

The moderating role of autonomous motivation in the job demands-strain relation: A two sample study

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Published online: 6 April 2012
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Abstract Although job demands are known to be detrimental to employees' psychological health, research suggests that certain individual characteristics moderate this relationship to some extent. This two-sample study investigated whether autonomous motivation moderates the relationship between specific job demands (role overload, role ambiguity, and role conflict) and psychological distress. Hierarchical multiple regression analyses showed clear moderating effects, indicating that highly autonomously motivated employees experience less psychological distress in the presence of job demands than their less autonomously motivated counterparts. Theoretical and practical implications are discussed in light of the job demands-strain perspective and self-determination theory.

Keywords Autonomous motivation · Job demands · Psychological distress · Self-determination theory

Introduction

Job demands are known to be detrimental to employees' psychological health (see Kahn and Byosiére 1992; Sauter and Murphy 1995). When coping with job demands such as role overload, role ambiguity, and role conflict, employees

are more likely to present various stress symptoms (also called strain), including burnout, health problems, job dissatisfaction, and psychological distress (Demerouti et al. 2001; Fox et al. 1993; Rau et al. 2010; Van der Doef and Maes 1999). Of these strains, psychological distress has received considerable attention for its association with salient work-related outcomes such as organizational disengagement, job dissatisfaction, absenteeism, and turnover intention (Haar and Bardeel 2008; Hilton et al. 2009; Rodwell et al. 2009). Psychological distress is commonly characterized by four dimensions: irritability, depressive symptoms, anxiety symptoms, and cognitive problems (Ilfeld 1976).

However, it is well recognized that not all employees are equally affected by demanding aspects of their job (Cox 1978; De Jonge and Kompier 1997; Ganster and Fusilier 1989; Seemer 2003). Therefore, much research has been conducted on individual differences in the job demands-strain process. Self-efficacy in particular has been extensively investigated in the relationship between job demands and psychological strain (e.g., Jex et al. 2001; Siu et al. 2007; Williams et al. 2010). According to the latter studies, it is not necessarily the job demands themselves that generate psychological strain, but rather how they are appraised; this appraisal being influenced by individual characteristics such as self-efficacy. For example, Siu et al. (2007) found that self-efficacy moderates the relationship between job demands (e.g., role conflict, lack of social support, home-work interference) and employees' psychological health. The authors argue that job demands are less overwhelming for individuals with high self-efficacy considering that they strongly believe in their ability to cope with stressful events and therefore are more likely to perceive their work environment as unthreatening and easier to deal with. Although, self-efficacy has been shown

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to alleviate stress in some cases, it may not always be sufficient (Janssen et al. 1999; Rosse et al. 1991; Xanthopoulou et al. 2007). Therefore, the moderating role of other individual characteristics merits examination.

Another important individual characteristic that has been linked to many indicators of employees' psychological health is autonomous motivation. Autonomous motivation refers to acting volitionally and in coherence with oneself (Gagné and Deci 2005). Whereas self-efficacy refers primarily to the perceived contingency between a behavior and its outcome (I *can* do it), autonomous motivation refers to the experience of choice in initiating such behavior (I *want* to do it). Thus, although employees may perceive that they can handle demanding aspects of their jobs, they may not necessarily be willing to do so or view this as worthwhile if they are not autonomously motivated in their work.

Unfortunately, with the exception of a few studies (e.g., Fernet et al. 2004; Parker et al. 2010), the moderating role of autonomous motivation in the link between job demands and psychological health has been little addressed. Although the two latter studies found promising results, revealing that motivation moderates the relationship between job characteristics (high job demands combined with low job control) and psychological health (burnout and engagement), they present some limitations regarding the assessment of job demands, and further investigation is needed. More precisely, Parker et al.'s (2010) study assessed job demands solely through overload and Fernet et al. (2004) regrouped multiple job demands (role overload, role ambiguity, role conflict, and job-related stress) into a single variable. Considering that job demands may have differential impacts on psychological health (Lepine et al. 2005; Orqvist and Wincent 2006), it appears worthwhile to examine the relative importance of specific job demands on work-related outcomes.

The aim of the present study was to investigate whether employee motivation (high vs. low autonomous motivation) attenuates the harmful impact of job demands on psychological health. More specifically, we propose that autonomous motivation moderates the relationship between three specific job demands (role overload, ambiguity, and conflict) and psychological distress.

In the next sections, we briefly discuss the basic theories underlying the job demands–strain perspective and address the concept of autonomous motivation and its potential buffering role in the job demands–strain relation. We then present the findings of a two-sample study examining the relationship between job demands and psychological distress, with autonomous motivation as a moderator. We conclude by discussing the implications from a theoretical and organizational standpoint, and we provide some avenues for future research.

The job demands–strain relation

Occupational stress researchers have focused on job demands that trigger symptoms of psychological strain. These job demands regroup all aspects of the job that require considerable effort, and are therefore associated with physiological and/or psychological costs (Demerouti et al. 2001). These job demands include *role ambiguity* (uncertainties about what actions to take to fulfil the expectations of a role; e.g., an employee receiving vague instructions and not knowing what must be done to adequately accomplish his/her mandate), *role conflict* (incompatibilities between expectations of a single role; e.g., being asked to increase productivity while simultaneity being asked to improve quality of the service provided), and *role overload* (when time and resources prove inadequate to meet expectations of a role; e.g., having too much to do, in too little time, with too few resources). These three job demands have been directly associated with psychological distress in workers (e.g., Choi et al. 2011; Opie et al. 2010; Shimazu et al. 2010; Verhaeghe et al. 2008). For example, Shimazu et al. (2010) found that in the presence of high job demands (role overload and emotional demands), employees showed greater psychological distress. In their meta-analysis, Lee and Ashforth (1996) observed that role ambiguity, role conflict, and role overload were positively associated with the core burnout dimensions: depersonalization (disengagement from others and one's work) and emotional exhaustion (a sense of being overextended). More recently, Hakanen et al. (2006) found that teachers who perceived high job demands (e.g., overload) showed greater burnout, which in turn predicted health problems. Furthermore, whereas role conflict and ambiguity have been negatively associated with anxiety and turnover intentions (Rizzo et al. 1970), role overload and time pressure were negatively correlated with job satisfaction (Gelsema et al. 2006).

In line with these findings, we hypothesized the following:

Hypothesis 1 Job demands are positively related to psychological distress:

Hypothesis 1a Role overload is positively related to psychological distress

Hypothesis 1b Role ambiguity is positively related to psychological distress

Hypothesis 1c Role conflict is positively related to psychological distress

Autonomous motivation

According to self-determination theory (SDT; Deci and Ryan 1985, 2008), individuals act based on different types

of motivation: intrinsic motivation, identified, introjected, and external regulations. These types of motivation differ with respect to the degree to which they are autonomous (self-determined), meaning the extent to which the value of the action has been internalized and integrated within the self. SDT situates these types of motivation along a continuum of autonomy. Actions carried out for the inherent satisfaction (intrinsic motivation) or because they are viewed as important and valuable (identified regulation) are considered highly autonomous. For instance, employees who engage in their work because they truly enjoy what they do and/or because they believe that their job is personally meaningful are considered autonomously motivated. As for actions undertaken out of a sense of pressure and obligation, they are considered as the least autonomously motivated types of regulations (controlled motivation). An example is when employees engage in their work to satisfy external demands (external regulation) or to avoid internal pressures such as feelings of guilt and shame (introjected regulation).

Past research has demonstrated that highly autonomously motivated individuals show greater well-being and more positive experiences in a wide range of life domains than individuals with low autonomous motivation (see Deci and Ryan 2008 for a review). In the workplace, autonomous motivation has been positively associated with positive outcomes such as work performance (Kuvaas 2009), job satisfaction, and organizational commitment (Gagné et al. 2008; Lam and Gurland 2008), and has been negatively linked to turnover intention (Richer et al. 2002), burnout (Fernet et al. 2010) and psychological distress (Blais et al. 1993).

In view of these findings, we proposed the following hypothesis:

Hypothesis 2 Autonomous motivation is negatively related to psychological distress.

Autonomous motivation as a moderator in the job demands–strain relation

According to SDT, autonomously motivated employees are equipped to deal with job demands because they consider their work as interesting and spontaneously satisfying. Accordingly, they are likely to appraise job demands as challenging rather than threatening (Skinner and Edge 2002). Such appraisal may result in active and adaptive strategies to cope with job demands, thus alleviating the negative effects of job demands on psychological health. In other words, autonomously motivated employees are disposed to put in the necessary effort to deal with challenging demands because they view job demands as an opportunity for personal growth and accomplishment. Instead,

employees with low autonomous motivation are likely to view job demands as taxing and threatening. Such perception of threat may result in the use of passive and inefficient coping strategies (Skinner and Edge 2002). Indeed, when people engage in their work primarily for external or internal rewards (e.g., salary, prestige, feelings of self-worth), research shows that they have a tendency to feel overwhelmed by job demands and consequently use passive coping strategies such as withdrawal and rationalization (Crawford et al. 2010). The use of passive strategies leads to job stress because they prevent employees from efficiently overcoming job demands. Some support for this assertion was found by Parker et al. (2010) who showed that job overload was more detrimental for employees with high controlled motivation than for low controlled motivated employees. Indeed, although highly controlled motivated employees reported a number of health complaints in the presence of job overload, their less controlled motivated counterparts did not.

Based on these findings, we argue that autonomous motivation moderates the negative effect of job demands on employees' psychological health. Accordingly, we proposed the following hypothesis:

Hypothesis 3 Autonomous motivation moderates the relationship between job demands and psychological distress.

Hypothesis 3a Autonomous motivation moderates the relationship between role overload and psychological distress. Specifically, highly autonomously motivated employees experience less psychological distress in the presence of role overload than low autonomously motivated employees

Hypothesis 3b Autonomous motivation moderates the relationship between role ambiguity and psychological distress. Specifically, highly autonomously motivated employees experience less psychological distress in the presence of role ambiguity than low autonomously motivated employees

Hypothesis 3c Autonomous motivation moderates the relationship between role conflict and psychological distress. Specifically, highly autonomously motivated employees experience less psychological distress in the presence of role conflict than low autonomously motivated employees

In order to test the proposed hypotheses, two independent studies were conducted in school board and college staff.

Study 1: Method

Sample

This study was carried out among employees of a school board in the province of Quebec, Canada. After obtaining the approbation of the head of the school board, each employee was contacted at work by mail, receiving a questionnaire, a postage-paid envelope, as well as an informative letter explaining the study. The confidentiality and anonymity of the responses were emphasized in the informative letter. No incentive was given in exchange for participation. All employees received a reminder 2 weeks after the questionnaires were initially distributed. A total of 356 questionnaires were returned, representing a 46 % response rate. The majority of the participants were women (74.9 %) and the mean age was 41.8 (SD = 10.4). Out of the participants, 55.1 % were teachers (primary school, high school, or vocational education) and 44.6 % held a non-teaching position (administrative staff, educational professionals, or support service staff).

Measures

All measures were administered in French. Properties (means, standard deviations, scales, and correlations) of the measures are presented in Table 1.

Control variables

In the analyses, we controlled for gender and job position, given that past research indicates that men and women are not equally affected by psychological distress (World Health Organization [WHO] 2011) and that psychological distress tends to vary between job positions (e.g., Iwata et al. 1992). Gender was dummy coded with 0 = women and 1 = men. Job position was regrouped into two categories, namely teaching position (primary school, high school, and vocational education) and non-teaching position (administration, support service staff, and educational

professionals). Job position was dummy coded with 0 = teaching position and 1 = non-teaching position.

Job demands

Three specific job demands were assessed. Role overload was assessed with the Occupational Stress Inventory-R (Osipow 1998). A sample item of this 10-item scale is “*I work with time constraints*” ($\alpha = .84$). Items were scored on a five-point scale ranging from 1 (*rarely or never*) to 5 (*constantly or always*). Role ambiguity and role conflict were measured with the French-Canadian version (Lachance et al. 1997) of Rizzo et al.’s (1970) scales. Six items assessed role ambiguity (e.g., “*I know exactly what is expected of me*”; reverse scoring). Cronbach’s alpha was .87. Eight items assessed role conflict (e.g., “*I receive contradicting demands from other people*”; $\alpha = .81$). Items reflecting role ambiguity and role conflict were scored on a seven-point scale ranging from 1 (*definitively false*) to 7 (*definitively true*).

Autonomous motivation

Autonomous motivation was assessed by a short version of the Blais Work Motivation Inventory (BWMI; Blais et al. 1993), which was developed in French. Participants were presented with different reasons for working and were asked to indicate on a 1 (*do not agree at all*) to 7 (*agree completely*) scale the extent to which each reason presently corresponded to why they accomplish their job. Three subscales were used in the present study to assess intrinsic motivation (e.g., “*Because I experience satisfaction when my job provides me with interesting challenges*”; 3 items; $\alpha = .74$), identified regulation (e.g., “*Because this is the type of work that I prefer in order to further my career aspirations*”; 3 items; $\alpha = .82$), and introjected regulation (e.g., “*Because I absolutely want to be good, and if I’m not, I’ll be disappointed*”; 3 items; $\alpha = .81$). Although the original scale comprised items assessing external regulation (e.g., “*For the paycheck*”), this subscale was not used

Table 1 Study 1: Summary of correlations, means and standard deviations for all variables

Measures	1	2	3	4	5	Scale	<i>M</i>	SD
1. Role ambiguity	–					1–7	1.79	0.83
2. Role conflict	.43**	–				1–7	3.15	1.23
3. Role overload	.28**	.52**	–			1–5	2.79	0.66
4. Autonomous motivation	–.21**	–.13*	–.15**	–		–4–20	12.30	3.03
5. Psychological distress	.29**	.35**	.35**	–.24**	–	1–4	1.62	0.44

$n = 350$ for autonomous motivation; $n = 352$ role overload and psychological distress; $n = 352$ for all other variables

* $p < .05$; ** $p < .01$

due to policies established by the school board. Indeed, collective bargaining within the school board was ongoing at the time of the study and we were asked to omit all items which contained a monetary reference. Following a common procedure in the SDT literature (see Deci and Ryan 2008), an index score was created to measure relative autonomous motivation at work using the items from the three subscales. In this study, we used the following formula: [(intrinsic item*2 + identified item) – (introjected item)] (e.g., Millette and Gagné 2008; Ryan and Connell 1989). High scores indicate high autonomous motivation and low scores indicate low autonomous motivation. Scores could vary from –4 to 20.

Psychological distress

Psychological distress was assessed using the 14-item Psychiatric Symptom Index (PSI; Ilfeld 1976), which has been validated in French (Préville et al. 1992). The PSI measures the presence of four symptoms: anxiety, depression, irritability, and cognitive problems experienced during the previous week. Sample items are “I cried easily or felt like crying” (depressive symptom), “I felt easily annoyed or irritated” (irritability), “I felt agitated or nervous” (anxiety symptom), and “I had difficulty remembering things” (cognitive problem). Items were scored on a four-point scale ranging from 1 (never) to 4 (very often). Cronbach’s alpha was .88.

Study 1: Results and discussion

Preliminary analysis

Correlations between all variables are presented in Table 1. As expected, role overload ($r = .35, p < .01$), role

ambiguity ($r = .29, p < .01$), and role conflict ($r = .35, p < .01$) are all positively related to psychological distress, supporting Hypotheses 1a, 1b, and 1c. Moreover, autonomous motivation is negatively related to psychological distress ($r = -.24, p < .01$), supporting Hypothesis 2.

Regression analysis

To test the proposed moderating effect of autonomous motivation in the job demands–strain relation (Hypothesis 3), three sets of hierarchical multiple regression analysis were performed. To avoid multicollinearity problems, the predictors (role overload, role ambiguity, role conflict, and autonomous motivation) were mean-centered before the interaction terms were computed (Aiken and West 1991; Kline 1998). Each regression analysis was performed in three steps. First, the control variables (gender and job position) were entered. Second, one job demand (role overload, role ambiguity, or role conflict) and autonomous motivation were entered simultaneously. Third, the interaction between the job demand entered in step 2 and autonomous motivation was entered into the equation. The incremental variance (ΔR^2) accounted for by the interaction term represents the interaction effect size.

To determine the interaction term, we followed the procedure recommended by Aiken and West (1991): simple slopes derived from the moderator, autonomous motivation (mean ± 1 SD), were plotted.

Role overload

Results are presented in Table 2. Both role overload and autonomous motivation showed a significant main effect on psychological distress and significantly contributed to its explained variance ($\Delta R^2 = .17, F(2, 339) = 34.48$,

Table 2 Study 1: Hierarchical multiple regression analyses predicting psychological distress from job demands and autonomous motivation

Predictor	Role overload		Role conflict		Role ambiguity	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.01		.01		.01	
Gender		-.11*		-.11*		-.11*
Job position		-.06		-.06		-.06
Step 2	.17***		.17***		.14***	
Job demand		.30***		.31***		.23***
Autonomous motivation		-.24***		-.24***		-.23***
Step 3	.01 [†]		.02*		.01*	
Job demand \times autonomous motivation		-.09 [†]		-.13*		-.12*
Total	.19 [†]		.20*		.16*	
n	356		356		356	

[†] $p < .10$; * $p < .05$; *** $p < .001$

$p < .001$). The role overload—autonomous motivation interaction term was marginally significant ($\beta = -.09$, $t(351) = -1.82$, $p = .07$), accounting for a marginally significant 0.8 % of the incremental variance ($F(1, 338) = 3.79$, $p = .07$). The effect of role overload was greater for employees with low autonomous motivation ($\beta = .37$, $p < .001$) than for employees highly autonomously motivated ($\beta = .21$, $p = .003$). Hypothesis 3a was therefore partially supported.

Role conflict

Results (see Table 2) revealed that both role conflict and autonomous motivation were significant and made a significant contribution to the explained variance in psychological distress ($\Delta R^2 = .17$, $F(2, 337) = 34.01$, $p < .001$). The role conflict—autonomous motivation interaction term was significant ($\beta = -.13$, $t(351) = -2.57$, $p = .01$), accounting for a significant 1.7 % of the incremental variance ($\Delta R^2 = .02$, $F(1, 336) = 6.59$, $p = .01$). Results from simple slope analyses indicated that the effect of role conflict on psychological distress was stronger for low autonomously motivated employees ($\beta = .45$, $p < .001$) than for highly autonomously motivated employees ($\beta = .18$, $p = .01$). Hypothesis 3b was therefore supported.

Role ambiguity

Results (see Table 2) indicated that both role ambiguity and autonomous motivation both showed a significant main effect on psychological distress and significantly contributed to its explained variance ($\Delta R^2 = .14$, $F(2, 337) = 27.61$, $p < .001$). The ambiguity—autonomous motivation interaction term was also significant ($\beta = -.12$, $t(351) = -2.42$, $p = .02$), accounting for a significant 1.4 % of the incremental variance ($F(1, 336) = 5.84$, $p = .02$). Role ambiguity had a significant effect on psychological distress for less autonomously motivated employees ($\beta = .36$, $p < .001$) but not for highly autonomously motivated employees ($\beta = .13$, $p = .09$). Hypothesis 3c was therefore supported.

Study 1 aimed to test the moderating effect of autonomous motivation in the job demands–strain relation in a sample of school board employees. Autonomous motivation moderated the negative impact of three specific job demands on employees' psychological health. More specifically, we found that autonomous motivation protects employees' psychological functioning, as it attenuates the relationships between role ambiguity and psychological distress as well as between role conflict and psychological distress. The moderating effect of autonomous motivation in the relationship between role overload and psychological

distress was marginally significant.¹ All together the results of Study 1 suggest that employees who are autonomously motivated at work (i.e., who engage in their work willingly and with a sense of volition) are less negatively impacted by job demands and are better equipped psychologically to overcome these constraints compared to their less autonomously motivated counterparts (i.e., who are more driven by internal or external pressures).²

Study 2: Method

Study 2 was designed to replicate the findings obtained in Study 1 in an independent sample of college employees.

Sample

Sample 2 comprised 277 employees (62 % female; mean age of 44.32 (SD = 19.5)) of a college in the province of Quebec, Canada. As in sample 1, after obtaining the college's approval of the research project, questionnaires and pre-paid return envelopes were sent to employees at work. Employees also received a letter informing them of the study's objectives and guarantying the respondents' anonymity and confidentiality. No compensation was offered in exchange of participation. A reminder was sent to all participants 2 weeks after the questionnaires were sent. A 32 % response rate was obtained. Of the sample, 52.3 % were teachers and 46.2 % were non-teaching staff (administrative staff, educational professionals, or support service staff).

Measures

All measures were administered in French. Properties (means, standard deviations, scales, and correlations) of all measures are presented in Table 3.

Control variables

As in Study 1, gender and job position were controlled in the analyses.

¹ Supplementary analyses were conducted regrouping all three job demands into a single equally-weighted variable. Results from hierarchical regression analysis revealed a significant interaction ($\beta = -.58$, $t(351) = -3.26$, $p < .001$). The effect of job demands was greater for employees with low autonomous motivation ($\beta = .52$, $p < .001$) than for highly autonomously motivated employees ($\beta = .22$, $p < .001$).

² Based on the SDT literature, autonomous motivation may also mediate the job demands–strain relation (e.g., Rubino et al. 2009). Supplementary analyses were conducted to test this alternate role and results revealed that autonomous motivation partially mediated the relationship between all three job demands and psychological distress.

Table 3 Study 2: Summary of correlations, means and standard deviations for all variables

Measures	1	2	3	4	5	Scale	<i>M</i>	SD
1. Role ambiguity	–					1–7	2.33	0.93
2. Role conflict	.40**	–				1–7	3.53	1.19
3. Role overload	.39**	.53**	–			1–5	2.56	0.68
4. Autonomous motivation	–.14**	.01	.18**	–		–18–18	10.49	2.50
5. Psychological distress	.41**	.38**	.45**	–.26**	–	1–4	1.70	0.49

n = 276 for role ambiguity; *n* = 277 for psychological distress; *n* = 275 for all other variables

** *p* < .01

Job demands

Role overload ($\alpha = .84$), role ambiguity ($\alpha = .83$), and role conflict ($\alpha = .80$) were assessed with the same scales as in Study 1.

Autonomous motivation and controlled motivation

The BWMI (Blais et al. 1993) was used to assess participants’ work motivation, as in Study 1. However, in this sample, the external regulation subscale (3 items; $\alpha = .75$) was also included. A sample item of this subscale is “For the paycheck”. In Study 2, we used the following formula: [(intrinsic item*2 + identified item) – (introjected item – extrinsic item*2)] to assess relative autonomous motivation. High scores indicate high autonomous motivation and low scores indicate low autonomous motivation. Scores could vary from –18 to 18.

Psychological distress

Psychological distress was assessed with the same scale as in Study 1. Cronbach’s alpha in this study was .89.

Study 2: Results and discussion

Preliminary analysis

Correlations between all variables are presented in Table 3. All predictors (role overload, role ambiguity, role conflict, and autonomous motivation) are significantly correlated to psychological distress. As expected, role overload ($r = .45, p < .01$), role ambiguity ($r = .41, p < .01$), and role conflict ($r = .38, p < .01$) are positively related to psychological distress, supporting Hypotheses 1a, 1b, and 1c. Moreover, autonomous motivation is negatively related to psychological distress ($r = -.26, p < .01$), supporting Hypothesis 2.

Regression analysis³

Role overload

Results of the hierarchical regression analysis (Table 4) indicated that both role overload and autonomous motivation were significant, and contributed significantly to the explained variance in psychological distress ($\Delta R^2 = .35, F(2, 263) = 69.19, p < .001$). The results revealed that the role overload—psychological distress interaction term was significant ($\beta = -.16, t(272) = -3.22, p = .001$ and significantly contributed to the explained variance in psychological distress ($\Delta R^2 = .03, F(1,262) = 10.35, p = .001$). The effect of role overload was greater for employees with low autonomous motivation ($\beta = .69, p < .001$) than for employees with high autonomous motivation ($\beta = .35, p < .001$). Hypothesis 3a was therefore supported.

Role conflict

Results are presented in Table 4. Both role conflict and autonomous motivation showed a significant main effect on psychological distress and made a significant contribution to its explained variance ($\Delta R^2 = .21, F(2, 263) = 34.62, p < .001$). The interaction term was significant ($\beta = -.19, t(272) = -3.50, p = .001$) in predicting psychological distress, and explained an additional 3.5 %

³ As in Study 1, the mediating role of autonomous motivation in the relationship between job demands (role overload and role ambiguity) and psychological distress was tested. Results indicated that autonomous motivation partially mediated both relationships. The mediating role of autonomous motivation between role conflict and psychological distress was not tested in Study 2 given that role conflict (predictor) was not significantly correlated to autonomous motivation (mediator), which is a prerequisite for testing mediation (Baron and Kenny 1986).

Table 4 Study 2: Hierarchical multiple regression analyses predicting psychological distress from job demands and autonomous motivation

Predictor	Role overload		Role conflict		Role ambiguity	
	ΔR^2	β	ΔR^2	β	ΔR^2	β
Step 1	.00		.00		.00	
Gender		-.02		-.02		-.02
Job position		-.01		-.01		.00
Step 2	.35***		.21***		.22***	
Job demand		.54***		.38***		.40***
Autonomous motivation		-.37***		-.26***		.21***
Step 3	.03**		.04**		.01 [†]	
Job demand \times autonomous motivation		-.16**		-.19*		-.09 [†]
Total	.38**		.25**		.23 [†]	
<i>n</i>	277		277		277	

[†] $p < .10$; ** $p < .01$; *** $p < .001$

of its variance ($F(1, 262) = 12.25, p = .001$). Results revealed that the effect of role conflict on employees' psychological distress was greater in less autonomously motivated employees ($\beta = .60, p < .001$) than in more autonomously motivated employees ($\beta = .22, p = .001$). Hypothesis 3b was therefore supported.

Role ambiguity

The results of the hierarchical regression analysis testing the moderating effect of autonomous motivation in the relationship between role ambiguity and psychological distress are presented in Table 4. Role ambiguity and autonomous motivation both showed a significant main effect on psychological distress and significantly increased its explained variance ($\Delta R^2 = .22, F(2,262) = 36.58$). The ambiguity—autonomous motivation interaction was marginally significant ($\beta = -.10, t(272) = -1.72, p = .09$), as was the increment of explained variance ($\Delta R^2 = .01, F(1,261) = 2.99, p = .09$). Role ambiguity had a greater effect on employees with low autonomous motivation ($\beta = .47, p < .001$) than on highly autonomously motivated employees ($\beta = .29, p < .001$). Hypothesis 3c was therefore partially supported.

Study 2 aimed to replicate the results obtained in Study 1, which suggested that autonomous motivation plays an important role in protecting employees' psychological health by attenuating the link between specific job demands (role overload, role ambiguity, and role conflict) and psychological distress. The results of Study 2 reveal that autonomous motivation significantly moderated the relationship between role overload and psychological distress and between role conflict and psychological distress. With respect to role ambiguity, the interaction term was

marginally significant; suggesting that autonomous motivation also intervenes in this relationship.^{4,5}

General discussion

The purpose of this study was to examine the moderating role of autonomous motivation in the relationship between three specific types of job demands (role overload, role

⁴ Supplementary analyses were conducted regrouping all three job demands into a single equally-weighted variable. Results from hierarchical regression analysis revealed a significant interaction ($\beta = -.31, t(272) = -3.40, p = .001$). The effect of job demands was greater for employees with low autonomous motivation ($\beta = .63, p < .001$) than for highly autonomously motivated employees ($\beta = .31, p < .001$).

⁵ In Study 2, the proposed moderating effect of motivation was also tested using two distinct indicators (autonomous motivation [IM + ID] and controlled motivation [EX + IJ]). Results from hierarchical regression analyses reveal a similar pattern of results as obtained with the relative autonomy index. In terms of autonomous motivation (IM + ID), results revealed that the role overload-autonomous motivation interaction was significant ($\beta = -.12, t(272) = -2.13, p = .03$) [low autonomous ($\beta = .60, p < .001$) vs. high autonomous ($\beta = .39, p < .001$)]. The role conflict-autonomous motivation interaction was also significant ($\beta = -.13, t(272) = -2.36, p = .02$) [low autonomous ($\beta = .53, p < .001$) vs. high autonomous ($\beta = .26, p = .001$)]. As for the interaction between role ambiguity and autonomous motivation, it was marginally significant ($\beta = -.11, t(272) = -1.83, p = .07$) [low autonomous ($\beta = .47, p < .001$) vs. high autonomous ($\beta = .28, p = .003$)]. In terms of controlled motivation, the role overload-controlled motivation was significant ($\beta = .17, t(272) = 3.12, p = .002$) [high controlled ($\beta = .64, p < .001$) vs. low controlled ($\beta = .21, p < .001$)]. The role conflict-controlled motivation interaction was also significant ($\beta = .15, t(272) = 2.64, p < .001$) [high controlled ($\beta = .54, p < .001$) vs. low controlled ($\beta = .25, p < .001$)]. The interaction between role ambiguity and controlled motivation was not significant ($\beta = .04, t(272) = 0.81, p = .42$) [high controlled ($\beta = .47, p < .001$) vs. low controlled ($\beta = .39, p < .001$)].

ambiguity, and role conflict) and psychological distress in two independent samples. It was expected that in the presence of job demands, employees highly autonomously motivated experienced less psychological distress than employees with low autonomous motivation. Results provide support for this proposition and reveal a clear moderating pattern. That is, four of the six moderating effects tested were significant and in the expected direction, while the other two were marginally significant. Interestingly, the pattern of results in the two samples was not identical. That is, in Study 1 autonomous motivation did not significantly moderate the effect of role overload while in Study 2, it did not significantly moderate the effect of role ambiguity. A possible explanation for these differences is the sample size (Kline 2009), given that both non-significant results were marginally significant ($p \leq .09$). The nature of the samples may also explain these differences. Although both samples worked within the educational field, research has evidenced that job demands and the experience of strain vary across educational settings (Byrne 1994) and professions (Chan et al. 2000). Despite these inconsistencies, the results of this study indicate that autonomous motivation plays a significant role in the job demands–strain relation. The findings also highlight the relevance of examining job demands separately, which has not been done by previous studies evaluating autonomous motivation as a stress-buffer (e.g., Fernet et al. 2004; Parker et al. 2010).

Theoretical contributions

Consistent with past research, our results support the notion that psychological strain (i.e., psychological distress) does not derive only from employees' perception of environmental characteristics (job demands) but also from their individual characteristics. This study adds to the knowledge by identifying autonomous motivation as an important personal resource involved in the relationship between job demands and psychological distress. Specifically, our results show that employees perceive job demands as more or less overwhelming depending on their level of autonomous motivation. Indeed, autonomous motivation appears to be a key personal resource which leads employees to appraise demanding aspects of their job as challenges, such could trigger adaptive coping strategies (Skinner and Edge 2002). For example, when dealing with conflicting or ambiguous roles, autonomously motivated employees could be more inclined to use effective problem-solving coping strategies (Crawford et al. 2010; Skinner and Edge 2002), such as actively seeking the information required to carry out a mandate. Furthermore, given that autonomous motivated employees tend to exhibit greater persistence (Grant 2008) and creativity (Grant and Berry 2011), they might also come up with innovative and resourceful ways

to manage a workload. Our results suggest that autonomously motivated employees are less likely to view job demands as insurmountable and are more likely to efficiently deal with these demands. On the other hand, low autonomously motivated employees seem to engage in their work more out of a sense of obligation (e.g., for the salary or to maintain a positive self-image) than out of a sense of pleasure and satisfaction (Deci and Ryan 2008). Low autonomous motivation is likely to negatively influence employees' perceptions of job demands and foster maladaptive action tendencies (Skinner and Edge 2002), such as viewing job demands as an additional burden. Such perception could lead to feelings of pressure and could trigger negative emotions, like feelings of inadequacy or passive problem-solving strategies, like withdrawal and rationalization (Crawford et al. 2010). By using passive coping techniques, employees are less likely to deal effectively with job demands, creating escalating pressure and leaving them more vulnerable to psychological distress and strain. The results of supplementary analyses conducted in Study 2 offer additional support for this contention, as they indicate that controlled motivation evaluated separately exacerbated the effect of job demands on employees' feelings of psychological distress.

The moderating effect of autonomous motivation in the job demands–strain relation is also consistent with the plasticity hypothesis, proposed by Brockner (1983), which states that individuals are more or less influenced by environmental factors according to their individual characteristics. Several studies have provided support for this hypothesis by revealing that employees with low self-esteem are more susceptible to work environment factors (e.g., role conflict, role ambiguity, role overload) than their counterparts with high self-esteem (Ganster and Shaubroeck 1991; Jex and Elacqua 1999; Mossholder et al. 1981; Pierce et al. 1993). The present findings reveal a very similar pattern for autonomous motivation, in that employees with high autonomous motivation are less negatively impacted by job demands than employees with low autonomous motivation. These results add to Fernet et al.'s (2010) findings that, in contrast to highly autonomously motivated employees, employees with low autonomous motivation are more sensitive to social resources in the workplace (i.e., quality of coworker relationships). Overall, the present results suggest that research based on the plasticity hypothesis, which up to now has focused mainly on self-esteem, would benefit from exploring other individual characteristics such as autonomous motivation.

Our results also contribute to the job demands–strain perspective. Traditionally, greater emphasis has been placed on job resources (e.g., job control, social support, constructive feedback) that alleviate the negative impact of job demands on employees' psychological health (Bakker

and Demerouti 2007; Karasek 1979). For example, in a study conducted in employees of an institute for higher education, Bakker et al. (2005) found that employees reported higher levels of burnout (emotional exhaustion and depersonalization) when job demands (e.g., role overload, emotional demands) were high and resources (e.g., social support, feedback) were low. Similar results were obtained by Hakanen et al. (2005), who found that job resources buffered the negative effect of job demands on work engagement (i.e., a positive, fulfilling work-related state of mind; Schaufeli et al. 2002). More precisely, their results showed that dentists felt energetic and dedicated to their work despite having to cope with job demands (e.g., role overload, emotional dissonance), but only when resources at work (e.g., positive contacts with patients, variability in professional skills, peer contacts) were high. With respect to psychological distress, it has been shown that job resources (timing control, methods control, and supervisor support) moderate the relationship between job demands (changes in the work environment) and distress in nurses (Verhaeghe et al. 2008). Although the role of job resources has been largely documented, the present findings expand this view by revealing that other types of resources, such as employee motivation, may also shield against job demands. Interestingly, the majority of job resources evaluated in the job demands-strain perspective (e.g., job control, constructive feedback, social support) echo the need for autonomy (possibilities for choosing and deciding), competence (possibilities for applying one's skills), and relatedness (possibilities for feeling connected, listened to, and helped)—which are fundamental to sustain optimal motivation (Ryan and Deci 2000). Through job resources and other supportive conditions that allow the satisfaction of psychological needs, it appears that autonomous motivation can play a significant role in employees' adaptation to their work environment as well as in their well-being.

Our findings also contribute to the SDT literature in at least two ways. First, the present study has identified a further function of autonomous motivation. To date, scholars have assessed the direct role of autonomous motivation mostly in connection with work-related outcomes (e.g., job involvement, performance, organizational commitment) or in terms of its mediating role in the relationship between socio-organizational factors (e.g., autonomy support, quality of relationship) and these outcomes (e.g., Blais and Brière 2002; Lynch et al. 2005; Richer et al. 2002). By proposing that autonomous motivation moderates the relationship between job demands and strain (psychological distress), our findings add new insights to the SDT literature in the workplace. They underscore the pertinence of exploring autonomous motivation not only in terms of socio-organizational factors, but also in relation to

demanding aspects of the job. Our results also point to the relevance of assessing the moderating role of autonomous motivation in the relationship between workplace factors and outcomes, rather than addressing its direct or mediating role alone, as in most of the past research. Second, the present study offers valuable information regarding the differential effects of autonomous and controlled motivation. It has recently been argued that autonomous and controlled motivation are not necessarily mirror-image opposites in relation to various outcomes and should therefore be evaluated separately rather than using a relative autonomy index (Koestner et al. 2008). Contrary to this contention, the complementary analyses conducted in Study 2 showed a similar but opposite pattern of results regarding the moderating roles of autonomous and controlled motivation, converging with the findings obtained using the relative autonomy index. While controlled motivation exacerbated the effect of job demands on employee's distress, autonomous motivation mitigated this effect. Further studies are needed to examine in greater depth the differential effects of autonomous and controlled motivation in the workplace.

Limitations and direction for future research

Despite the valuable findings of this study, a few caveats are worth mentioning. First, the study is based on self-reports and a cross-sectional design. Common-method variance may therefore have altered the relationships among the variables, and firm conclusions on the directions of the effects cannot be drawn. Future studies should seek to replicate our findings using a longitudinal design and sources other than self-report. Furthermore, because the participants held jobs in the education field and reported relatively low levels of job demands (see means reported in Tables 1, 3), our findings can only be generalized to occupations within the educational field and to relatively low demanding jobs. However, the fact that a similar pattern was found in two independent samples suggests that the moderating role of autonomous motivation in the job demands-strain relation is worth exploring in other occupations with different levels of job demands. In addition, although psychological distress has been established as a significant concern for workers (Bourbonnais et al. 2007; Lopes et al. 2010), future studies would gain from replicating this study using other relevant outcomes such as burnout and turnover intention. It would also be useful to test the moderating role of autonomous motivation in connection with positive indicators such as work engagement, commitment, satisfaction, and performance. Lastly, future research exploring individual differences in the job demands-strain relation could explore the role of autonomous motivation in relation to other individual

characteristics. For example, future research could explore whether autonomous motivation plays a protective role in the job demands–strain relation over and above other important personal resources such as self-efficacy, self-esteem, or optimism (Hobfoll 2002).

Practical contributions

From a practical standpoint, the present findings can orient organizations who seek to prevent employees from experiencing psychological distress in at least two ways. First, organizations can make efforts to attenuate job aspects that are stressful and harmful to employees' psychological health. Our results suggest that employees' uncertainties as to what is expected from them at work can lead to feelings of frustration, as they can spend a great deal of time and energy figuring out what is required in order to accomplish their job properly (Rubino et al. 2009). These expenditures of time and energy might overtax employees' capacities (Hobfoll 2002), making them potentially more prone to problems such as cognitive deficiencies (e.g., memory loss). Moreover, people who are unable to accomplish their work because of contradicting demands, because they do not understand their prescribed roles, or because they are expected to accomplish an unreasonable amount of work may be more vulnerable to anxiety and feelings of inadequacy as well as depressive symptoms. Accordingly, organizations could put more effort into ensuring that employees are given clear and unambiguous tasks and responsibilities as well as manageable workloads. However, although such changes would be very beneficial, they may not always be possible or easily implemented, given the organizational structure or the nature of the employees' assignments. Therefore, organizations could also take steps to foster employees' autonomous motivation, which could help them better adapt to job demands and ultimately shield them against psychological strain, such as psychological distress. Our results show that although this adaptive characteristic did not completely eliminate the negative effects of job demands on psychological health, it did significantly attenuate job demands' impact. According to SDT, a social environment that supports autonomy and promotes competence (i.e., an informational environment) can foster autonomous motivation. Accordingly, organizations that wish to enhance autonomous motivation in employees could offer them choices and provide positive feedback on performance rather than use constant surveillance, threats of punishment, or extrinsic rewards (Deci et al. 1989). Furthermore, other studies (e.g., Bono and Judge 2003) have shown that employees are more likely to be autonomously motivated when their managers demonstrate transformational leadership behavior (i.e., articulating a compelling vision of the future, re-examining critical

assumptions when needed, and spending time teaching and coaching employees). Consequently, encouraging such managerial practices would provide another promising avenue to foster autonomous motivation in employees.

Conclusion

Our findings allow a more nuanced view of how job demands are related to employees' psychological health by revealing the importance of work motivation. High or low autonomous motivation can respectively attenuate or intensify the presence of employees' psychological distress in the presence of job demands. By identifying this key moderator, we are one step closer to understanding the complex interplay between workplace and individual characteristics and its effect on psychological distress.

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