

# Job Demand-Control Model and Mental Health: Burnout as a Mediator

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## Abstract

This study attempted to verify the role of burnout as a mediator in the relationship between job stress and mental health. Empirically, we collected longitudinal data to decrease effects of occasion factors. After testing the different effects of DC model on burnout, then help advance the work by addressing how DC model influences mental health through burnout. The results suggest that increasing in job demand will have the positive effects on both emotional exhaustion and cynicism, increasing in job control will have the negative effects on burnout (emotional exhaustion, cynicism and low professional efficacy). Burnout negatively impacts employee's mental health. When employees are given higher job control, it reduces their degrees of burnout and furthermore negatively relate to mental health. We verified the important mediator, burnout, does link the relationship between job control and mental health. Job demand reduces employee's emotion exhaustion and cynicism, and has further effects on one's mental health. Suggestions and limitation were proposed.

## Introduction

As Karasek (1979) proposed the job demand and job control model are the two important dimensions of work environment, our research attempts to build on the demand-control model (DC model) developed by Karasek. In this article, we aim to explore both positive and negative effects of work environment substantive contribution to employee's burnout and mental health. We provide a clear viewpoint by examining burnout as a mediator for the relationship between DC model and psychological health. The majority of studies testing the job strain model have employed cross-sectional research designs that tend to inflate correlations between the predictor and outcome variables. The effects of occasion factors can be reduced by assessing the stressor and strain variables at different points in time (Podsakoff & Organ, 1986; Zapf et al., 1996). We advance the bias by doing a longitudinal study. Specifically, our aim is threefold: First, we introduce burnout and its related literature to DC model. In so doing, we draw clear distinction of three dimensions of burnout and the effect of DC model on them. Second, we posit a set of

hypotheses based on the notion that burnout partially mediates the effect of DC model and mental health. In so doing, we develop the theoretical rationale that inclusion of burnout helps clarify the relationship between DC model and psychological health. Finally, we provide the implications for theory and managerial practice on managing employees' stress management.

### **Job Demand –Control Model and Job Stress**

The DC model which proposed by Karasek (1979) has stimulated the greatest amount of research and is generally acknowledged as the dominant theoretical perspective in the occupational stress area (Guglielmi & Tatrow, 1998; Tairs & Feij, 2004). It is a situation-centered model on which much of the current job stress research is based. In its basic form, the JD-C Model postulates that the primary sources of job stress lie within two basic characteristics of the job itself: (1) “psychological job demands” and (2) “job decision latitude” or “job control”.

Job demands are defined as psychological stressors, such as requirements for working fast and hard, having a great deal to do, not having enough time, and having conflicting demands (Karasek, 1979). It is important to note that these are psychological demands and not physical ones (Fox, Dwyer, & Ganster, 1993). Thus, a fast and hectic work pace may impose physical requirements that lead to fatigue, but the stress-related outcomes the model predicts are related to the psychological effects of the work load—the anxiety associated with the need to maintain the pace of work and the associated consequences of failing to complete the work.

The term “job decision latitude” or “job control” has been described as the worker's ability to control his own activities and skill usage (Karasek and Theorell, 1990). Fox et al. (1993) pointed out that there are two components are included in job control: a worker's authority to make decisions on the job, or decision authority, and the variety of skills the worker uses on the job, or skill discretion. Previous researchers (Karasek, 1979) have combined these two components into one measure of decision latitude, or job control.

The DC model assumes that strains are produced by job stressors: job demands and job control. The stressors have their greatest negative impact when job control is low and job demands are high, whereas an increase in job control serves to attenuate the negative effects of job demands on strain. Two different effects were proposed in the model: (1) additive effect states that the high job demands precipitate job strain, as does low job control (main effects); (2) the interaction or buffer effect states that job control has a moderating effect on the relationship between job demands and job strain (interaction effect). A recent analysis of 63 studies (Van Der Doef & Maes, 1999) reveals a greater proportion supporting the additive than the interactive version and that most investigators have tested both forms. Therefore, the additive effect will be implemented in this research for the examination of the relationship among DC model and other variables.

### **DC Model and Burnout**

Burnout is potentially a more accurate predictor of critical job outcomes than the presence or extent of key role stressors (cf. Bacharach, Bamberger, and Conley 1991). Moreover, burnout provides a theoretically sound approach to differentiate, at the individual level, between positive and negative levels of stress. Professional burnout is a stress-related disorder that is currently receiving much interest from behavioral researchers and health specialists. (Linden, Keijsers, Eling, & Schaijk, 2005).

Burnout not only includes an affective response (i.e., exhaustion) that is similar to an orthodox job strain variable, but also a cynical and skeptical attitude towards work as well as an evaluation of one's efficacy in the job. The three dimensions of the MBI-GS parallel those of the original MBI, in the sense that they are more generic and do not refer to other people is working with. The first dimension—*emotional exhaustion*—refers to the feelings of being emotionally overextended and drained. The second dimension—*cynicism*—reflects indifference or a distant attitude towards work in general, not necessarily with other people. Finally, *professional efficacy* reflects a dimension of self-evaluation, which encompasses both social and non-social aspects of occupational accomplishments (Schaufeli, Bakker, 2004). Hence, it offers the possibility of studying the relationships with three different aspects of worker's affective strain, negative job attitude, and perceived level of competence (Salanova, Peiró, Schaufeli, 2002).

The first major prediction of the model is that job strain, a stress outcome reflected in mental and physical health problems, occurs when jobs are simultaneously high in demands and low in controllability. This prediction rests on the reasoning that high demands produce a state of arousal in a worker that would normally be reflected in such responses as elevated heart rate or adrenaline excretion. When certain job demands are high and when certain job resources are limited burnout develops irrespective of the type of job or occupation (Demerouti et al., 2001). Thus, we expect the job demand is positively related to burnout.

*Hypothesis 1a: Job demand is positively related to emotional exhaustion.*

*Hypothesis 1b: Job demand is positively related to cynicism.*

*Hypothesis 1c: Job demand is positively related to low professional efficacy.*

There is now a substantial body of evidence showing that higher demands are associated with greater strain and that greater control is associated with less strain (Holman, & Wall, 2002). High level of job control means that workers have enough opportunity to deal with their tasks. When there is a constraint on the responses of the worker, as would occur when job control is low, the arousal cannot be appropriately channeled into a coping response and thus produces an even larger psychological reaction that persists for a longer time (Fox, Dwyer, & Ganster, 1993). Therefore, the potential of higher job control may reduce the burnout. Thus, the job control is negative related to burnout.

*Hypothesis 2a: Job control is negatively related to emotional exhaustion.*

*Hypothesis 2b: Job control is negatively related to cynicism.*

*Hypothesis 2c: Job control is negatively related to lower professional efficacy.*

### **Burnout and Mental Health**

Burnout focuses on the perceptions resulted from characteristics of psychosocial aspects in the workplace. Hence, the definition of burnout lies in the projected mental states when facing work stressors. Burnout was exhibited by means of emotional exhaust, cynicism and low professional efficacy. Moreover, the extent of what mental health measures not only reflects one's reaction to his work environment, but also expands to the wider scope as to the individual's integrated mental state. Therefore, we can presume that the consequential effects of

burnout can extend to the individual's mental state as a whole, and the impact on the individual's mental health as well. Consequently we propose the hypotheses as below:

*Hypothesis 3a: Emotional exhaustion is negatively related to mental health.*

*Hypothesis 3b: Cynicism is negatively related to mental health.*

*Hypothesis 3c: Low professional efficacy is negatively related to mental health.*

### **Burnout as a mediator of Job Demand-Control and Mental Health**

Though some scholars also argue that job stress leads to the feeling of burnout and then burnout induces negatively physical and psychological impacts toward oneself (Kelloway, & Barling, 1991 ; Tang, Au, Schwarzer, & Schmitz, 2001), their studies, after detailed reviewing, do not apply Karasek's job demand-control model as the measuring tool for job characteristics. The aim of this study thereby focuses on the application of Karasek's Job Demand - Control Model as the job stressors of employees, with a view to verify burnout plays the mediate role in the process of the negative impacts produced by the job stressors toward mental health. In other words, Job Demand-Control Model induces burnout, and then accordingly influences mental health. Therefore, base on the above arguments, we propose the hypotheses regarding burnout mediates the relationship between job demand and mental health.

*Hypothesis 4a: The burnout dimension of emotional exhaustion mediates the negative relationship between job demand and mental health.*

*Hypothesis 4b: The burnout dimension of cynicism mediates the negative relationship between job demand and mental health.*

*Hypothesis 4c: The burnout dimension of low professional efficacy mediates the negative relationship between job demand and mental health.*

Burnout mediates the relationship between job control and mental health as well.

*Hypothesis 5a: The burnout dimension of emotional exhaustion mediates the positive relationship between job control and mental health.*

*Hypothesis 5b: The burnout dimension of cynicism mediates the positive relationship between job control and mental health.*

*Hypothesis 5c: The burnout dimension of low professional efficacy mediates the positive relationship between job control and mental health.*

## **METHODS**

### **Research Setting and Sample**

In order to minimize organizational variation, we focused on organizations in a single industry. We tested our hypotheses using data collected from employees of Director General Custom Office in Taiwan. The data were collected as a two-wave study in order to diminish the effects of common method variance. The first-wave questionnaire included measures of job demands, job control, and several biographical variables. 653 employees were selected by systematic sampling. All questionnaires were sent through internal organizational mail system.

Among them 513 questionnaires are valid. Two months after the first data collection, we delivered the second questionnaire included the scales of burnout and mental health. 402 questionnaires are valid for the second-wave data collection.

## Measures

The questionnaires used in this study were originally developed in English and then translated into the native language of Mandarin. We established the linguistic equivalence of all the measures used in this study through the use of back-translation procedures.

**Dependent variables.** We measured mental health by using General Health Questionnaire (GHQ-12) (Goldberk, 1972). The General Health Questionnaire (GHQ) is a broad extent measure of psychological well-being comprising a symptoms checklist which is useful in detecting subclinical disturbances of individual mental health (Kelloway, & Barling, 1991).

**Independent variables.** The measures for job demand and job control were developed by van Veldhoven (1996). The measurement of job demand includes psychological demand and job variety.

**Mediating variable.** Our mediating variable was burnout. Cherniss (1980) described burnout as a process in which the professional's attitudes and behavior change in negative ways in response to job strain. The Maslach Burnout Inventory and its cross-language derivatives are the instruments most often used in burnout research. The MBI-GS (Maslach, Jackson & Leiter, 1996) consists of 16 items with a 7-point Likert scale, assessing the three most important dimensions of burnout: emotional exhaustion, cynical attitude/ depersonalization, and diminished personal accomplishment as in professional efficacy. The internal consistencies ( $\alpha$ ) for the three subscales were .924 for exhaustion, .808 for cynicism, and .779 for low professional efficacy.

**Control variable.** To isolate the effects of burnout on individual characteristic heterogeneity, we controlled for each respondents' gender, age, annual income and company tenure suggested by researchers. (Bourbonnais, Comeau, Vezina, 1999 ; Payne, Wall, Borrill & Carter, 1999; Xie, 1996). Those variables could in principle lead spurious results if they were not included in the analyses.

## RESULTS

We tested our hypotheses using hierarchical regression analyses on the dependent variables. At first, we assessed whether the statistical assumptions underlying the regression held for these analyses by examining residual plots for evidence of confirming that the assumptions of linearity and homogeneity of variance have been met. No major violations of the assumptions were observed. Table 1 provides the descriptive statistics and correlations for the study variables.

Table 2 shows the results of models predicting the effects of job demand and job control to the three dimensions of burnout: emotional exhaustion, cynicism, and low professional efficacy. In Hypothesis 2 predicts that job control is negatively related to burnout. The table 2 shows the coefficients estimate of job control for emotional exhaustion, cynicism and low professional efficacy were negative and significant, a result that is consistent with Hypotheses 2a, 2b and 2c.

Table 3 shows the result of models predicting the effects of burnout to mental health as Hypothesis 3. The result supports of burnout is negatively related to mental health. Therefore, the Hypothesis 3 is supported.

**Table 1**  
**Means, Standard Deviation, and Correlations for All Variables**

Variables	Cranbatch's $\alpha$	Means	SD	1	2	3	4	5	6
1.Job Demands	0.80	2.43	0.73	1.000					
2.Job Control	0.92	2.50	4.91	-.284**	1.000				
3.Emotional exhaustion	0.87	3.03	8.20	.406**	-.260**	1.000			
4.Cynicism	0.81	3.00	3.85	.252**	-.213**	.680**	1.000		
5.Low professional efficacy	0.84	2.33	1.56	-.030	-.121*	.075	.183**	1.000	
6.Mental Health	0.92	2.97	1.30	-.169**	.242**	-.433**	-.423**	-.356**	1.000

\*p< .05 ; \*\*p< .01

**Table 2**  
**Hierarchical Regression Analyses in Predicting DC Model to Burnout**

Source	Emotional exhaustion		Cynicism		Low professional efficacy	
	regression coefficient (b)		regression coefficient (b)		regression coefficient (b)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Constant	3.637***	1.039	4.777***	3.564*	2.486**	3.681***
Gender	-.063	.051	-.338*	-.245	-.218	-.167
Age	-.019	-.010	-.050*	-.044	.012	.013
Annual Income	.007	.006	.003	.002	-.004	-.004
Tenure	-.017	-.021	.019	.017	-.018	-.016
Job Demands		<b>1.330***</b>		<b>.778***</b>		-.213
Job Control		<b>-.363**</b>		<b>-.348**</b>		<b>-.303*</b>
F	2.386	17.306***	2.706**	7.648***	1.242	1.965
R <sup>2</sup>	.024	.209	.027	.105	.012	.029
$\Delta R^2$	.024	<b>.185***</b>	.027*	<b>.078***</b>	.012	<b>.017*</b>

\*p< .05 \*\*p< .01 \*\*\*p< .001

Table 4 summarizes the hypotheses 4 and 5 by using hierarchical multiple regression analyses to detect main effects of job demands, job control and the mediator of burnout on the mental health. We can conclude the hypothesis 4a and 4b: emotional exhaustion and cynicism mediate the relationships between job demand and mental health is supported. However, the result does not support the low professional efficacy mediates the negative relationship between job demand and mental health due to the job demand didn't relate to the low professional efficacy in table 2. As for the hypothesis 5a, 5b and 5c: emotional exhaustion, cynicism and low professional efficacy mediate the positive relationship between job control and mental health is supported.

**Table 3**

### Hierarchical Regression Analyses in Predicting Burnout to Mental Health

Source	Mental Health regression coefficient (b)	
	Model 1	Model 2
Constant	2.721***	3.891***
Gender	.156*	.092
Age	.008	.004
Annual Income	-.004	-.003
Tenure	.008	.005
Emotional exhaustion		<b>-1.31***</b>
Cynicism		<b>-.066**</b>
Low professional efficacy		<b>-.152***</b>
F	3.383*	27.013***
R <sup>2</sup>	.033	.326*
ΔR <sup>2</sup>	.033*	<b>.293***</b>

\*p<.05 \*\*p<.01 \*\*\*p<.001

**Table 4**  
**Hierarchical Regression Analyses in Predicting Mental Health through Burnout**

Source	Mental Health regression coefficient (b)		
	Model 1	Model 2	Model 3
	Constant	2.271***	2.730***
Gender	.156*	.110	.076
Age	.008	.006	.004
Annual Income	-.004	-.003	-.003
Tenure	.008	.008	.004
Job Demands		<b>-.180*</b>	<b>.004</b>
Job Control		<b>.206***</b>	<b>.094</b>
Emotional Exhaustion			<b>-.123***</b>
Cynicism			<b>-.065**</b>
Low Professional Efficacy			<b>-.148***</b>
F	3.383*	6.521***	21.504***
R <sup>2</sup>	.033	.091	.332
ΔR <sup>2</sup>	.033*	.058***	<b>.241***</b>

\*p<.05 \*\*p<.01 \*\*\*p<.001

### DISCUSSION AND CONCLUSION

In this study, we introduced and tested the relationship among job demand, job control, burnout and mental health. There are several conclusions which we generated from this study. Increasing job demand will increase the level of the two dimensions of burnout (e.g. emotional

exhaust and cynicism). Employee will decrease the degree of burnout when given higher job control. The higher the perception of burnout, the stronger harm to the employee's mental health. When employees have more job control, it will reduce their emotional exhaustion, cynicism, and low professional efficacy and further increase their mental health. What stands out most from our results is that job control has more clear relationship on burnout and mental health. We could identify burnout as a mediator between job demand and job control, and mental health. Specify, this article examined the three dimensions of burnout: emotional exhaustion, cynicism and lower professional efficacy to see the different effects between job demand and control and mental health.

In other word, job stressors further influences mental health through the mediator of burnout. Organization should lay emphasis on employee's health in order to well maintain better human resources. Managers also should have keen awareness to perceive the occurrence of burnout in the organizational atmosphere, rebuild the organizational culture, and help improve employee's health. Researches from scholars also support that when job demand increases but job control does not accordingly accompany, it will lead to the high risk of employee's health (Cahill, 1996; Schaufeli, Maslach, & Marek, 1993). In terms of employee, individuals should properly strive for the higher job control from the organization through the job redesign in the organization. As well, employees should have self-awareness of burnout and seek for positive improvement. Individual should learn the impact of burnout against the psychological health. And the emotional exhaustion, cynicism and low professional efficacy will harm one's health if he works under the stressful environment for long term. Therefore, one should seek for the positive way for active improvement.

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