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# Adjusting to job demands: The role of work self-determination and job control in predicting burnout<sup>☆</sup>

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## Abstract

This study examined the dynamic interplay among job demands, job control, and work self-determination in order to predict burnout dimensions. A three-way interaction effect was found between job demands, job control and work self-determination in predicting each dimension of burnout (emotional exhaustion, depersonalization, and personal accomplishment). Overall, results showed that job control moderates the unhealthy effects of job demands in predicting emotional exhaustion and depersonalization only for employees with high levels of work self-determination. In addition, job control increases the relation between job demands and the sense of personal accomplishment only for employees with high levels of work self-determination. These results are discussed in light of the Job Demand–Control model.

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*Keywords:* Work self-determination; Job demands; Job control; Individual characteristics; Burnout; Occupational stress and strain

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## 1. Introduction

Using various theoretical models, many researchers have attempted to explain psychological well-being of workers in relation to the work environment (see Cooper, 1998; Parker & Wall, 1998). Among these theoretical models, the Job Demand–Control (JD–C) model (Karasek, 1979, 1998; Karasek & Theorell, 1990) has been widely studied. This model suggests that job control protects the individual from the unhealthy effects of the work environment. Although this model proves to be useful for understanding the link that exists between job demands and work adjustment, the latter does not take into account individual differences to explain such a link. However, numerous studies in organizational psychology have demonstrated that not all people react in the same way to stressful situations (Parkes, 1990, 1994).

This study investigated whether some individual characteristics (i.e., work self-determination) can explain the links that exist between job demands, job control, and burnout dimensions (i.e., emotional exhaustion, depersonalization, and personal accomplishment). This study is innovative because it assesses the role of a personal characteristic, (i.e., work self-determination) which has not yet been examined in order to understand the relations that exist between job demands, job control, and burnout. In the sections that follow, we will examine: (a) the multidimensional nature of burnout, (b) the JD–C model, (c) the role of individual characteristics, and (d) the specific goals and hypotheses of this study.

### 1.1. The multidimensional nature of burnout

Burnout is defined as a symptom of emotional exhaustion, depersonalization, and reduced personal accomplishment at work due to work activity (Maslach, 1982). *Emotional exhaustion* refers to the depletion of one's emotional resources. *Depersonalization* refers to a detached attitude that used employees toward others in order to protect themselves from the psychological stress coming from people with whom they interact. *Reduced personal accomplishment* refers to a decrease in the feeling of competence and productivity at work. Thus, in addition to being marked by a loss of emotional energy, burnout implies a negative assessment of the self (reduced personal accomplishment) and of others (depersonalization). Studies suggest that the three dimensions of burnout are associated with different aspects of work environment, in particular work overload, role ambiguity or role conflict (Janssen, Schaufeli, & Houkes, 1999). Moreover, some studies underline the role of individual characteristics in individuals' vulnerability to developing burnout (Semmer, 1996). However, most studies on burnout tend to consider individual and contextual factors separately rather than using a theoretical framework which incorporates them together (i.e., job-person fit). According to Maslach, Schaufeli, and Leiter (2001), the challenge is to extend the job-person paradigm to a broader and more complex conceptualization of the person situated in the job context. In this respect, the JD–C model could be quite useful (Karasek, 1979; Karasek & Theorell, 1990).

### 1.2. *Job Demand–Control model*

The JD–C model (Karasek, 1979; Karasek & Theorell, 1990) focuses on two dimensions found in work environment, namely, job demands and job control. *Job demands* refer to the volume of work to be accomplished as well as the requirements and time constraints related to the work. *Job control* refers to the control over work process, that is, the ability to make decisions and the opportunity to exercise a degree of control over the work to be accomplished. The model suggests that job demands can have two opposing consequences: job strain or learning-oriented outcomes at work. Thus, the combination of high job demands along with low job control precipitates psychological and physical strain (the so-called job stain), whereas jobs in which both demands and control are high lead to feelings of competence and productivity, and accomplishment (so-called active learning). Thus, the model is based on the premise that job control not only buffer the development of psychological and physical strain when job demands are high but also foster feelings of competence, productivity, and accomplishment. Interestingly, these two effects (job stain and active learning) could be conceptualized within the three burnout dimensions. Indeed, job strain could be assessed via emotional exhaustion and depersonalization whereas active learning could be assessed via the personal accomplishment dimension.

### 1.3. *Individual characteristics*

Karasek's model (1979) has been challenged for not taking individual differences into account. According to Parkes (1994), personal characteristics can moderate the relation between job demands and job strain in two ways: a good fit between personal characteristics and work-environment characteristics results in favorable psychological consequences while a lack of fit leads to negative consequences. The current state of knowledge suggests that certain individual characteristics (e.g., coping style, explanatory style, proactive personality, and self-efficacy) would influence the individual's psychological adjustment to the constraints of work environment (Salanova, Peiro, & Schaufeli, 2002; Schaubroeck, Jones, & Xie, 2001). Therefore, it can be assumed that some people would be more effective than others at managing job control. As regards burnout, two studies have examined the role of individual characteristics. First, de Rijk, LeBlanc, Schaufeli, and de Jonge (1998) reported that the active coping style (i.e., a concrete action undertaken to solve a problem) moderates the job demands–job control interaction in the prediction of emotional exhaustion. Specifically, facing job demands, employees with an active coping style experience less emotional exhaustion when they have a high level of job control. However, a high level of job control increases emotional exhaustion due to job demands in people with a passive coping style. Second, Salanova et al. (2002) demonstrated the moderating role of self-efficacy in the job demand–job control interaction in the prediction of two dimensions of burnout (i.e., emotional exhaustion and depersonalization) among technology workers. Results show that job control reduces the negative effect of job demands on emotional exhaustion and depersonalization among employees who have a high level of computer self-efficacy. In contrast, job

control does not reduce the effect of job demands on these two dimensions of burnout for workers who have a lower level of computer self-efficacy.

Thus, these studies have demonstrated the importance of the role of individual characteristics in understanding the interaction between job demands and job control when predicting emotional exhaustion and depersonalization. However, very few studies have assessed individual characteristics in the prediction of personal accomplishment. Beyond the role of individual characteristics, the links with job demands and job control in relation to learning-oriented outcomes have been under-examined (Karasek, 1998; Theorell & Karasek, 1996). In fact, researchers focusing on this issue have demonstrated, at most, the main effects of job demands and job control on learning-oriented outcomes. To the best of our knowledge, no study has demonstrated the role of personal characteristics as a moderator in the job demands–job control interaction in predicting learning-oriented outcomes.

All the studies reviewed bring out the importance of individual characteristics in explaining the relations that exist between job demands, job control, and burnout. However, the variables used in order to assess the individual characteristics have some limitations, which may explain why the job demands–job control interaction is nonsignificant when predicting personal accomplishments. Among other things, while proactive personality, explanatory style, and self-efficacy underline the intentionality of behaviors, they do not allow to differentiate between self-determined and non-self-determined behaviors, which, according to Deci and Ryan (1985), is a fundamental distinction. Self-determination refers to the experience of choice in the process of intentionality of behaviors, thus going beyond the perception of a contingency between an exhibited behavior and results of this behavior. According to Self-Determination Theory (Deci & Ryan, 1985, 1991, 2002), individuals who perform an activity by choice and pleasure demonstrate a self-determined behavior regulation. In this regard, O'Connor and Vallerand (1994) demonstrated that self-determined people adjust better psychologically to an environment that provides autonomy, while the adjustment of people with less self-determined motivation is fostered in a controlling environment that offers fewer opportunities for choice and autonomy. Moreover, they underline the need to understand the fit between personal needs and environmental characteristics. This understanding is very important while interpreting the JD–C model, suggesting that individuals would experience job strain or feel that they have attained learning-oriented outcomes, if and only if their individual characteristics (i.e., work self-determination) are compatible or incompatible with work environment (i.e., job demands and job control).

#### *1.4. Objectives and hypotheses of the present study*

In the present study, we evaluated the role of work self-determination as a variable that moderates the job demand–job control interaction in the prediction of emotional exhaustion and depersonalization. In addition, we assessed the role of work self-determination as a moderator of the job demand–job control interaction in the prediction of learning-oriented outcomes (i.e., personal accomplishment). Following research on burnout (see Maslach et al., 2001), and research in academic

setting (Byrne, 1999), we controlled for gender, age, rank, and years of experience. Three hypotheses stem from these two objectives:

The first hypothesis postulates a three-way interaction between job demands, job control, and work self-determination in predicting emotional exhaustion over and above gender, age, rank, and years of experience. More precisely, *Hypothesis 1a* suggests that for employees with high levels of work self-determination, job demands associate positively to emotional exhaustion when job control is low whereas when job control is high, the link between job demands and emotional exhaustion is non-significant. In contrast, *Hypothesis 1b* suggests that for employees with low levels of work self-determination, job demands associate positively to emotional exhaustion when job control is high. On the other hand, we hypothesize that when job control is low, the relation between job demands and emotional exhaustion is nonsignificant.

The second hypothesis postulates a three-way interaction between job demands, job control, and work self-determination in predicting depersonalization over and above gender, age, rank, and years of experience. More precisely, *Hypothesis 2a* suggests that for employees with high levels of work self-determination job demands positively associate to depersonalization when job control is low whereas; when job control is high, the link between job demands and depersonalization is nonsignificant. In contrast, *Hypothesis 2b* suggests that for employees with low levels of work self-determination, job demands associate positively to depersonalization when job control is high. However, when job control is low, we expect that the relation between job demands and depersonalization is nonsignificant.

The third hypothesis postulates a three-way interaction between job demands, job control, and work self-determination in order to predict personal accomplishment over and above gender, age, rank and years of experience. More specifically, *Hypothesis 3a* postulates that for employees with high levels of work self-determination, job demands associate positively to personal accomplishment when job control is high. However, when job control is low, job demands do not associate to personal accomplishment. In contrast, *Hypothesis 3b* suggests that for employees with low levels of work self-determined motivation, job demands associate positively to personal accomplishment when job control is low. However, when job control is high, job demands do not associate to personal accomplishment.

## 2. Method

### 2.1. Participants

Participants were 398 University professors (280 males and 116 females, 2 without gender identification) from a large French-Canadian University (i.e., 1313 professors). The response rate was 30.3%. Age ranged from 29 to 72 ( $M = 48.89$ ,  $SD = 8.37$ ) and years of experience as University professors ranged from 1 to 43 ( $M = 17.61$ ,  $SD = 9.55$ ). Among these participants, 211 held the rank of professor, 120 the rank of associate professor, and 35 the rank of assistant professor (32 held other ranks). The present sample represented adequately the distribution of gender

and professor's rank observed in the entire University population, which were 21% of females and 79% of males as well as 16% of assistants professor, 29% of associates professor, and 55% of professors.

## 2.2. Procedure

Data from this study came from a project on University professors' psychological well-being. A questionnaire was mailed to 1313 professors. Participants were asked to mail back the questionnaire. To increase the participation rate, an e-mail message was sent to the professors two weeks after the initial mailing and a telephone follow-up was conducted three weeks after the mailing.

## 2.3. Measures

### 2.3.1. Job demands

Job demands were assessed by a relatively broad range of potential work stressors, namely work overload, role ambiguity, role conflict, and stress related to research activities.

Work overload was assessed by ten-items adapted in French from the Occupational Stress Inventory-R (Osipow, 1998). The OSI has provided evidence of good internal consistency, factorial validity, and convergent validity (Osipow, 1998). Items focused on qualitative and quantitative demanding aspects of the job (e.g., "I work with time constraints"). Items were scored on a five-point scale ranging from 1 (rarely or never) to 5 (constantly or always). In the present study, the Cronbach's  $\alpha$  value for this measure was .82.

Role ambiguity and role conflict were assessed, respectively, by four-items and eight-items from the French version (Lachance, Tétreau, & Pépin, 1997) of the Role Ambiguity and Role Conflict Scales (Rizzo, House, & Lirtzman, 1970). The French version showed similar factorial validity as the original version, and also provided evidence of construct and discriminant validity (see Lachance et al., 1997). Role ambiguity concerns the lack of adequate information to do the job adequately (e.g., "I know exactly what is expected of me") (reverse scoring). Role conflict concerns the multiplicity of roles and occurred when conflicting demands at the job had to be met (e.g., "I have to do things that should be done differently"). Participants used a seven-point scale ranging from 1 (definitively false) to 7 (definitively true). Two original items from the role ambiguity subscale were, a priori, eliminated because they were not relevant to the academic setting. In the present study, Cronbach's  $\alpha$  values for role ambiguity and role conflict were .69 and .80, respectively.

Work-related research was assessed by six-items adapted in French from Singh, Mishra, and Kim (1998). In their study, the measure showed acceptable internal consistency ( $\alpha = .85$ ). Each item had a five-point scale ranging from 1 (rarely or never) to 5 (constantly or always). The items assessed the extent to which the participants perceived stress-related research (e.g., "I feel pressured to find funds to publish my studies and research"). In the present study, Cronbach's  $\alpha$  value for this measure was .77.

Mean scores on each of the four subscales were computed to form a global score of job demands. Confirmatory factor analyses (CFA) using EQS Version 5.1 (Bentler, 1993) were conducted to assess the unidimensionality of the construct. The fit of a second-order model was good ( $\chi^2(50) = 212.37$ ,  $N = 398$ ,  $p < .001$ ; CFI = .90; NNFI = .87; and RMSEA = .09). Correlations between latent constructs indicated that latent constructs were relatively dependant of each other (i.e., correlations ranged between .31 to .59). In the present study, the Cronbach's  $\alpha$  value for this global score was .88.

### 2.3.2. *Job control*

Many studies on the JD–C model have used measures of job control that are confounded with other concepts such as skill variety or job complexity (Ganster, 1989). In contrast to these studies, we used three items derived from the French version (Brisson et al., 1998) of the Job Content Questionnaire (JCQ; Karasek, 1985). These items concerned opportunities for control and decision and therefore assessed job control per se. This measure is composed of the three following items: “My job allows me to make a lot of decisions on my own,” “I have a lot to say about what happens on my job,” and “In my job, I have very little freedom to decide how I work” (reverse scored). Items are answered on a Likert-type scale ranging from 1 (strongly disagree) to 4 (strongly agree). A mean score was calculated from the three items. The French version of the JCQ has evidenced adequate internal consistency, factorial validity, and discriminant validity (see Brisson et al., 1998). In the present study, the Cronbach's  $\alpha$  value for this three items measure was .80.

### 2.3.3. *Work self-determination*

Work self-determination was assessed by the short version of the Blais Work Motivation Inventory (Blais, Lachance, Brière, Riddle, & Vallerand, 1993), which has been validated in French. This inventory has evidenced high levels of construct and concurrent validity as well as internal consistency (Blais et al., 1993). The short version consists of 18 items that assess six motivational dimensions with three items per dimension. Each item represents a possible reason for working. According to Senécal (1994), the short version showed similar internal consistencies values and showed similar factorial structure. Two subscales assessed intrinsic motivation: toward accomplishment (e.g., “Because I experience satisfaction when my job provides me with interesting challenges”;  $\alpha = .76$ ), and towards knowledge (e.g., “Because I experience pleasure when learning new things”;  $\alpha = .86$ ). Three subscales assessed types of extrinsic motivation: identified regulation (e.g., “Because this is the type of work that I prefer regarding my career aspirations”;  $\alpha = .57$ ), introjected regulation (e.g., “Because I absolutely want to be good and if I'm not, I'll be disappointed”;  $\alpha = .83$ ), and external regulation (e.g., “For the salary”;  $\alpha = .77$ ). One subscale assessed amotivation (e.g., “I don't know, I don't think that I have what it takes to do this job successfully”;  $\alpha = .77$ ). Items were scored on a seven-point scale ranging from 1 (do not agree at all) to 7 (agree completely).

To test our hypotheses, we computed an index of self-determined work motivation. This index integrates scores on each motivation subscale into a single score,

thus reducing the number of variables used in analyses. Following the procedure commonly used in the self-determination theory literature (e.g., Fortier, Vallerand, & Guay, 1995; Grolnick & Ryan, 1987; Vallerand, Fortier, & Guay, 1997), subscales items were used to compute the self-determination indices by subtracting non-self-determined motivations from self-determined motivations. These motivational indices thus represent people's relative levels of self-determination with higher scores indicating higher levels of intrinsic and identified regulation relative to external regulation, introjected regulation, and amotivation. In the present study, we used the following formula:  $[(2 * (\text{IM knowledge} + \text{IM accomplishment})/2 + 1 * \text{identified regulation}) - (1 * \text{introjected regulation} + 1 * \text{external regulation})/2 + 2 * \text{amotivation}]$ . This weighting procedure forms a continuous variable from less (below zero) to more (higher than zero) self-determination in the work context. Thus, scores could vary from -18 to 18.

#### 2.3.4. *Burnout*

The French version (Dion & Tessier, 1994) of the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1986) was used to measure emotional exhaustion, depersonalization, and personal accomplishment. The psychometric properties of the French version of the MBI are similar to those of the original version (Maslach et al., 2001).

Emotional exhaustion was measured via seven of the nine items of the original version. Two of the original items that focused on working with people were eliminated in final analyses (i.e., "Working with people directly puts too much stress on me" and "working with people all day is really a strain for me"). In the present study, means on these two items were very low ( $M = 1.24$ ,  $SD = 1.47$ , and  $M = 1.10$ ,  $SD = 1.38$ ) thereby indicating that very few professors found them relevant. Responses to all items were scored on a seven-point scale ranging from 0 (never) to 6 (every day) (e.g., "I feel emotionally drained from my work"). In the present study, the Cronbach's  $\alpha$  value for this measure was .88. Five items were used to assess depersonalization. Responses to all items were scored on a seven-point scale ranging from 0 (never) to 6 (every day) (e.g., "I've become more callous toward people since I took this job"). In the present study, the Cronbach's  $\alpha$  value for this measure was .78. Personal accomplishment was measured by 8 items. Responses to all items were scored on a seven-point scale ranging from 0 (never) to 6 (every day) (e.g., "I have accomplished many worthwhile things in this job"). In the present study, the Cronbach's  $\alpha$  value for this measure was .75.

### 3. Results

#### 3.1. *Preliminary analyses*

Correlations between all variables appear in Table 1. All predictors (job demands, job control, and self-determined work motivation) correlated significantly to emotional exhaustion, depersonalization, and personal accomplishment. As expected,

Table 1  
Correlations among all variables and descriptive statistics

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10
1. Gender <sup>a</sup>	1.71	0.46	—									
2. Age	48.90	8.37	.21***	—								
3. Professor's rank <sup>b</sup>	2.50	0.66	.59***	.25***	—							
4. Years of Experience	16.66	9.48	.84***	.27***	.61***	—						
5. Job demands	3.20	0.60	-.14**	-.22***	-.06	-.20***	—					
6. Job control	3.35	0.60	.13**	.14**	.07	.15**	-.36***	—				
7. Self-determination	10.09	3.70	.07	.16**	.16**	.06	-.38***	.33***	—			
8. Emotional exhaustion	3.27	1.26	-.21***	-.23***	-.11*	-.23***	.62***	-.41***	-.48***	—		
9. Depersonalization	2.30	0.98	-.08	.02	-.04	-.07	.38***	-.26***	-.35***	.48***	—	
10. Personal accomplishment	5.24	0.81	.05	.11*	.07	.05	-.14**	.23***	.35***	-.20***	-.33**	—

<sup>a</sup> Gender (female = 1; male = 2).

<sup>b</sup> Professor's rank (assistant = 1; associate = 2; and professor = 3).

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

job demands related positively to emotional exhaustion ( $r = .62, p < .001$ ), and to depersonalization ( $r = .38, p < .001$ ) and negatively to personal accomplishment ( $r = -.14, p < .01$ ). Both job control and work self-determination related positively to personal accomplishment ( $r = .23, p < .001$ ;  $r = .35, p < .001$ , respectively) and negatively to emotional exhaustion ( $r = -.41, p < .001$ ;  $r = -.48, p < .001$ , respectively), and depersonalization ( $r = -.26, p < .001$ ;  $r = -.35, p < .001$ , respectively).

### 3.2. Regression analyses

Three sets of hierarchical moderated multiple regression analyses (Cohen & Cohen, 1983) were performed to test our three hypotheses based on emotional exhaustion, depersonalization, and personal accomplishment. For each analysis, the predictor variables were entered within four successive steps. In the first step, gender, age, rank, and experience were introduced as control variables. In the second step, main effects (job demands, job control, and work self-determination) were entered. In the third step, three two-way interaction terms (i.e., job demands\*job control, job demands\*work self-determination, job control\*work self-determination) were entered. Finally, in the fourth step, the three-way interaction term (i.e., job demands\*job control\*work self-determination) was entered. To avoid multicollinearity between the predictors and the interaction terms, interactions terms were computed using variables centered scores (Aitken & West, 1991; Kline, 1998). With this approach, the incremental variance ( $\Delta R^2$ ) accounted for by the interaction term reflects the effect size of the interaction.

#### 3.2.1. Regression analysis testing Hypotheses 1a and 1b

Results of this analysis appear in Table 2. Results from the first step indicated that three of the four control variables were significant and accounted for 12 % of variance in emotional exhaustion. Results of the second step indicated that job demands, job control, and self-determined work motivation were all significantly related to emotional exhaustion ( $\Delta R^2 = .37$ ). Results of the third step indicated that only job demands–job control interaction was significant, but did not account for a significant percentage of incremental variance. Results of the fourth step indicated that the three-way interaction terms explained 1% of additional variance in emotional exhaustion ( $p < .05$ ).

To interpret this interaction effect, which involved continuous variables, simple slopes were derived for high (+1SD), and low levels (–1SD) of the moderator, self-determined work motivation (Aitken & West, 1991). The results indicate that job demands associated positively to emotional exhaustion for high self-determined employees with low job control ( $\beta = .66, p < .001$ ), but there was an attenuated association between job demands and emotional exhaustion for high self-determined individuals with high job control ( $\beta = .32, p < .001$ ). Job demands also related positively to emotional exhaustion for low self-determined employees with both high ( $\beta = .36, p < .001$ ) and low job control ( $\beta = .46, p < .001$ ). The results, which are shown in Fig. 1, provided partial support to Hypothesis 1a, by indicating that job control buffers the negative effects of job demands on emotional exhaustion for high

Table 2  
Hierarchical multiple regression analyses for emotional exhaustion

Variables entered	Steps			
	1	2	3	4
1. Gender	-.13*	-.00	-.01	-.01
Age	-.23**	-.09	-.09	-.09
Professor's rank	.13*	.07	.08	.08
Experience	-.13	-.10	-.12	-.11
2. Job demands		.43***	.44***	.45***
Job control		-.16**	-.14**	-.16***
Self-determination		-.24***	-.25***	-.27***
3. Job demands * job control			-.10*	-.12*
Job demands * self-determination			.05	.05
Job control * self-determination			-.04	.02
4. Job demands * job control * self-determination				-.12*
R <sup>2</sup>	.12***	.49***	.50	.50*
$\Delta R^2$	.12***	.37***	.01	.01*

Note. The displayed coefficients in the four columns are centered beta weights at each step.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

self-determined employees. It is important to keep in mind that we expected in Hypothesis 1a a nonsignificant relation between job demands and emotional exhaustion for high self-determined individuals with high job control but results indicated that this relation was significant. However, results did not supported Hypotheses 1b.

### 3.2.2. Regression analysis testing Hypotheses 2a and 2b

Results for the depersonalization variable appear in Table 3. Results from the first step indicated that none of the four control variables was significant. Results of the second step indicated that job demands, job control, and work self-determination were all significant and accounted for 22% of variance in depersonalization. Results of the third step indicated that job demands–job control interaction and job demands–self-determination interaction were significant, and accounted for a significant 3% of incremental variance. Results of the fourth step indicated that the three-way interaction term explained a significant portion of the variance (i.e., 1%) in depersonalization ( $p < .05$ ).

Results show that job demands was associated positively to depersonalization for high self-determined employees with low job control ( $\beta = .56, p < .001$ ). Interestingly, job demands was not significantly related to depersonalization ( $\beta = .06, ns.$ ), for high self-determined individuals with high job control. In addition, job demands was positively related to depersonalization for low self-determined employees with low job control ( $\beta = .46, p < .001$ ), and for low self-determined employees with high job control ( $\beta = .29, p < .01$ ). The results, which are shown in Fig. 2 supported

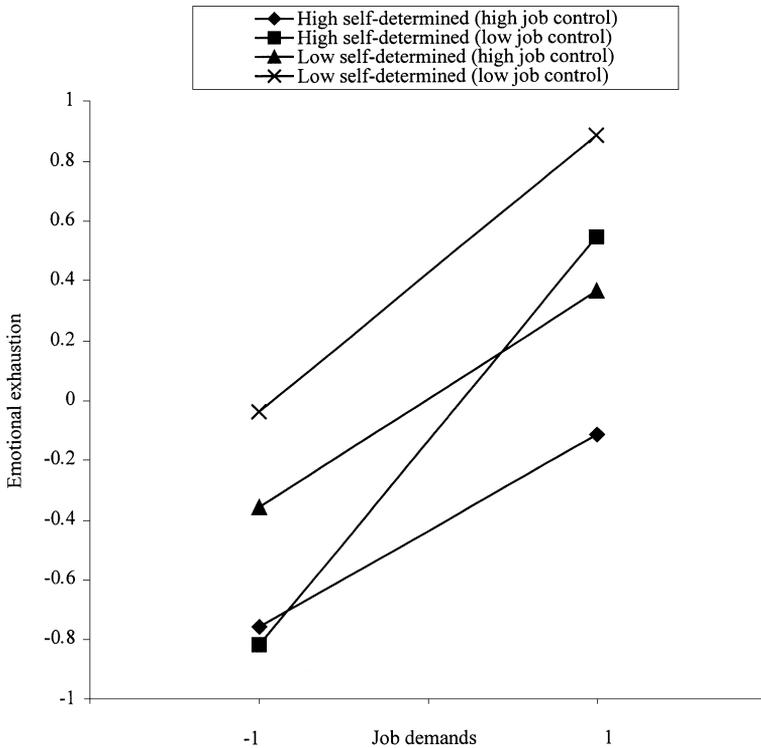


Fig. 1. Three-way interaction between job demands, job control, and work self-determination when predicting emotional exhaustion: Fitted regression equation  $\pm$  SD from the mean.

Hypothesis 2a, by revealing that job control buffers the negative effects of job demands on depersonalization for high self-determined employees. Nevertheless, the results did not support *Hypothesis 2b*.

3.2.3. Regression analysis testing *Hypotheses 3a and 3b*

Results for personal accomplishment appear in Table 4. The first step indicated that none of the four control variables were significant. Results of the second step indicated that job demand was nonsignificant, but that job control and work self-determination were significant and accounted for 12% of variance in personal accomplishment. Results of the third step indicated that none of two-way interaction terms was significant. Results of the fourth step indicated that the three-way interaction term explained a significant portion of the variance (i.e., 1%) in personal accomplishment ( $p < .05$ ).

Job demands associated positively with the level of personal accomplishment for high self-determined employees with high job control ( $\beta = .20, p < .05$ ). Job demands was not related to personal accomplishment for high self-determined employees with low job control ( $\beta = .02, ns$ ). In addition, job demands was associated, but

Table 3  
Hierarchical multiple regression analyses for depersonalization

Variables entered	Steps			
	1	2	3	4
1. Gender	.04	.14**	.15**	.14**
Age	-.13	-.02	-.03	-.04
Professor's rank	.04	.00	.02	.02
Experience	-.05	-.04	-.04	.03
2. Job demands		.29***	.32***	.34***
Job control		-.13*	-.10	-.13*
Self-determination		-.22***	-.23***	-.26***
3. Job demands * job control			-.16**	-.19**
Job demands * self-determination			-.03	-.04
Job control * self-determination			-.19**	-.11
4. Job demands * job control * self-determination				-.18*
R <sup>2</sup>	.02	.24***	.27***	.28*
$\Delta R^2$	.02	.22***	.03***	.01*

Note. The displayed coefficients in the four columns are centered beta weights at each step.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

not significantly, with personal accomplishment for low self-determined employees with low ( $\beta = .09$ , *ns*) or high job control ( $\beta = -.06$ , *ns*). These results supported Hypothesis 3a, by indicating that job control buffers the negative effects of job demands on personal accomplishment for high self-determined individuals. However, results did not support Hypothesis 3b.

#### 4. Discussion

This study examined the interactive effect of job demands, job control, and work self-determination in order to predict each dimension of burnout (i.e., emotional exhaustion, depersonalization, and personal accomplishment).

The first hypothesis postulated a three-way interaction between job demands, job control, and work self-determination in predicting emotional exhaustion. Results provide some support for Hypothesis 1a by indicating that for high self-determined individuals, job control reduces the unhealthy effects of job demands. It is important to keep in mind that we expected in Hypothesis 1a a nonsignificant relation between job demands and emotional exhaustion for high self-determined individuals with high job control but results indicated that this relation was significant. Nevertheless, results do not support Hypothesis 1b because job demands associated positively to emotional exhaustion, independently of the level of job control enjoyed by low self-determined employees.

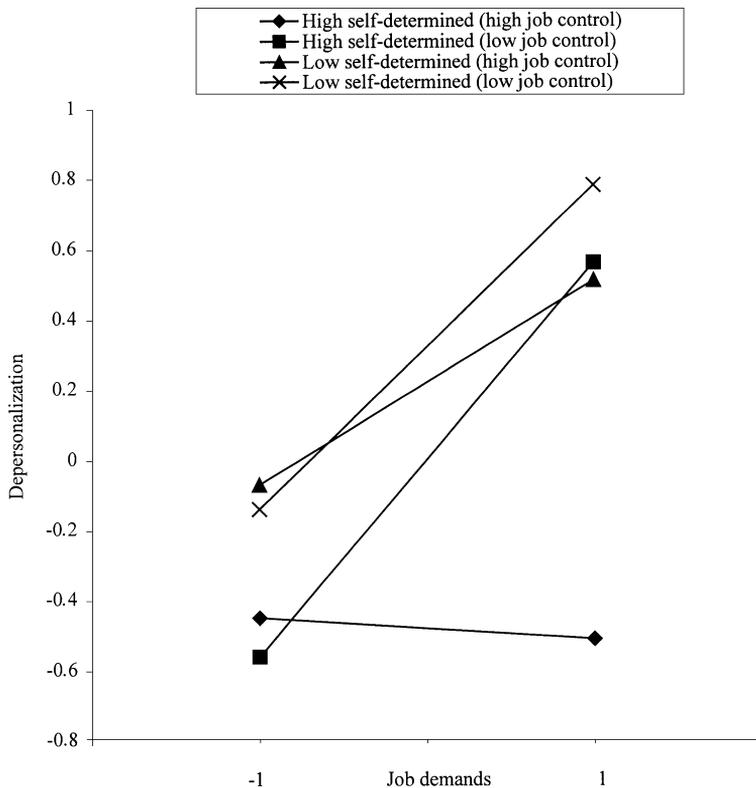


Fig. 2. Three-way interaction between job demands, job control, and work self-determination when predicting depersonalization: Fitted regression equation  $\pm$  SD from the mean.

The second hypothesis postulated a three-way interaction between job demands, job control, and work self-determination in predicting depersonalization. Results support *Hypothesis 2a*, by indicating that job control moderates the unhealthy effects of job demands in predicting depersonalization for high self-determined employees. Nevertheless, results do not support *Hypothesis 2b* since for low self-determined individuals, results show a direct effect of job demands on depersonalization. Job demands associated positively to depersonalization, independently of the level of job control enjoyed by low self-determined employees.

The third hypothesis postulated that work self-determination moderates the relation between job demands and job control. Results support *Hypothesis 3a*, by indicating that for high self-determined individuals, job demands associated positively to personal accomplishment at work when they have a high level of job control, but this is not the case when their job control is low. However, the results do not support *Hypothesis 3b*. For low self-determined individuals, job demands is not related to personal accomplishment even when employees enjoy a high or low level of job control. Consequently, for high self-determined individ-

Table 4  
Hierarchical multiple regression analyses for personal accomplishment

Variables entered	Steps			
	1	2	3	4
1. Gender	.06	.01	.01	.02
Age	.13	.08	.09	.10
Professor's rank	.02	-.01	-.01	-.01
Experience	-.10	-.06	-.07	-.08
2. Job demands		.09	-.08	-.06
Job control		.15**	.15**	-.18**
Self-determination		.32***	.32***	.34***
3. Job demands * job control			.01	.01
Job demands * self-determination			.05	.05
Job control * self-determination			.07	-.01
4. Job demands * job control * self-determination				.17*
R <sup>2</sup>	.01	.14***	.14	.15*
$\Delta R^2$	.01	.12***	.00	.01*

Note. The displayed coefficients in the four columns are centered beta weights at each step.

\*  $p < .05$ .

\*\*  $p < .01$ .

\*\*\*  $p < .001$ .

uals, our results support the active component hypothesis of the JD–C model (Karasek & Theorell, 1990). To the best of our knowledge, this study is the first to have demonstrated a three-way interactive effect between job demands, job control, and individual characteristics in the prediction of a learning-oriented outcome.

Although our results indicate the importance of job control, they also suggest that individual differences are inherent to the use of job control, an aspect that is neglected in the JD–C model (Karasek, 1979; Karasek & Theorell, 1990). More precisely, not all people react in the same way to job control offered by work environment. These differences are expressed through individual psychological adjustment to job demands. In fact, job control appears to be important, especially for high self-determined employees. Under the pressure of a demanding work, the job control of the latter tends to reduce emotional exhaustion and depersonalization, in addition to fostering their feeling of personal accomplishment at work. Conversely, when facing demands in which they do not have a level of job control that meets their needs, they become more vulnerable to emotional exhaustion and depersonalization without the opportunity to develop their feelings of personal accomplishment. In regards to low self-determined employees, who are less inclined toward autonomous actions, job control appears to have little value as a stress-reducing or as an active learning orientation when they are facing job demands. It would seem that the presence of job control may not be sufficient to cope effectively with demands.

The role of individual differences offers a more nuanced view of the theoretical foundations of the dynamic version of the JD–C model (Karasek & Theorell, 1990). Karasek and Theorell propose two mechanisms through which active learning and psychological tension are related. First, based on the concept of learned helplessness (Seligman, 1975), they stipulate that the accumulation of strain at work inhibits individuals' capacity to learn, to actively develop their skills and to feel effective at work. Second, they suggest that the cumulative effect of a high level of job demands and job control increases individual skills and a sense of control which, in turn, reduces the perception of stress. Our results take these hypotheses a step further. That is, the consideration of individual differences suggests that this dynamic would be plausible only among high self-determined individuals who have a level of job control that meets their needs.

Although the results of the present study should be interpreted keeping in mind certain limitations. A self-administered questionnaire was used to measure job demands and job control, which could give rise to the common problem of shared method variance. Because of the cross-sectional nature of the study, we were unable to observe any causal relationships. Longitudinal studies where all variables are measure over time are thus needed. Finally, results cannot be generalized to all employees in the labor market because the participants consisted only of University professors. Nevertheless, the results of this study indicate that motivation plays a role in an employee's adjustment to job demands. It can foster or delay the appearance of burnout. The findings of the present study are consistent with the premise that job demands will affect burnout unless employees have both the opportunity (environment resources) and the propensity (self-determination) to act on them.

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