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Control, stress, and job satisfaction in Canadian nurses

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The main effects of four domains of control (task, decision, resource, physical environment) on job satisfaction and their interactions with three types of job stressors (task demands, role conflict, interpersonal conflict) were examined in a sample of 765 Canadian nurses. Multiple regression analyses were conducted to determine the proportion of variance in job satisfaction that could be accounted for by job stressors, control, and the interaction of stressors and control in that order. The job stressors were analysed separately and as a composite job demands score, as were the four domains of control. The results indicated that the proportion of variance in job satisfaction increased with the addition of control for the composite scores and for task, resource, and physical environment control. However, decision control did not account for additional variance in job satisfaction above that for any of the job stressors. In addition, none of the stressor \times control interactions were significant. The results support previous attempts to test the moderating effects of control, suggesting that perceived control is not a moderator of job stress but rather that it has a direct influence. The relevance of the different domains of control for nurses is discussed.

Keywords: control, task demands, decision latitude, job satisfaction.

The concept of control occupies a central position in Karasek's (1979) decision latitude model of job stress. In this currently popular formulation, job control (or job decision latitude) is thought to moderate the relationship between deleterious job demands (or stressors) and their strain (health) consequences. Specifically, the model suggests that strain will increase when there are high levels of job demands and low levels of control over those demands.

The results of two recent field studies (Payne and Fletcher 1983, Spector 1987) and a laboratory study (Perrewe and Ganster 1987) failed to support the Karasek model. Ganster (1988) has offered some explanations for this lack of support. First, he notes that because Karasek's (1979) sample comprised of many different occupations, individuals characterized by low socio-economic status (and, by inference, low pay, job dissatisfaction, and poorer health) may have been over-represented in jobs characterized by high demands and low control. By contrast, Payne and Fletcher (1983), Spector (1987), and Perrewe and Ganster (1987) used samples that were homogeneous with respect to socio-economic status.

Second, Ganster argues that Karasek (1979), in contrast to Spector (1987) and Perrewe and Ganster (1987), did not test for a true statistical interaction effect. Karasek rejected the use of a multiplicative term (demands \times control) to carry the interaction effect, instead opting for a formulation based upon differences between demands and control, whereas Spector (1987) and Perrewe and Ganster (1987) used the multiplicative term. It should be noted, however, that Payne and Fletcher (1983) used Karasek's difference formulation, but also found no support for the model.

Last, and most relevant to the present study, Ganster (1987) notes that Karasek used composite (global) measures of demands and control. The measures used in the non-supportive studies, while composite in nature, were more narrowly defined. Thus, it is possible that the Karasek measures contained domains of control and elements of job demands not included in the other studies. It may be important, then, to consider the effects of individual domains of control and of job demands or stressors before drawing conclusions about their combined effects.

The present study examines the job decision latitude model and addresses Ganster's (1988) concerns. A single occupation is used to control for the potentially confounding effects of socio-economic differences and the interactions are tested using multiplicative terms. In addition, four different domains of control and three types of job stressors are examined, both separately and as composite scores.

Method

Subjects

Data used in the current study were collected as a part of an employee attitude and health survey of Newfoundland and Labrador Nurses (see Bulbrook 1987). Questionnaires were mailed to a random sample of 1400 union members, stratified on the basis of geographic location and type of employing facility. The facilities surveyed included hospitals, nursing homes, community and occupational health agencies, physician's offices, and educational institutions. The response rate was 48% resulting in 675 usable questionnaires. Respondent's ages ranged from 20 to 60 with a median age of 32 years. The sample was 96% women. 80% of the nurses surveyed were general duty or staff nurses and 73% were employed in a hospital setting.

Measures

Control. Control was measured using a scale developed by Greenberger (1981). The scale contained 16 items and assessed the degree of influence workers have over various aspects of their jobs on a five point scale (5 = 'very much' and 1 = 'very little').

The items were factor analyzed for this study using principal factor analysis with oblique rotation. The number of factors retained was determined by the Scree-Test (Cattell 1965). This analysis resulted in four factors indicating four different domains of control. The first factor reflected task control (7 items). Questions about the variety, order, amount, pace, and quality of the tasks were correlated with this factor. The second factor appeared to be a decision control factor (4 items) and was characterized by questions regarding assignment of tasks, deadlines, training others, and decisions about policies and procedures. The third factor seemed to represent control over the physical environment (2 items). Items loading on this factor were concerned with the arrangement of furniture, equipment, and decoration of work areas. The fourth factor was a resource control factor (2 items) and was identified by questions about the availability of supplies, materials and equipment. The internal consistency (alpha: Nunnally 1967) for the task, decision, physical environment, and resource control scales was 0.85, 0.74, 0.79, and 0.82 respectively.

Other stressors. Three types of job stressors were examined in the present study: task demands, role demands, and interpersonal conflict.

Task demands: The three task demand scales were developed by Caplan *et al.* (1975) and Hurrell *et al.* (1985). These scales include quantitative workload (7 items), variance in workload (7 items), and cognitive demands (5 items). The alpha coefficients were 0.75, 0.90, and 0.75 for the quantitative, variance, and cognitive demands scales respectively.

Role demands: A scale developed by Rizzo *et al.* (1970) was used to measure role conflict (8 items) and role ambiguity (6 items). A four-item scale developed by Caplan *et al.* (1975) was used to assess responsibility for other people. The alpha coefficients for the conflict, ambiguity, and responsibility scales were 0.82, 0.74, and 0.62 respectively.

Interpersonal conflict: Interpersonal conflict was measured using the intergroup (7 items) and intragroup (8 items) conflict scales developed by Rahim (1983). The alpha coefficient was 0.85 for intergroup conflict and 0.86 for intragroup conflict.

Outcome measure. A single outcome measure, job satisfaction, was used as the dependent variable. Job satisfaction has demonstrated relationships to various types of job stressors (compare Loher *et al.* 1985) and may have long term effects on physical health (Fisher 1987, Palmore 1969). The job satisfaction scale used in the present study contained four items (Caplan *et al.* 1975). Respondents were asked to indicate whether they would accept their current jobs if given another choice, take a new job, recommend the job to others, and their overall level of satisfaction. The alpha coefficient for this scale was 0.83.

Scores for all scales used in the analyses were computed by summing the responses of the items on each scale. The main effects and multiplicative interactions of four domains of control and three types of job stressors on job satisfaction were then examined using multiple regression analyses.

Results

Means, standard deviations, and possible ranges for the control, task demands, role demands, interpersonal conflict, and job satisfaction scales are shown in Table 1 and intercorrelations of all scales are presented in Table 2.

Analyses of variance of age, education level, and job satisfaction revealed that there were no differences in job satisfaction based on either age or educational level. Thus, there was no need to control for these variables in further analyses.

The first multiple regression analysis was conducted to determine the proportion of variance in job satisfaction attributable to job stressors, control, and the interaction of stressors and control. In this analysis, the eight job stressor scales were combined into a composite index, as were the four control scales. The composite stressor score was entered into the hierarchical multiple regression analysis first; the composite control score was entered into the regression equation second, and the interaction of the composite stressor and control scores was entered last. The increment in R^2 was computed after the second and third steps to determine whether control or the stressor \times control interaction accounted for additionally significant variance in job satisfaction. The result of this analysis indicated that the proportion of variance accounted for in job satisfaction increased from 0.19 to 0.21 with the addition of control ($F=23.08$, $df=1,647$ $p<0.01$). However, the stressor \times control interaction did not increase the proportion of variance accounted for above that for the main effects of job stressors and control.

Table 1. Means and standard deviations for stressors, control, and job satisfaction.

	Scale	N	Range	Mean	SD
Task Demands	quantity	628	7-35	25.72	3.60
	variance	674	7-35	25.01	5.27
	cognitive	670	5-25	17.47	2.49
Role Demands	conflict	672	8-40	25.81	9.49
	ambiguity	661	6-35	15.75	5.76
	respons.	673	4-20	11.16	3.40
Interpersonal Conflict	intergrp.	639	7-35	17.57	5.19
	intragrp.	639	8-40	19.74	6.23
	overall job demands	675	52-260	170.13	26.86
	overall control	675	15-75	40.24	10.64
Control	task	675	7-35	20.79	5.75
	decision	675	4-20	9.60	3.27
	resource	675	2-10	5.26	1.98
	phy. env.	674	2-10	4.60	2.17
	job satisfaction	653	4-13	9.94	2.15

Multiple regression analyses were then performed separately for each of the three categories of stressors to determine their associations with specific domains of control. Scales within each stressor category were entered into the regression equations as sets of variables (Cohen and Cohen 1975) followed by one of the four domains of control and the multiplicative interaction terms. The interaction terms were created by multiplying the score for each scale in the stressor category by the particular control domain being considered. For example, in the analysis using the three task demand scales and task control as predictors, the interaction terms were created by multiplying each of the task demand scores by the task control score. The same method was followed for the role demands and interpersonal conflict stressor categories. These procedures resulted in a total of 15 regression equations and 32 interaction terms.

The results of these analyses are shown in Table 3. None of the 32 stressor \times control interactions was significant and therefore they are not included in the table. Inspection of Table 3 reveals that low 'variance-in-workload' scores were associated with higher job satisfaction scores, regardless of the domain of control. Lower quantity (of workload) scores were associated with higher job satisfaction in the decision control and physical environment control domains, and higher cognitive demands scores were associated with greater satisfaction in the task control domain. When the task demand scales were entered into the regression equation first, three of the four domains of control (task, resource, and physical environment) significantly increased R^2 . Decision control despite its significant beta weight, did not account for additional variance in job satisfaction above that for the task demand scales.

The results of the regression analyses for role demands show that greater job satisfaction was associated with less role conflict, but it was not associated with role ambiguity or responsibility for others. The increment in R^2 was significant when task control was entered after the role demands scales. Resource control and control over the physical environment also accounted for additional variance in job satisfaction; decision control, however, did not.

Table 2. Correlations among stressors, control, and job satisfaction.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Task demands														
quantity	0.53†													
variance	0.35†	0.46†												
cognitive														
Role demands														
conflict	0.21†	0.30†	0.07											
ambiguity	0.03	0.07	0.02	0.41†										
respons.	0.15†	0.15†	0.10	0.07	-0.08									
Interpersonal conflict														
intergrp.	0.06	0.07	-0.03	0.46†	0.38†	-0.01								
intragrp.	0.10	0.09	0.02	0.44†	0.30†	0.01	0.63†							
Overall job demands														
control	0.41†	0.50†	0.26†	0.76†	0.50†	0.22†	0.61†	0.62†						
overall control	-0.20†	-0.23†	-0.20†	-0.27†	-0.28†	0.21†	-0.22†	-0.25†	-0.33†					
task	-0.28†	-0.28†	-0.26†	-0.26†	-0.22†	0.13	-0.17†	-0.22†	-0.34†	0.91†				
decision	-0.00	-0.06	-0.06	-0.16†	-0.29†	0.34†	-0.22†	-0.21†	-0.18†	0.79†	0.56†			
resource	-0.12	-0.11	-0.07	-0.24†	-0.20†	0.10	-0.19†	-0.21†	-0.23†	0.68†	0.51†	0.43†		
phy. env.	-0.10	-0.18†	-0.15†	-0.16†	-0.16†	0.08	-0.15†	-0.13†	-0.21†	0.69†	0.50†	0.46†	0.43†	
Job satisfaction														
	-0.20†	-0.25†	-0.09	-0.36†	-0.24†	0.00	-0.33†	-0.34†	-0.40†	0.29†	0.30†	0.13†	0.25†	0.20†

Table 3. Regressions of job satisfaction on task demands, role demands, interpersonal conflict, and each domain of control*.

<i>Task demands</i>					
		<i>plus task control</i>	<i>plus decision control</i>	<i>plus resource control</i>	<i>plus phy. env. control</i>
quantity	-0.11†	-0.06	-0.11†	-0.09	-0.11†
variance	-0.21‡	-0.18‡	-0.21‡	-0.19‡	-0.18‡
cognitive	0.05	0.09†	0.06	0.06	0.06
		0.26‡	0.12‡	0.23‡	0.17‡
R ²	0.07	0.12	0.08	0.12	0.09
ΔR ²		0.05	0.01	0.05	0.02
F(4,592)		8.33‡	ns	8.33‡	3.33†
<i>Role demands</i>					
conflict	-0.31‡	-0.27‡	-0.31‡	-0.28‡	-0.30‡
ambiguity	-0.12‡	-0.10†	-0.12‡	-0.11‡	-0.11‡
resp.	0.01	-0.02	0.00	-0.006	-0.001
		0.20‡	0.04	0.17‡	0.15‡
R ²	0.15	0.18	0.15	0.17	0.17
ΔR ²		0.03	0.00	0.02	0.02
F(4,585)		5.36‡	ns	3.57‡	3.57‡
<i>Interpersonal conflict</i>					
intergrp.	-0.19‡	-0.17‡	-0.18‡	-0.17‡	-0.18‡
intragrp.	-0.23‡	-0.19‡	-0.22‡	-0.20‡	-0.22‡
		0.23‡	0.06	0.19‡	0.16‡
R ²	0.14	0.20	0.15	0.18	0.17
ΔR ²		0.06	0.01	0.04	0.03
F(3,589)		14.29‡	ns	9.29‡	7.14‡

*The four domains of control were entered in separate regression analyses. Cell entries are standardized regression coefficients unless otherwise noted.

‡ p < 0.01.

† p < 0.05.

The results for the analysis of interpersonal conflict revealed that greater job satisfaction was associated with lower group conflict, both between and within groups. Again, task control, resource control, and control over the physical environment contributed significantly to the explanation of the variance in job satisfaction while decision control did not.

Discussion

The present analyses allowed an examination of the effects of perceived job control and job demands on job satisfaction. Four domains of control in combination with three types of demands were investigated to determine whether specific domains of control differentially interact with specific job demands. Thus, this study was a test of Karasek's job decision latitude model, as well as an analysis of associations among domains of job control and types of job demands.

The results indicated that, while both job control and job demands had main effects on job satisfaction, they did not interact, regardless of the domain of control or type of demand being considered. This finding is consistent with previous attempts to test the moderating effects of control on the job demands/satisfaction relationship (Payne and Fletcher 1983, Perrewe and Ganster 1987). Thus, control appears to increase job satisfaction independent of the level of perceived job demands.

This study additionally revealed that domains of control are differentially associated with job satisfaction. Increased task control, resource control, and control over the physical environment were found to be related to greater job satisfaction regardless of the type of job demand. Thus, increasing perceptions of control in any of these three domains would increase job satisfaction. Decision control, however, did not appear to have an effect on job satisfaction across all three job demand categories. It was a significant predictor of job satisfaction for task demands, although its effect was not strong enough to explain a significant amount of variance in job satisfaction. Decision control was not a predictor for role demands or interpersonal conflict. It may be that role demands and interpersonal conflict are similar types of job stressors. Both are concerned with identifying oneself and one's position in relation to other individuals, whereas task demands do not necessarily involve interpersonal relationships.

The lack of an effect for decision control is surprising, given the importance generally attributed to participative decision-making by organizations (Locke and Schweiger 1979). It has been found that participative decision-making will usually account for approximately 10–15% of the variance in job satisfaction (Ganster 1987, Locke and Schweiger 1979, Spector 1987). The nonexistent effect of decision control in the present study may indicate that it is important to consider the type of occupation in investigations of the effects of different domains of control. For example, nurses, the subjects used in this study, may not have a high degree of decision-making power since the patient's physician may be viewed as having ultimate control due to the hierarchy inherent in many health care professions (Scully 1980). Thus, decision control may be an irrelevant form of control for them.

The results of this study do not support the hypothesis of an interaction between job demands and control. They do indicate, however, that it is important to determine the domain of control that may be appropriate for the job.

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