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Role Conflict and Role Ambiguity as Factors in Work Stress among Managers in Singapore: Some Moderator Variables

Joachim Quah & Kathleen M. Campbell

ABSTRACT

The subject of stress at work has been thoroughly investigated in Western countries, particularly the United States. Very little work has been carried out in Southeast Asia. Singapore has developed very rapidly into a newly industrialised nation over the past few decades. Thus, it is probable that managers and workers experience stress as much as their Western counterparts. The present research study found that role conflict and role ambiguity were positively and significantly related to work stress among Singaporean managers and work stress was negatively and significantly related to job satisfaction. Two personality variables were chosen as moderator variables, but only one, tolerance of ambiguity showed moderating effects. Locus of control failed to moderate the stressor stress and stress response relationships. Overall, this study demonstrates that stress at work does exist for a sample of Singaporean managers and that the antecedents of this stress are role related.

INTRODUCTION

Stress in the workplace is increasingly a critical problem for workers, employers and societies. Researchers who study stress in the United States have demonstrated the direct and indirect costs of stress (Matteson & Ivancevich, 1987). While stress has been studied frequently in the West, there has been little research on the topic in Southeast Asia. One recent study carried out in the People's Republic of China found higher job stress for Chinese managers with Type A personalities (Xie & Jamal, 1993), but little else has been reported in research journals. Singapore appears to be a prime country in Southeast Asia to study stress due to the rapid transformation of the city-state from a British colony to a newly industrialised country. Singaporeans have had to adjust to both the positive and negative effects of the quickened pace of life in a modern, industrialised nation. In fact, as early as 1984, Cooper and Arbose noted,

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managers in Singapore show a higher incidence of stress symptoms... than managers in the other highly industrialised countries such as the United States, Britain,

There are many variables which have been related to work stress. Ivancevich and Matteson (1980) proposed a model of organisational stress research which outlined the major antecedents of work stress. They noted the importance of individual differences as moderators of stress and detailed possible outcomes of stress at work. Haviovic & Keenan (1991) in their recent work have again emphasized the importance of individual differences as moderators of job stress.

Role conflict and role ambiguity are among the antecedents of work stress which have been most cited in the research literature (Fisher & Gitelson, 1983). Role conflict, that is pressure to perform in two or more incompatible ways, has been tied conclusively to occupational stress in Western research. It has also been demonstrated to be a factor in job dissatisfaction and propensity to leave the organisation one works for ever since the classic work of Kahn and his colleagues (Kahn, Wolfe, Quinn, Snoeck & Rosenthal, 1964; Rizzo, House & Lirtzman, 1970; House & Rizzo, 1972; Hamner & Tosi, 1974; Van Sell, Brief & Schuler, 1981; Stout & Posner, 1984; Fang & Baba, 1993; Cordes & Dougherty, 1993). Role ambiguity, the lack of clear and specific information regarding work role requirements, has also been linked repeatedly with job stress and low job satisfaction (House & Rizzo, 1972; Hamner & Tosi, 1974; Ivancevich & Donnelly, 1974; Wright & Thomas, 1982; Cordes & Dougherty, 1993). Since role conflict and role ambiguity are issues in most Western organisations, they must be faced by Singaporean managers as well.

Many individual difference variables have been studied as moderators, that is, as characteristics which may either intensify or weaken the relationship among role conflict/role ambiguity and job stress. Most of these are personality variables including the need for achievement (Johnson & Stinson, 1975; Abdel-Halim, 1980), tolerance of ambiguity (Kahn, et al, 1964; Lyons, 1971; Ivancevich & Donnelly, 1974; Miles & Petty, 1975) and locus of control (Organ & Greene, 1974; Szilagyi, Sims & Keller, 1976; Abdel-Halim, 1980; Baths, 1980). The present study included two moderator variables — locus of control and tolerance of ambiguity.

Locus of control was outlined by Rotter (1966) as the extent to which people believe that they control the outcomes in their lives (internal locus of control) versus those outcomes being dependent on fate, luck or powerful others (external locus of control). Research has frequently demonstrated that "internals" tolerate role ambiguity and role conflict better than "externals" and are less stressed (Organ & Greene, 1974; Szilagyi, et al, 1976; Jackson & Schuler, 1985). Locus of control may be particularly important to study in an Asian society where many people have been raised to believe that fate plays a big part in their success. This is indicated perhaps most graphically in the use of geomancers to specify the best dates to marry, to set up a business, to move to a new home, etc.

Tolerance of ambiguity, or the conceptual opposite of the need for very clear and specific direction, is the tendency of some individuals to see ambiguous situations as desirable. Thus, those people with a high tolerance for ambiguity would be hypothesized to be less stressed by role conflict/role ambiguity than those with a low tolerance of ambiguity. Again, Western researchers have found this to be the case in numerous studies (Lyons, 1971; Ivancevich & Donnelly, 1974; Keenan & McBain, 1979; Wright & Thomas, 1982). This was felt to be another personality variable worth studying in an Asian context as many Asians are said to look for clear guidelines from authority figures. When such specific guidelines are lacking in the workplace, Asian managers might experience ambiguity as a negative feature of their jobs.

Figure 1 depicts the general model used for the present research study in which role ambiguity and role conflict are posited as antecedents to job stress while the individual difference variables of locus of control and tolerance of ambiguity are moderator variables which may affect the impact of job stress on job satisfaction.

The present study attempted to replicate work in this area carried out by researchers in North America. The hypotheses are:

H1 Overall, role conflict and role ambiguity will be positively related to work stress

and work stress will be negatively related to job satisfaction.

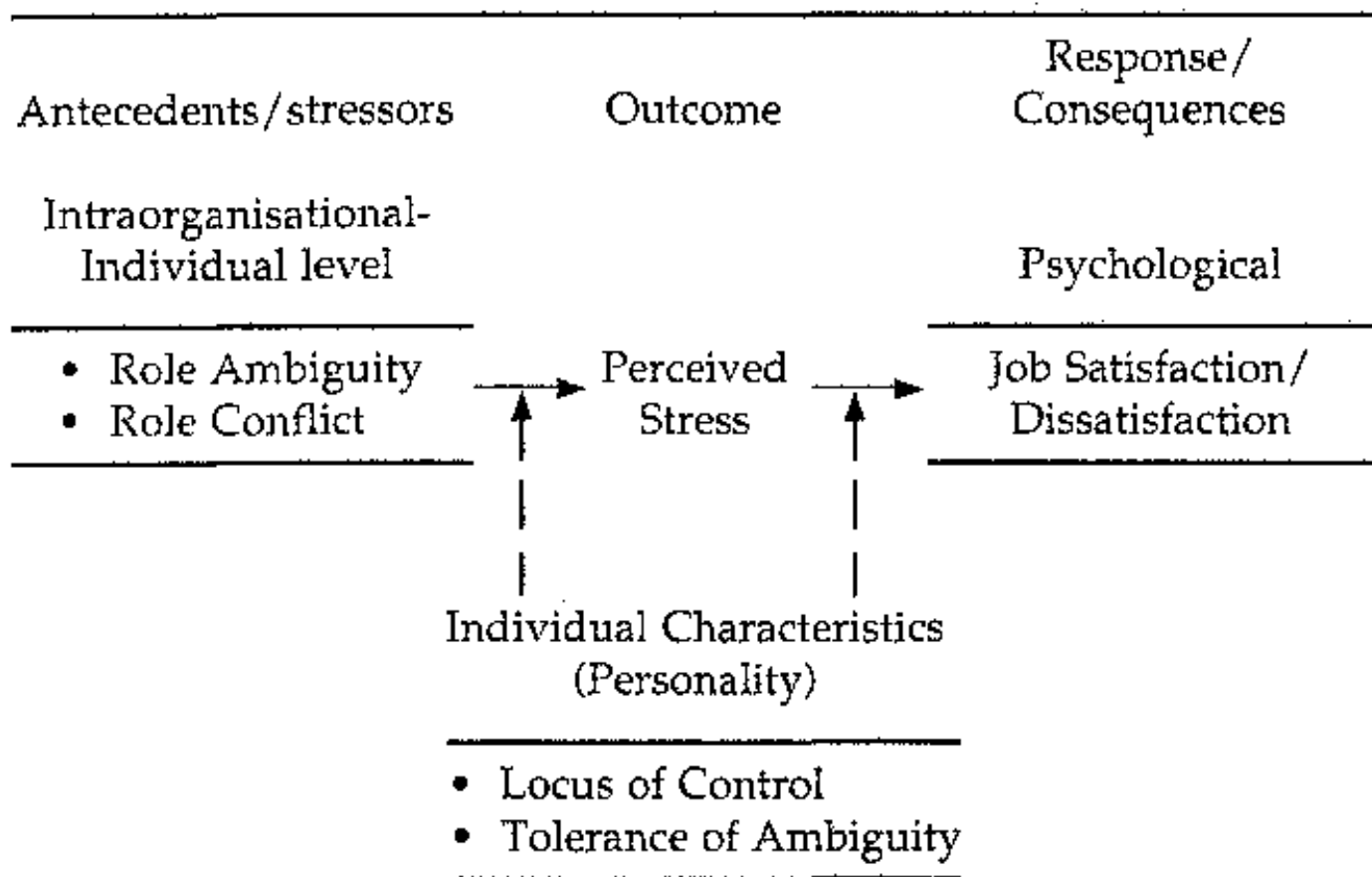
H2 The degree of work stress experienced would be significantly greater for the group (i) high in role conflict, (ii) high in role ambiguity and (iii) the degree of job satisfaction would be greater for the group low in work stress. (This hypothesis is, of course, simply a restatement of H1. However, since researchers have tested the proposed relationships both ways, we have included H2 for completeness.)

H3 Subjects who are (i) internal in locus of control and (ii) high in tolerance for ambiguity will experience less work stress than those who are (i) external in locus of control and (ii) low in tolerance of ambiguity regardless of their role conflict and role ambiguity scores.

H4 Subjects who are (i) internal in locus of control and (ii) high in tolerance of ambiguity will experience more job satisfaction than subjects who are (i) external in locus of control and (ii) low in tolerance of ambiguity regardless of their work stress scores.

Figure 1
General Research Model

General Research Model



METHOD

Subjects and Procedure

The sample included 194 managers who were enrolled in the part-time MBA programme or the Diploma of Business Administration at the National University of Singapore. Questionnaires were distributed to these managers and they were asked to complete them and return them to the researchers. Sixty-four questionnaires were received with a response rate of 33%. Questionnaires were also distributed with the same instructions to 244 managers at a large oil company and a major bank in Singapore. Of these, 80 were returned which again resulted in a response rate of 33%. Response rates of 30% and above are typically reported in questionnaire studies (True,

1989). The respondents were all at the lower-middle levels of management within their companies. The mean number of years in management was three for each sample. The dominant ethnic group was Chinese (94%). Of the managers 72% were male while 28% were female. No significant differences were found in terms of scores on the various instruments between the two sub-samples nor between males and females so all responses were combined into one data set. After discarding 13 incomplete questionnaires, a total sample of 131 was available.

Measures

Role conflict and role ambiguity were assessed through the use of a 14-item scale developed by Rizzo et al (1970). This scale has been used extensively in research and has been found to be psychometrically sound (Schuler, Aldag & Brief, 1977; Smith, Tisak & Schmeider, 1993). Scores for role conflict could range from 8 to 56 with higher scores representing role conflict; scores for role ambiguity range from 6 to 42 with higher scores representing role ambiguity.

Locus of control was measured using Rotter's 29-item Internal- External Locus of Control Scale (1966). This scale has also been used extensively and has been found to be reliable and valid (Lefcourt, 1966). High scores (maximum 23) reflect a high degree of externality while low scores (the lowest possible score is zero) reflect a high degree of internality.

The 16-item Tolerance — Intolerance of Ambiguity Scale developed by Budner was used to measure tolerance of ambiguity. The scale is psychometrically sound (Budner, 1962). Scores range from 16 to 112 with higher scores reflecting intolerance of ambiguity.

Work stress was measured by the 18-item Stress at Work Scale developed by Jenner (1986). The author reports good reliability and validity data for the scale. Scores on this scale range from 18 to 90 with high scores reflecting high perceived stress.

Finally, job satisfaction was measured by the 18-item Job Satisfaction Index (Brayfield & Rothe, 1951) which also has been used extensively by researchers and which has sound psychometric properties. The possible range of scores on this index are 18 to 90 with 54 as a " neutral" point and higher scores representing increased job satisfaction.

RESULTS

The means and standard deviations for this sample and for past United States samples are reported in Table 1. These descriptive statistics are very similar for the Singaporean managers and their Western counterparts although the scores for role ambiguity, tolerance of ambiguity and stress at work are somewhat higher for the Singaporean managers.

Table 2 displays the correlation matrix for the variables used in the present study.

Hypothesis 1 was accepted as role conflict and role ambiguity scores were significantly and positively related ($r = .482, p < .001$ and $r = .456, p < .001$ respectively) with work stress. Work stress was significantly and negatively related to job satisfaction ($r = -.61, p < .001$).

Table 1
Comparison of Scores of Singaporeans and Americans

Scales	Singaporeans		Americans		Source
	Mean (S.D.)	N	Mean (S.D.)	N	
Role Conflict	34.8 (7.9)	131	33.5 (10.3)	108	Baths, 1980
Role Ambiguity	15.9 (4.5)	131	12.4 (5.1)	108	Baths, 1980
Locus of Control	9.5 (4.6)	131	9.6 (4.0)	108	Baths, 1980
Tolerance of Amb.	65.4 (9.5)	131	53.0 (9.9)	57	Budner, 1962
Stress at Work	50.4 (9.4)	131	45.4 (10.0)	202	Jenner, 1986
Job Satisfaction	62.8 (10.2)	131	65.4 (14.0)	51	Brayfield/Rothe, 1951

Table 2

Pearson' s Product Moment Correlation Matrix						
	1	2	3	4	5	6
Job Stressors						
1. Role Conflict	-	.213**	.099	.291*	.482*	-.208*
2. Role Ambiguity	-		.369*	.189**	.456*	-.341*
Moderators						
3. Locus of Control			-	.083	.384*	-.299*
4. Tolerance of Ambiguity				-	.106	.292*
Outcome						
5. Work Stress					-	-.608*
Consequence						
6. Job Satisfaction						-

*p<0.001

**p<0.10

In order to test Hypothesis 2 (i), one-way ANOVA' s were performed. Table 3 shows the results of the ANOVA with role conflict scores being grouped into those experiencing high versus low role conflict. As expected, given the results of HI, there was a significant difference in mean stress scores for the group that was high in role conflict and the group that was low in role conflict. Thus, Hypothesis 2 (i) was accepted.

Table 4 shows the ANOVA results for those high and low in role ambiguity. Again, as expected, the difference in stress scores was significant, confirming that greater work stress was experienced by those who reported greater role ambiguity. Thus, Hypothesis 2 (ii) was also accepted.

Table 3
Differences in Mean Stress Scores by Median Subgrouping of Role Conflict

Analysis of Variance	DF	SS	MSS	F	Prob.
Between Groups	1	1,716.37	1,716.37	22.86	0.001
Within Groups	129	9,684.04	75.07		

Table 4
Differences in Mean Stress Scores by Median Subgrouping of Role Ambiguity

Analysis of Variance	DF	SS	MSS	F	Prob.
Between Groups	1	1,189.29	1,189.29	15.03	0.001
Within Groups	129	10,211.12	75.07		

Table 5
Differences in Mean Satisfaction Scores by Median Subgrouping of Work Stress

Analysis of Variance	DF	SS	MSS	F	Prob.
Between Groups	1	2,787.46	2,787.46	33.83	0.001
Within Groups	129	10,627.97	82.39		

Table 6
Moderated Regression Analysis with Locus of Control as Moderator

Dependent Variable:	R ²	R ² Change	F Change	P <
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Work Stress				
Predictor Variables RA, RC	.363	.363	36.457	.001
RA, RC, LC	.413	.050	10.773	.001
Interaction Variables RA, RC, LC, RALC	.416	.003	.732	n.s.
RA, RC, LC, RALC, RCLC	.433	.017	3.778	n.s.
Job Satisfaction				
Prediction Variables ST	.370	.370	75.717	.001
ST, LC	.375	.005	1.040	n.s.
Interaction Variables ST, LC, STLC	.376	.001	.042	n.s.

n = 131, RA = role ambiguity; RC role conflict; LC = locus of control; ST = work stress

Finally, Hypothesis 2 (iii) was accepted due to the results outlined in Table 5. Those who perceived more work Stress had significantly lower job satisfaction scores.

Hypotheses 3 and 4 were related to the moderating effects of locus of control and tolerance of ambiguity. Tables 6 and 7 present the findings related to these hypotheses.

With respect to locus of control, the results proved disappointing. Entering the regression model as an independent predictor variable, locus of control managed to explain an additional 5% of the variance in work stress ($p < .001$). However, when it entered the model in interactive terms, RALC and RCLC respectively, it failed to contribute to the variance in work stress although RCLC did show a very weak moderating influence at the .10 level of significance (R^2 Change = 1.7%). Thus, we cannot conclude that locus of control mediated the relationship between role conflict and role ambiguity on work stress. With job satisfaction V as the dependent variable, again no robust moderating effects were recorded for the interactive term (or cross product) of locus of control and work stress. Hypotheses 3 (1) and 4 (1) were not confirmed.

Table 7
Moderated Regression Analysis with Tolerance of Ambiguity as Moderator

Dependent Variable:	R^2	R^2 Change	F Change	P <
Work Stress				
Predictor Variables RA, RC	.363	.363	36.457	.001
RA, RC, TA	.370	.007	1.493	n.s.
Interaction Variable RA, RC, TA, RATA	.400	.030	6.069	.05
Job Satisfaction				
Predictor Variables ST	.370	.370	75.717	.001
ST, TA	.422	.052	11.624	.001
ST, TA, STTA*	-	-	-	-

TA = tolerance of ambiguity;

*the .010 limit reached, STTA cannot enter the model

The results of tolerance of ambiguity as a moderator variable offered some confirmation of the hypothesis. Table 7 displays the results of the analysis of the moderated multiple regression.

Tolerance of ambiguity as an independent predictor variable on work stress did not contribute to any significant explanation in its variance (R^2 Change = .7%). However, the cross product of tolerance of ambiguity and role ambiguity did account for an additional 3% of the variance in the stress model ($p < .05$). As such, it can be concluded that robust moderating influences were present in the relationship of role ambiguity and work stress. Thus, there is support for Hypothesis 3 (ii).

As for the influence of tolerance for ambiguity as a moderator in the stress-job satisfaction relationship, the results proved negative. The .010 limit was breached and the interaction term was unable to explain the variance in job satisfaction. Even though Hypothesis 4 (ii) was not supported,

tolerance of ambiguity as an independent variable did significantly contribute to the explanation of the variance in job satisfaction (R^2 Change = 5.2%).

DISCUSSION

As with the majority of correlational studies conducted in the United States, the results of the correlation coefficients of the various stressor-stress and stress-response variables were in the predicted direction. Role ambiguity and role conflict were shown to be positively and strongly related to work stress. Work stress and job satisfaction were shown to be highly negatively related.

The predicted notion that role conflict and role ambiguity function as job stressors was confirmed in that the higher the experience of role conflict and/or role ambiguity, the higher the reported work stress. For this sample of Singaporean managers, it is also the case that the greater the work stress the more likely the manager is to report job dissatisfaction.

It is acknowledged by both researcher and practitioners that a degree of both role conflict and role ambiguity is inevitable in complex organisations. It is not possible to eradicate these role stressors completely. Perhaps they can be contained at levels which are tolerable and which do not add to greater job stress. Recently, Schaubroeck, Caustier, Sime & Dittman, (1993) carried out an intervention study in which role clarification was offered to managers. Role ambiguity was reduced; although at least initially, these managers did not report experiencing less stress. Further studies along this line are needed, however.

The results in the present study of the use of two personality variables, locus of control and tolerance of ambiguity, proved disappointing. The results of the analyses using locus of control as a moderating variable failed to uncover any moderating effects. A simplistic explanation for this may be that both role ambiguity and role conflict are so prepotent that individual differences like locus of control play a minimal role. An equally attractive argument could be that the influence of locus of control as a modifier may be better appreciated if it is treated in a nonlinear manner in its impact on work stress and job satisfaction. The independent contribution of locus of control in explaining work stress seems to suggest strongly its importance as a job stressor rather than as a moderator.

As with past studies (eg Kahn et al., 1964; Keenan & McBain, 1979), the present study provided some support for the influence of tolerance of ambiguity as a moderator between role ambiguity and work stress. If in fact tolerance of ambiguity does influence the amount of work stress experienced when role ambiguity is high, then this has implications for the workplace. We may be able to select people who are high in tolerance for ambiguity for jobs where role ambiguity is a major factor. Further, in designing stress management programmes, we might be able to include training to increase one's level of tolerance for ambiguous situations. This might be especially important at the present time for Singaporean managers as more and more of them are being encouraged to venture out into newly opening markets in China and Vietnam, for example, where their roles may be less clear cut than ever.

Further studies on work stress in Singapore would be beneficial especially studies which might include managers at the middle- to upper-levels of the organisation. It would also be useful if Singaporean researchers and practitioners were to collaborate on the development of stress reduction interventions. Certainly such interventions represent the direction of future efforts in this area (Ivancevich, Matteson, Freedman & Philips, 1990).

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