 0.92, suggested good reliability. Thus these measures demonstrate adequate convergent and discriminant validities, with no adjustments to this measurement model being required.

### Construct Equivalence

Hult et al. (2008) demonstrate that previous research has shown that measurement equivalence encompasses three critical components: calibration, translation, and metric equivalence. In this study several steps were taken to ensure equivalence prior to multi-group analysis. Prior to data collection, we first established calibration equivalence by ensuring that units of measure were converted correctly between cultures. Next, translation equivalence was also carefully addressed to ensure that items identified the same latent constructs in the different cultures.

Craig and Douglas (2002) indicated that metric equivalence has two important facets: consistency of scoring, and equality of responses (i.e., scalar equivalence). Consequently, as a precursor to CFA, we established scalar equivalence by deculturating the data of each observable variable by standardizing the response to within-subjects standard scores to eliminate possible cross-cultural differences in the scale used (Glass & Hopkins, 1970; Hult et al., 2008). We also established scoring consistency by statistically examining factor loadings using

exploratory factor analysis and comparing the reliabilities of each construct between groups.

Finally, metric equivalence was also further tested by utilizing simultaneous multi-group factor analysis. First, we tested for factor structure equivalence by examining the baseline models from the seven societies simultaneously for invariance across samples. The result indicated that incremental fit indexes (NFI=0.87, CFI=0.89, and GFI=0.91) of the baseline Model 1 (factor structure equivalent) were all well above 0.85, and the value of the RMSEA was 0.04, indicating that the baseline models provided a good approximation to the relationships among the items from the six variables. Next, factor loadings equivalence was tested to determine whether the coefficients linking the latent constructs to the observed variables were the same in each group. The results indicated a non-significant difference in the  $\chi^2$  values ( $\Delta\chi^2/\Delta df = 1.32$ ) for the baseline Model 1 and Model 2, specifying that the factor loadings were invariant and stable across the seven societies (see Appendix B).

### Common Method Assessment

To minimize the effects of common method variance (CMV), we examine this issue in three steps, as suggested by Podsakoff, MacKenzie, Lee, and Podsakoff. (2003).

- *Step 1: Harman's single-factor test.* Examination of the unrotated factor structure involving 35 items revealed distinct factors that paralleled ours, each with eigenvalues greater than 1, which collectively accounted for 62.8% of the variance explained. The results showed that no general factor was apparent, with Factor 1 accounting for only 22.5% of the variance, while the other five factors accounted for an additional 40.3% of the variance. This result reduces the concern over CMV.
- *Step 2: Measurement model.* We examined the fit between our measurement model (overall sample) with our data and found a good fit ( $\chi^2 = 1121.42$ ,  $df = 287$ ,  $GFI = 0.90$ ,  $AGI = 0.92$ ,  $CFI = 0.90$ ,  $RMSEA = 0.04$ ). We also examined the measurement model in each society, as shown in Table 2, and found a good fit for our data.
- *Step 3: The effect of a single unmeasured latent method factor.* We assessed CMV with a latent CMV factor test by partitioning the variance into three components: method, trait, and random error. We estimated two models: M1, where items were allowed to load on their theoretical constructs ( $\chi^2 = 1121.42$ ,  $df = 287$ ,  $GFI = 0.90$ ,  $AGI = 0.92$ ,  $CFI = 0.90$ ,  $RMSEA = 0.04$ ); and M2, where a latent

**Table 2** Subgroup and combined sample confirmatory factor analysis: Goodness-of-fit statistic

	$\chi^2$	df	GFI	AGI	NFI	CFI	RMSEA
Brazil	532.34	287	0.84	0.83	0.85	0.85	0.08
China	632.21	287	0.88	0.85	0.86	0.88	0.07
Hong Kong	476	287	0.89	0.89	0.91	0.89	0.06
Fiji	785.52	287	0.85	0.84	0.85	0.86	0.08
France	663.34	287	0.87	0.86	0.87	0.85	0.07
Germany	796.83	287	0.86	0.89	0.92	0.89	0.05
US	567.11	287	0.88	0.90	0.91	0.91	0.05
Overall sample	1121.42	287	0.90	0.92	0.93	0.90	0.04

CMV factor linking to all measurement items was added into M1 ( $\chi^2=903.64$ ,  $df=241$ ,  $GFI=0.92$ ,  $AGI=0.93$ ,  $CFI=0.93$ ,  $RMSEA=0.039$ ). We compared M1 and M2 and found that the change of fit index was insignificant, indicating that the addition of a latent CMV factor does not significantly improve the fit of the measurement model over our measurement model without a CMV factor: hence the CMV issue is negligible.

Moreover, the items used in this study were part of a large-scale questionnaire. Therefore it is improbable that the respondents would be able to deduce the objective of this study in an attempt to force their answers to be consistent (Mohr & Spekman, 1994). In addition, most of our hypotheses involved testing the interaction terms. Many researchers (Aiken & West, 1991; Dooley & Fryxell, 1999; Doty, Glick, & Huber, 1993; Evans, 1985) have observed that complex data relationships shown by interaction terms are not explained by CMV bias, because respondents are unable to deduce the researcher's interaction hypotheses in order to respond in a socially desirable manner.

### Hierarchical Regression

Hypotheses 3 and 4 were tested with the inclusion of six interaction terms between psychological resources and work role stressors on strain. The predictor variables were entered in six blocks based on previous research (Sattler, Kaiser, & Hitner, 2000). To examine the importance of different societies, dummy-coded societal-level variables were controlled in step 1, and demographic variables were controlled in step 2. The two main effect variables (role conflict and role ambiguity) were entered in step 3. In step 4, the three psychological resources were entered. The first three two-way interaction terms between psychological resources and work role conflict were entered in step 5. Finally, in step 6, the last three two-way interaction

terms between psychological resources and work role ambiguity were entered.

To test our model, in the context of an idiocentrism and/or an allocentrism effect on the hypotheses, we followed Aguinis's (1995) recommendation by creating additional interaction terms, as shown in Table 3. In these two hierarchical multiple regressions, dummy-coded societal-level variables were controlled in step 1, and demographic variables were controlled in step 2. The five main effect variables, two role stressors and the three psychological resources were entered in step 3. Idiocentrism and allocentrism were also entered in step 3 in their respective regression analyses. In each analysis, the six two-way interaction terms were entered in step 4. Finally, the six three-way interaction terms were entered in step 5.

## RESULTS

### An Across-Society Test of the Hypotheses

Hypotheses were stated at the individual level, which allows for a "pan-cultural analysis" (Leung & Bond, 1989) involving pooling the data from all seven societies. The factor analyses showed enough equivalence across societies to support such pooling. As shown in Table 3, the six predictor blocks accounted for 29% of the strain variance, which indicated that about one-third of the observed variation in strain is explained by the variables in the model.

Hypotheses 1 and 2 postulated positive relationships for work role conflict and work role ambiguity with strain. Results reported in Table 3 indicated that Hypotheses 1 and 2 were supported. Both work role conflict ( $\beta=0.10$ ,  $\rho<0.01$ ) and work role ambiguity ( $\beta=0.12$ ,  $\rho<0.001$ ) were found to be significantly related with strain. Hypotheses 3 and 4 proposed that the three stress resistance resources (mastery, optimistic orientation, and self-esteem) each provided a moderating effect between the two work role stressors (conflict and ambiguity) and strain. When each of the three work role conflict interaction terms and the three work role ambiguity interaction terms were entered into Model 6, the results provided support for interaction of work role conflict only with self-esteem ( $\beta=0.18$ ,  $\rho<0.001$ ). Thus we find support for Hypothesis 3c but not for Hypotheses 3a and 3b. For work role ambiguity, mastery ( $\beta=-0.14$ ,  $\rho<0.001$ ), optimistic orientation ( $\beta=-0.11$ ,  $\rho<0.001$ ), and self-esteem ( $\beta=-0.10$ ,  $\rho<0.001$ ) were each significant moderators. Hence we found support for Hypotheses 4a, 4b, and 4c.

**Table 3** Across-societies regressions of strain on control variables, work role conflict, work role ambiguity, optimistic orientation, mastery, self-esteem, and interaction terms

Variables	Dependent variable: strain <sup>a</sup>					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6 (full model)
Dummy 1: US	-0.03	-0.00	0.03	0.08*	0.06	0.05
Dummy 2: Hong Kong	0.21***	0.20***	0.23***	0.20**	0.17***	0.15***
Dummy 3: China	0.12***	0.15***	0.17***	0.16***	0.13***	0.13***
Dummy 4: Germany	0.08*	0.10**	0.10**	0.01	-0.03	-0.06
Dummy 5: Fiji	0.22***	0.24***	0.27***	0.24***	0.20***	0.18***
Dummy 6: Brazil	0.15***	0.17***	0.20**	0.20***	0.17***	0.15***
Age		-0.08**	-0.08**	-0.10**	-0.09*	-0.07
Gender <sup>b</sup>		-0.10**	0.10**	0.10**	0.10**	0.10**
Work role conflict (WRC)			0.10**	0.05	0.05	0.06
Work role ambiguity (WRA)			0.12***	-0.01	-0.04	-0.06
Mastery				-0.26***	-0.27***	-0.30***
Optimistic orientation				0.03	0.05	0.03
Self-esteem				-0.07	-0.12**	-0.19***
WRC × Mastery					-0.00	-0.05
WRC × Optimistic orientation					-0.02	-0.06
WRC × Self-esteem					-0.23**	0.18***
WRA × Mastery						-0.14***
WRA × Optimistic orientation						-0.11**
WRA × Self-esteem						-0.10**
F	18.07***	16.53***	17.87***	19.36***	20.16***	21.31***
R <sup>2</sup>	0.09	0.12	0.15	0.20	0.24	0.29
Adjusted R <sup>2</sup>	0.09	0.11	0.14	0.19	0.23	0.27
Δ adjusted R <sup>2</sup>		0.02	0.03	0.05	0.04	0.04
ΔF		1.54***	1.34***	1.49***	0.8***	1.15***

<sup>a</sup>Model statistics are standardized regression coefficient.

<sup>b</sup>Coding 0=female and 1=male.

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001; †p<0.10.

To interpret and understand these significant interactions better, we plotted the interaction lines, following the suggestions of Aiken and West (1991). Results demonstrated that an increase in role ambiguity resulted in a slight increase in strain for those with high mastery but in a substantial increase in strain for those with low mastery. A similar phenomenon occurred for the optimistic orientation and self-esteem moderators. Those who were high on mastery and self-esteem reported substantially less strain than those who were low on these moderators. Those with high self-esteem tended to experience lower and decreasing strain when work role conflict increased, whereas those with low self-esteem tended to experience higher and increasing strain when work role conflict increased.

### GNI-based Tests of the Hypotheses

Based on data calculated by the World Bank Atlas method (2004), the seven societies were categorized

into two groups, low GNI and high GNI. Based on their GNI per capita, converted to US dollars, Brazil (\$2830), China (\$960), and Fiji (\$2130) were categorized as the low-GNI group, and France (\$22,240), Germany (\$22,740), Hong Kong (\$28,460), and the US (\$35,400) were categorized as the high-GNI group. Thus we have a substantial split in economic development levels between our two GNI groups.

**High GNI.** The high-GNI regression results, as reported in Table 4, did not support Hypothesis 1, but we did find support for Hypothesis 2. Work role ambiguity ( $\beta=0.15$ ,  $\rho<0.001$ ) is significantly related with strain. For work role conflict, there were no significant interactions for mastery and optimistic orientation. Thus we did not find support for Hypothesis 3a or Hypothesis 3b. However, there was a significant interaction for self-esteem ( $\beta=0.20$ ,  $\rho<0.001$ ). Therefore the results showed support for Hypothesis 3c. For

**Table 4** Across societies, low GNI, high GNI, idiocentrism and allocentrism (individual-level analysis) regressions of strain on control variables, stressors, psychological resources, values, and interaction terms

Variable	Overall sample N=780	High GNI <sup>a</sup> N=448	Low GNI <sup>a</sup> N=332	Idiocentrism N=780	Allocentrism N=780
<i>Main effects</i>					
Age	-0.09**	-0.05	-0.10**	-0.09**	-0.09**
Gender <sup>b</sup>	-0.10**	0.07*	0.11**	0.10**	0.10**
Work role conflict (WRC)	0.10**	-0.02	0.11**	-0.05	0.09**
Work role ambiguity (WRA)	0.12***	0.15***	0.10**	0.13***	0.10**
Mastery	-0.26***	-0.31***	-0.25***	0.20***	0.18***
Optimistic orientation (OP)	0.03	0.10**	-0.06	-0.02	-0.01
Self-esteem	-0.07	-0.03	-0.09*	0.07	-0.06
Idiocentrism				0.02	
Allocentrism					-0.04
Adjusted R <sup>2</sup>	0.19	0.13	0.16	0.17	0.16
ΔF	20.87***	26.25***	26.59***	14.60***	11.73***
<i>Two-way interactions</i>					
WRC × Mastery	-0.05	-0.06	-0.05		
WRC × Optimistic orientation	-0.06	-0.05	-0.06		
WRC × Self-esteem	0.18***	0.20***	0.19***		
WRA × Mastery	-0.14***	-0.15***	-0.16***		
WRA × Optimistic orientation	-0.11**	-0.10**	0.10**		
WRA × Self-esteem	-0.10*	-0.12**	0.10**		
<i>Three-way interactions</i>					
WRC × Mastery × Idiocentrism				0.01	
WRC × OP × Idiocentrism				0.04	
WRC × Self-esteem × Idiocentrism				-0.16***	
WRA × Mastery × Idiocentrism				0.07*	
WRA × OP × Idiocentrism				0.09*	
WRA × Self-esteem × Idiocentrism				0.16**	
WRC × Mastery × Allocentrism					0.01
WRC × OP × Allocentrism					0.06
WRC × Self-esteem × Allocentrism					-0.20***
WRA × Mastery × Allocentrism					-0.06
WRA × OP × Allocentrism					0.10*
WRA × Self-esteem × Allocentrism					0.13**
ΔR <sup>2</sup>	0.05	0.05	0.05	0.04	0.03
ΔF	21.03***	23.72***	22.27***	16.52***	15.22***
Model R <sup>2</sup>	0.29	0.26	0.26	0.26	0.25
Model F	21.31***	21.64***	22.51***	17.65***	16.98***

<sup>a</sup>Model statistics are betas.

<sup>b</sup>Coding 1=male and 2=female.

<sup>†</sup>p<0.10; \*p<0.05; \*\*p<0.01; \*\*\*p<0.001.

work role ambiguity, significant interactions were found for mastery ( $\beta=-0.15$ ,  $\rho<0.01$ ), optimistic orientation ( $\beta=-0.10$ ,  $\rho<0.001$ ), and self-esteem ( $\beta=-0.12$ ,  $\rho<0.01$ ). Thus we found support for Hypotheses 4a, 4b, and 4c. In sum, our findings for

the high-GNI group indicated that the self-esteem interaction effect was supported for both work role conflict and work role ambiguity, but that the mastery and optimistic orientation interactions were supported only for work role ambiguity.

**Low GNI.** The low-GNI regression results, as also reported in Table 4, supported both Hypothesis 1 and Hypothesis 2. Work role conflict ( $\beta=0.11$ ,  $\rho<0.01$ ) and work role ambiguity ( $\beta=0.10$ ,  $\rho<0.01$ ) were found to have significant positive relationships with strain. For work role conflict, there were no significant interactions for mastery or optimistic orientation. Consequently, we did not find support for Hypotheses 3a or 3b. However, there was a significant interaction for self-esteem ( $\beta=0.19$ ,  $\rho<0.001$ ). Hence the results showed support for Hypothesis 3c. For work role ambiguity, significant interactions were found for mastery ( $\beta=-0.16^{***}$ ,  $\rho<0.001$ ), optimistic orientation ( $\beta=0.10$ ,  $\rho<0.01$ ), and self-esteem ( $\beta=0.10$ ,  $\rho<0.01$ ). Thus we found support for Hypotheses 4a, 4b, and 4c. These findings mirror those of the high-GNI group. In sum, our findings for the low-GNI group indicated that the self-esteem interaction effect was supported for both work role conflict and work role ambiguity. The mastery and optimistic orientation interactions were supported only for work role ambiguity.

#### Idiocentrism and Allocentrism Tests of the Hypotheses

As noted, the idiocentrism and allocentrism tests were based on a pan-cultural analysis, not on a societal culture analysis. Thus these micro-level analyses contrast with the macro-level GNI analyses; they do not duplicate them. The idiocentrism regression results, as reported in Table 4, did not support Hypothesis 1 (positive relationship between role conflict and strain). We did find support for Hypothesis 2. Work role ambiguity ( $\beta=0.13$ ,  $\rho<0.001$ ) had a significant positive relationship with strain. A three-way interaction was found between work role conflict, mastery, and idiocentrism. For work role conflict, the idiocentrism findings supported Hypothesis 3c. Self-esteem is a significant moderator for work role conflict and strain ( $\beta=-0.16$ ,  $\rho<0.001$ ). There were no significant interactions for optimistic orientation or mastery. Thus we did not find support for Hypotheses 3a or 3b. For work role ambiguity, we found significant interactions for mastery ( $\beta=0.07$ ,  $\rho<0.05$ ), optimistic orientation ( $\beta=0.09$ ,  $\rho<0.05$ ), and self-esteem ( $\beta=0.16$ ,  $\rho<0.01$ ). Thus Hypotheses 4a, 4b, and 4c were supported. In sum, our findings for the idiocentrism group indicated that the self-esteem interaction effect was supported for both work role conflict and work role ambiguity, but that

the optimistic orientation and mastery interactions were supported only for work role ambiguity.

The allocentrism regression results supported both Hypothesis 1 and Hypothesis 2. Work role conflict ( $\beta=0.09$ ,  $\rho<0.01$ ) and work role ambiguity ( $\beta=0.10$ ,  $\rho<0.01$ ) were found to be significantly related with strain. For work role conflict, there were no significant interactions for mastery or optimistic orientation. Thus we did not find support for Hypotheses 3a or 3b. However, there was a significant interaction for self-esteem ( $\beta=-0.20$ ,  $\rho<0.001$ ). Accordingly, the results showed support for Hypothesis 3c. For work role ambiguity, support was found for optimistic orientation ( $\beta=0.10$ ,  $\rho<0.05$ ), and self-esteem ( $\beta=0.13$ ,  $\rho<0.01$ ). Hypotheses 4b and 4c were supported, but Hypothesis 4a was not supported. In sum, our findings for the allocentrism group indicated that the self-esteem interaction effect was supported for both role conflict and role ambiguity, but optimistic orientation interactions was supported only for role ambiguity.

## DISCUSSION

The multi-society research design of our study allowed us to explore empirically the consistency of the relationships predicted in our model across diverse societies, across diverse socio-economic conditions, and across diverse individual value orientations. Our findings, while not universally consistent, did indicate a substantial degree of across-group consensus, as summarized in Table 5.

For the first hypothesis, it is interesting to note that, while supported in the full, combined-societies sample, only for those in low-GNI countries, as well as individuals who are allocentric, did role conflict significantly relate to strain. Role conflict is associated with strain for individuals who are constrained economically or socially. Given that this relationship appears to be affected by societal well-being and individual values, further research is clearly needed to fully understand the sociocultural and business ideology influences (Ralston, 2008) on the work role conflict-strain relationship.

Second, all of our findings supported the relationship between work role ambiguity and strain. Our multi-society findings strengthen previous single-country research that has consistently found positive associations between role ambiguity and strain in a variety of population samples (Glazer & Beehr, 2005; O'Driscoll & Beehr, 1994). Thus our findings support the perspective that if one knows what roles one is expected to play in the workplace, one

**Table 5** A summary of the support for the hypotheses

Groups	Hypothesis 1	Hypothesis 2	Hypothesis 3a	Hypothesis 3b	Hypothesis 3c	Hypothesis 4a	Hypothesis 4b	Hypothesis 4c
Full sample (n=780)	SUPPORTED	SUPPORTED	Not supported	Not supported	SUPPORTED	SUPPORTED	SUPPORTED	SUPPORTED
High-GNI group (n=448)	Not supported	SUPPORTED	Not supported	Not supported	SUPPORTED	SUPPORTED	SUPPORTED	SUPPORTED
Low-GNI group (n=332)	SUPPORTED	SUPPORTED	Not supported	Not supported	SUPPORTED	SUPPORTED	SUPPORTED	SUPPORTED
Idiocentrism (n=780)	Not supported	SUPPORTED	Not supported	Not supported	SUPPORTED	SUPPORTED	SUPPORTED	SUPPORTED
Allocentrism (n=780)	SUPPORTED	SUPPORTED	Not supported	Not supported	SUPPORTED	Not supported	SUPPORTED	SUPPORTED

Hypothesis 1: Work role conflict is positively related to strain.

Hypothesis 2: Work role ambiguity is positively related to strain.

Hypothesis 3a: Under work environment conditions of high work role conflict, individuals with higher levels of mastery will report less strain than will individuals with lower levels of mastery.

Hypothesis 3b: Under work environment conditions of high work role conflict, individuals with higher levels of optimistic orientation will report less strain than will individuals with lower levels of optimistic orientation.

Hypothesis 3c: Under work environment conditions of high work role conflict, individuals with higher levels of self-esteem will report less strain than will individuals with lower levels of self-esteem.

Hypothesis 4a: Under work environment conditions of high work role ambiguity, individuals with higher levels of mastery will report less strain than will individuals with lower levels of mastery.

Hypothesis 4b: Under work environment conditions of high work role ambiguity, individuals with higher levels of optimistic orientation will report less strain than will individuals with lower levels of optimistic orientation.

Hypothesis 4c: Under work environment conditions of high work role ambiguity, individuals with higher levels of self-esteem will report less strain than will individuals with lower levels of self-esteem.

will have a better understanding of behavioral expectations, and in turn experience less strain. More clearly prescribed roles may reduce demands on individuals, as these roles provide purpose and direction in one's work life. The clear communication of expectations from a superior of one culture to a subordinate of another culture can be challenging. Our findings illustrate how important it is for superiors to ensure that they have clearly communicated task expectations to their subordinates.

Our findings indicate some interesting relationships among the resource moderators of the work role conflict–strain relationship. One finding that stands out is that we found no support in any of the analyses for the moderating effect of either mastery or optimistic orientation with work conflict. Perhaps when conflict is the source of strain, an optimistic outlook and mastery are simply not sufficient. Conversely, we found strong support across all our analyses for self-esteem. We found that high self-esteem individuals appear to have more confidence in themselves, including their ability to cope, and therefore appraise the situation as less threatening. We might also speculate that these individuals who have high self-esteem have more self-control and confidence in terms of their ability to control emotions, and hence they are more able to buffer the relationship between work conflict and strain. While we do not contend that these findings are conclusive, we believe that they do provide well-founded direction for future cross-cultural research, which is needed to articulate more fully the contributions of these strain-reduction resources on work role conflict.

For the work ambiguity–strain relationship, we found universal support across all five analyses (combined across-societies analysis and four split-sample analyses). Specifically, we found substantial support for the roles that the three strain-reduction psychological resources played in moderating this relationship. Self-esteem and optimistic orientation moderated the relationship across all five analyses. The moderating effect of mastery, while supported in four of our analyses, was not supported for the allocentrism group. The mastery findings for role ambiguity indicated that the micro influences – individual values – may be playing the more determining role in the moderating effect. Thus this is also a relationship that requires more in-depth, cross-cultural inquiry.

Consistent with previous research and COR theory, our findings show that to minimize the negative influence of role ambiguity on strain, the individual resources of self-esteem, mastery and optimistic orientations are each important. The interaction results demonstrate that differences in the level of resources affect how individuals react to demands caused by work role ambiguity. These psychological resources help in transcending problems and maintaining a sense of inner equilibrium. Thus our findings, while clearly reinforcing the benefit of building more psychological resources, also indicate that these resources are of varying importance, depending upon the societal situation and the values of the individual. However, in general, our findings indicate that individuals who are rich in psychological resources may be less distracted by ambiguous situations and/or have a

lesser tendency to overemphasize them. These resources also appear to help dispel feelings of anxiety when the individual is faced with role ambiguity. Thus these psychological resources are likely to be effective in helping to insulate individuals from the stress of the work world.

### A COR-based Global Model of Stress

By providing supportive empirical evidence regarding our primary research questions, the present study concurrently provides evidential support for the validity of a COR-based global model of stress. As our model predicts, we consistently found evidence that work role ambiguity increases strain, and that optimistic orientation and self-esteem are constant factors in ameliorating that strain, with mastery also playing an important role. However, a key finding in support of the validity of this model is that the relationships of the three psychological resources with strain are higher than the relationships of the two work role stressors with strain. This finding corroborates the COR theory assertion that a primary role of resources is to limit stressors *before* they occur. That is, regardless of differences in economic situations or individual-level values, people with richer resources are probably better able to successfully manage the work stressors and strains posed in their lives; and the resource that consistently proved to be of most worth in minimizing stressors was self-esteem. Thus these findings are extremely encouraging, because they support the likelihood that a global model of stress can be developed based upon COR theory. Further, COR theory, with its emphasis on resources, provides a dynamic perspective that resources are created by individuals through their lifespan, both within and across cultures. In outlining the process by which resources operate, COR theory provides a specific set of behaviors and cognitions that may be observed in order to support, clarify, or disconfirm the stressors–strain relationships. Further, COR theory provides a perspective that may better reflect the current state of knowledge concerning stress, and it likewise provides a structure for a global model in which research on stress may advance. To that end, the findings from this study, in conjunction with previous research (Perrewé et al., 2002; Spector et al., 2004), provide important insights and direction for developing a global model of stress that not only seeks to identify potential differences, but also emphasizes that it is important to find the “non-differences” or consistencies across cultures (Glazer & Beehr, 2005).

### Study Limitations and Suggestions for Future Research

There are issues regarding this study that we wish to acknowledge. First, as in every multi-society study, translation of common questions and the ways the concepts are interpreted by people in different societies might have varied and accounted for some for the differences observed, even though we closely followed established translation–back-translation protocol and standardized our data. Second, the sample size of each society varied, although not dramatically, and the societal sample sizes were not as large as ideally we would have liked them to have been. Additionally, this study suggests that the interaction terms of role ambiguity with psychological resource variables may have suppressed the relationship of the interaction terms of role conflict with psychological resources on strain. If so, the association between the interaction terms may be even stronger than was reported in this study. This finding identifies another area that future research could clarify. Finally, this study investigated the moderating roles of three primarily psychological resources. Future study should investigate the roles of more collectivistic constructs, such as communal mastery, interdependence, and compliance.

The present study, by using a theoretical basis on which to build, provides new direction for future research on stressors and strains. This foundation, in conjunction with the paucity of cross-national research on stressor–strain issues, provides fertile ground for researchers interested in issues related to workplace stress. While we found substantial consensus across different socio-economic conditions and individual-level values orientations, it remains for future research, using participants in a wider variety of cultural settings over longer periods, to provide definitive answers to these questions.

### CONCLUSION

We examined a more comprehensive model of workplace stress based on COR theory and we expanded upon previous research by simultaneously examining several important work-relevant correlates of strains, as well as individual difference moderators among diverse nations grouped into high- and low-GNI and idiocentric and allocentric values categories, to provide direction for future research. For practicing professionals, our findings suggest that employees need clarity regarding their tasks and others’ expectations. This may be particularly relevant for multinational enterprises with operations in a variety of diverse cultures, given



that the norms of work behavior and employee expectations may vary greatly from one location to another. In addition, these organizations might also want to consider taking a more active role in working with employees to assist them in developing their psychological resources by supporting and guiding the development of employees' futures, their jobs, and their career growth in the organization.

In sum, we view the overall findings of our study as a very promising foundational step. We take this perspective because our COR-based model of stress

proved to be robust across seven very diverse societies. Our findings therefore appear to have important ramifications for the global business community, as well as for future research initiatives into the across-society understanding of interpersonal stress at work. While our study did not directly link our findings to the deleterious outcomes of excessive worker stress, these outcomes have long been known. Thus our paper provides the initial map to follow into the largely uncharted world of worker stress in the global business environment.

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## Appendix A

See Table A1.

**Table A1** Measurement items and validity assessment

Overall model fit: $\chi^2(287)=1121.42, p < 0.001; CFI=0.90, TLI=0.90; RMSEA=0.40$		SFL
<i>Role conflict: CR=0.75, AVE=0.40, HSV=0.33</i>		
I must do things that should be done differently.		0.67
I work under incompatible policies and guidelines.		0.80
I have to violate a rule or policy in order to carry out an assignment.		0.82
I receive assignments without the manpower to complete them.		0.62
I receive incompatible requests from two or more people.		0.79
I have to work under vague directions or orders.		0.75
I receive assignments without adequate resources and materials to execute them.		0.75
I work on many unnecessary things		0.83
<i>Role ambiguity: CR=0.72, AVE=0.38, HSV=0.21</i>		
I feel certain about how much authority I have.		0.72
I have clear, planned goals and objectives for my job.		0.79
I know that I have divided my time properly.		0.88
I know what my responsibilities are.		0.72
I know exactly what is expected of me.		0.71
I receive a clear explanation of what has to be done.		0.74
<i>Strain:<sup>a</sup> CR=0.84, AVE=0.56, HSV=0.23</i>		
In the last month, how often have you dealt successfully with irritating life hassles?		0.86
In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?		0.84
In the last month, how often have you felt confident about your ability to handle your personal problems?		0.75
In the last month, how often have you felt that things were going your way?		0.87
In the last month, how often have you been able to control irritations in your life?		0.70
In the last month, how often have you felt that you were on top of things?		0.80
<i>Mastery: CR=0.82, AVE=0.48, HSV=0.26</i>		
I have little control over the things that happen to me.		0.84
There is really no way I can solve some of the problems I have.		0.71
There is little I can do to change many of the important things in my life.		0.83
I often feel helpless in dealing with the problems of life.		0.74
Sometimes I feel that I am being manipulated in life.		0.82
What happens to me in the future mostly depends on me.		0.70
I can do just about anything I really set my mind to do.		0.82
<i>Optimistic orientation:<sup>b</sup> CR=0.69, AVE=0.53, HSV=0.29.</i>		
When I have difficulties in my work situation, I take some action to get rid of them.		0.72
When I have difficulties in my work situation, I talk to others to find a solution.		0.63
<i>Self-esteem: CR=0.92, AVE=0.74, HSV=0.28</i>		
I feel that I have a number of good qualities.		0.90
I feel that I am a person of worth, at least on an equal basis with others.		0.91
I am able to do things as well as most other people.		0.84
I take a positive attitude toward myself.		0.83
On the whole, I am satisfied with myself.		0.76
All in all, I am inclined to feel that I'm a failure.		0.75

<sup>a</sup>Two items ("In the last month, how often have you found yourself thinking about things that you have to accomplish?" and "In the last month, how often have you been able to control the way you spend your time?") from the Strain scale were dropped owing to cross loadings. Alpha of the scale increased after dropping these two items.

<sup>b</sup>One item ("When I have difficulties in my work situation, I notice people who have more difficulties than I do") from Optimistic orientation was dropped owing to cross loadings. Alpha of the scale increased after dropping the item.

Notes: SFL=standardized factor loading; CR=composite reliability; AVE=averaged variance extracted; HSE=highest shared variance with other constructs.

## Appendix B

See Table B1.

**Table B1** Measurement equivalent of stressors, strain, and psychological resources across the seven countries

Model	$\chi^2$	df	$\Delta\chi^2$	$\Delta df$	NFI	CFI	ILI	GFI	RMSEA
Model 1: Factor structure equivalent	1230.14	723			0.87	0.89	0.90	0.91	0.040
Model 2: Factor loadings equivalent	1421.20	578	191.06	145	0.85	0.87	0.89	0.89	0.067

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