

Lourel M., Abdellaoui S., Chevaleyre S., Paltrier M., & Gana K. (2008). Relationships between psychological job demands, job control and burnout among Firefighters, *North American Journal of Psychology*, 10(3), 489-496.

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Relationships Between Psychological Job Demands, Job Control and Burnout Among Firefighters

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The aim of the present study was to test Karasek's Demand-control Model and psychological impact (burnout) among firefighters. Data were obtained from 101 volunteer French Firefighters. The dependent variables were emotional exhaustion, depersonalization, and personal accomplishment, as measured by *Maslach's Burnout Inventory* (MBI). The predictor variables were job demands and job control as measured by an 18-item scale developed by Karasek. A path model showed that emotional exhaustion was predicted by job control. The paths from job demands to emotional exhaustion and to depersonalization were positive and significant. Respondent age was positively related to emotional exhaustion and negatively related to depersonalization. Job demands predicted depersonalization and emotional exhaustion. This research showed the importance of the mechanisms relevant to psychological burnout among firefighters. Particular attention must be paid to counseling and psychological support for individuals in this population.

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North American Journal of Psychology, 2008, Vol. 10, No. 3, 489-496.
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Of the theoretical models that have been developed for explaining job burnout and health the best known is the “Demand-control Model” (DC Model; Karasek, 1979; Karasek & Theorell, 1990). The DC Model shows how health impairment may be influenced by two dimensions at work: job demands and job control or resources. Job demands include the physical, social, and organizational elements of the work activity. Job control includes an employee's ability to control various aspects of his/her job. In short, the DC Model has two main dimensions: ~~psychological and physical~~ demands at work, and the worker's decision latitude or degree of control over those demands (Karasek, 1979; Karasek & Theorell, 1990).

This model has been very fruitful in predicting job stress and health impairment in occupational health psychology. For Pelfrene, Vlerick, Mak, De Smet, Kornitzer, and De Backer (2001), it is the best model for explaining the burnout process. A review by Van der Doef and Maes (1999) showed that high job demands and low control have negative effects on psychological and physiological health. Lourel, Gana, Prud'homme, and Cercle (2004) tested the DC Model among correctional officers in France and showed that a heavy workload predicted emotional exhaustion and depersonalization. However, a high degree of decision latitude predicted both emotional exhaustion and personal accomplishment. Llorens, Bakker, Schaufeli, and Salanova (2006) tested the robustness of the DC Model on different occupational samples. Structural equation modeling and multi-group analyses showed that the model did not vary across a number of occupational contexts and populations of different nationalities and countries.

The present study sought responses from a sample of firefighters about their workplace and its impact on mental health. Curiously, occupations such as fire fighting have rarely been examined in stress-related studies. We tested the relevance of Karasek's DC model on this population. Specifically we tested the model as a predictor of psychological burnout among firefighters. Consistent with the above-mentioned framework and empirical findings based on it, we set forth these hypotheses:

Hypothesis (1a) emotional exhaustion will be positively associated with job demands (e.g., psychological or emotional demands), and negatively associated with job control; and

Hypothesis (1b) Depersonalization will be positively associated with job demands and negatively associated with job control;

Hypothesis (2) Personal accomplishment will be positively associated with job control (e.g., decisional latitude).

METHOD

Participants

Data were obtained directly at the workplace of 101 male volunteer firefighters from all over France. All participants completed self-administered questionnaires. The age range was 20-50 years and the mean age was 32.76 years ($SD=9.34$).

Measures

The 18-item scale developed by Karasek (1985) was used to assess the DC Model. Psychological job demands were measured by responses to a 9-item subscale ranging from (1) "strongly disagree" to (4) "strongly agree." The items were derived from the well-validated French version (Hellemans & Karnas, 1999) of the *Job Content Questionnaire* (JCQ; Karasek, 1985). Higher scores indicated higher levels of psychological job demands. A sample item is "My work requires working very hard."

Job control (e.g., decision latitude) was measured by responses to a 9-item subscale ranging from (1) "strongly disagree" to (4) "strongly agree." Higher scores indicated higher levels of job control. A sample item is "My job allows me to make a lot of decisions on my own."

Burnout was assessed by the *Maslach Burnout Inventory* (MBI, Maslach & Jackson, 1981, 1986). The items were derived from the well-validated French version (Dion & Tessier, 1994) of the MBI. The scale consists of 22 items scored on a 7-point rating scale ranging from "never" (0) to "daily" (6). The MBI contains three subscales: (1) emotional exhaustion (i.e., the draining of emotional resources; e.g., "I feel used up at the end of the workday"); (2) depersonalization (i.e., cynical attitudes; e.g., "I have become less enthusiastic about my work"); and (3) reduced personal accomplishment (i.e., the tendency to evaluate oneself negatively, particularly with regard to job and job satisfaction). From these subscales, scores for emotional exhaustion (EE; 9 items), depersonalization (D; 5 items), and reduced personal accomplishment (P; 8 items) can be obtained. Higher scores on EE and D, and lower scores on P are indicative of job burnout. One demographic variable (age) was included as a control variable.

Procedure

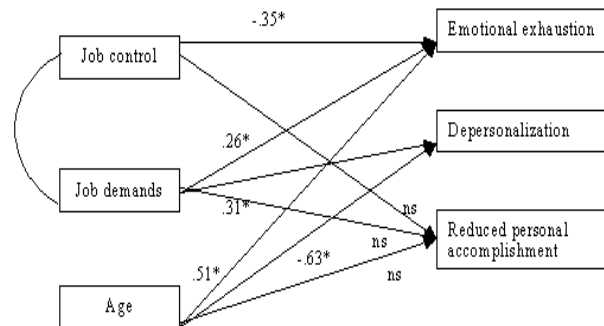
Participants (all males) were recruited from several fire stations throughout France. All participants completed self-administered questionnaires. Approximately 330 questionnaires were handed out. Although no one refused to participate, the return rate of completed questionnaires was 30 percent. After they completed the questionnaires

participants were given a brief description concerning the purpose of the study.

RESULTS

Table 1 provides the means, standard deviations, and correlation coefficients of all variables. Structural equation modeling (SEM) was used to verify our hypothesis that job demands and decisional latitude predict burnout with age controlled. The fit of model 2 (χ^2) was tested using maximum likelihood estimation and the root mean square error of approximation (RMSEA). The RMSEA value obtained (.001) was less than .08, so the fit was acceptable (Cudeck & Browne, 1993). As recommended by Marsh, Balla, and Hau (1996), the adjusted goodness-of-fit index (AGFI) and the goodness-of-fit index (GFI) were computed to assess the model's fit to the data. These values were above .90 (.96 and .99, respectively), indicating a good fit (see Figure 1).

The means, standard deviations, and zero-order Pearson correlations were computed (see Table 1). Emotional exhaustion was correlated with depersonalization ($r = .30, p < .001$), reduced personal accomplishment ($r = -.27, p < .001$), job control ($r = -.26, p < .001$), and age ($r = .21, p < .003$). Reduced personal accomplishment was correlated with job control ($r = .30, p < .001$), and also, surprisingly, job demand was positively related to job control ($r = .36, p < .001$). The small sample size ($n = 101$) authorized the use of structural equation modelling to examine the paths in the model (see Figure 1).



Note: * p significant, RMSEA: .001; GFI: .99; AGFI: .96; χ^2 values: ns.

FIGURE 1 Model of Relationships between Job Demands-Control and Job Burnout

The model showed that the coefficient of the path from job control to emotional exhaustion was negative and significant ($\beta = -.35$, $t = -3.32$, $p < .0001$). The paths from job demands to emotional exhaustion and to depersonalization were positive and significant ($\beta = .26$, $t = 2.18$, $p < .02$, and $\beta = .31$, $t = 2.39$, $p < .01$, respectively). The path from respondent age was positively related to emotional exhaustion ($\beta = .51$, $t = 2.28$, $p < .02$) and negatively related to depersonalization ($\beta = -.63$, $t = -2.34$, $p < .01$). Personal accomplishment was not significantly related to any of the other constructs measured.

TABLE 1 Means, SDs, and Correlation Coefficients Between Variables

		<i>M</i>	<i>SD</i>	1	2	3	4	5
1	Emotional exhaustion	9.33	7.94	—				
2	Depersonalisation	8.29	6.16	.30**	—			
3	Reduced personal accomplishment	36.53	7.31	-.27**	.03	—		
4	Job decision	14.89	3.96	-.26**	.00	.30**	—	
5	Job demands	13.75	3.19	.13	.18	.19	.36**	—
6	Age	32.77	9.35	.21*	-.15	.05	.10	.14

DISCUSSION

Results supported the hypotheses that emotional exhaustion will be positively associated with job demands and negatively associated with job control (1a) and that depersonalization will be positively associated with job demands and negatively associated with job control (1b). This study showed that job demands predicted depersonalization and emotional exhaustion. Personal accomplishment, on the other hand, was not related to job control. Thus hypothesis 2 was not supported. Certainly, the first data give meaning to what we already know about the job of firefighter. The work of firefighters appears to be a strong source of stress and mental strain. This occupation may create psychological trauma that could turn into post-traumatic stress disorder. For example, Chang, Lee, Connor, Davidson and Lai (2008) showed that older age and longer job experiences were associated with both psychiatric disorders and post-traumatic morbidities among rescue workers. On this point, it is important to note that the "John Wayne" syndrome (as defined by the fact that some workers hide their feelings and emotions to cope with the hard reality of some of their missions) is a good predictor of burn out

syndrome (Mitchell & Resnick, 1986). Indeed, it is a kind of syndrome that should be monitored by including regular debriefing sessions and a permanent system of social and psychological support, whatever the age, sex and level of experience of the person who has a highly stressful job.

In her study of 229 firefighters, Ponnelle (2003) noted three important stress-related phases relevant to this occupation. The *pre-operational (or anticipation) phase* begins when a call (alarm) is received, and ends when the firefighter arrives on site. During this phase, high levels of anxiety and concentration are found. The *operational phase* corresponds to the time during which the firefighter is taking action on the scene of the accident. Here, fear and aggressiveness, but also feelings of distress were reported. Afterwards, during the *post-operational phase*, tiredness, euphoria, and discouragement, as well the desire to express anger were found. It is during this phase that stress may appear (or re-appear).

Some limitations in the present research should be noted. First, a longitudinal approach might be better suited to explain the etiological burnout among firefighters. Another limitation was the use of self-reports. The last limitation is the absence of other constructs measured. For example, Effort-reward Imbalance (Siegrist, 1996) may better explain the model presented and tested. In the future the meaningful combination of the D-C and Effort-reward Imbalance models might lead to a clearer understanding of how burnout negatively impacts workers.

The present study pointed out the importance of some of the mechanisms of psychological distress among firefighters. Because of the intensity and high demands of this activity, measures should be taken upstream in view of preventing the psychological suffering of firefighters and promoting their health and well-being.

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