

ORIGINAL ARTICLE

**Being engaged: The multiple interactions between job demands and job resources and its impact on nurses engagement**

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ABSTRACT

**Background:** This study has been inspired by the JD-R model. It evaluates the role that job resources play in moderating the impact that job demands have on work engagement in a community of nurses.

**Methods:** A total of 481 nurses in 109 health care centers participated in this study. Three job demands: work overload, emotional demands, and home-work imbalance; and three specific job resources: social support, autonomy, and self-development opportunities were used to test the interaction hypotheses of this research.

**Results:** Results show that 33 out of 36 of the possible interaction effects were significant, thus showing that job resources create a buffer between job demands and work engagement and its three dimensions in nurses.

**Conclusion:** By and large, hypotheses were confirmed. The findings clearly shows the utility of the expanded JD-R model to the nursing community and suggest that the right job resources can help buffer the impact of demanding working condition on work engagement. Research and practical implications are discussed.

**Keywords:** *job demands–resources model; work engagement; nurses*

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## Introduction

Work engagement is one of the central issues for the 21<sup>st</sup> century professionals and is becoming strategically important for nurses in particular. Nurses constitute the largest professional group in the health care sector, and they play a substantial role in the quality of care and satisfaction of health care services in any country (e.g., Chang & Chang, 2007; Giallonardo, Wong & Iwasiw, 2010).

Linked to this, studies have demonstrated that high levels of job engagement increase personal initiative and innovation. This, in turn, underpins the development of nursing practices that support safe effective care, contribute to high levels of effectiveness, and reduce patient mortality rates (Bjarnadottir, 2011; Hakanen et al., 2006; Harter et al., 2009; Fasoli, 2010; Moodie et al., 2014, in press).

In this regard, evidence has shown that nurses score lowest on job engagement and highest on burnout of any professional healthcare group (Fasoli 2010; Nerstad et al., 2010). These findings correlate with important negative consequences at the organizational level such as dissatisfaction, poor performance, and turnover (e.g., Blizzard, 2005; Bjarnadottir, 2011; Jenaro et al., 2010; Giallonardo et al., 2010; Hakanen et al., 2006; Salanova et al., 2011; Xanthopoulou et al., 2009).

However a comprehensive understanding of the causes, the direct and indirect factors that contribute to sustaining job engagement in nurses, is still limited, and some authors have argued that ongoing research in this field is increasingly necessary (e.g., Bjarnadottir, 2011; de Lange, De Witteb & Notelaers, 2008; Jenaro et al., 2010; Simpson, 2009; Van Beek et al., 2008).

The purpose of this study is to further understand the factors that can predict work engagement in nursing professionals. The central hypothesis is that job resources moderate the relationship between job demands and job engagement. Several facts have been taken into consideration when developing the study. First, the theoretical framework for the research is based on the JD-R model (Demerouti et al, 2001). Second, we have adopted a theoretical approximation for the job engagement construct. Third, we have used an established measure of job engagement. Finally, we have selected a specific job resources variables relevant to nursing professionals.

## Literature review

This study focuses on the construct of job engagement and its determinants tested in multiple interaction forms (see Bargagliotti 2011). Job engagement has often been defined as the emotional and intellectual commitment toward the organization and the quantity of voluntary effort displayed by the employees in their workplace (Baumruk, 2004; Frank et al., 2004; Richman, 2006; Shaw, 2005).

Job engagement is therefore defined as the positive affective-motivational state related to well-being at work and is characterized by vigor, dedication, and absorption. Vigor refers to high levels of energy and mental resilience while working. Dedication refers to how deeply involved the individual is with the job, and whether the employee feels that the work is meaningful in terms of identity, enthusiasm, inspiration, pride, and challenge. The third dimension of job engagement is absorption, which is considered to be another element of engagement (Schaufeli et al., 2001). Absorption is characterized by being fully concentrated and happily engrossed in one's work such that time passes quickly and one has difficulty detaching from work (e.g., Bakker et al., 2007; Sonnentag et al., 2012). Being engaged with one's job is not transitory in this sense, but rather a persistent and dominant cognitive-affective state that is generalized and not focused on a single object, event, or particular behavior (Schaufeli et al., 2002; Seligman & Csikszentmihalyi, 2000).

Research conducted on nursing professionals has demonstrated that job engagement has a critical protective function in this specific sector. Job engagement, for example, enhances personal initiative to develop practices and create changes, helps nurses to confront adversity, and to maintain congruence between jobs, values, and the management of professional responsibilities (e.g., Severinsson et al., 2007). Research has also demonstrated a positive correlation between job engagement and variables such as leadership, self-efficiency, job satisfaction, and work performance, and equally importantly a negative association with burnout (e.g., Bjarnadottir, 2011; Llorens et al., 2007; Salanova et al., 2011; Xanthopoulou et al., 2009). Therefore, we may conclude that job engagement in nurses is the most important psychological mechanism facilitating both personal and organizational goals.

The Job Demands-Resources model (JD-R) as a predictor for job engagement

The Job Demand-Resources model (Bakker, Demerouti & Verbeke, 2004) is a popular and well published model that explains well-being (e.g. job engagement) and discontent (e.g. stress and burnout) in employees, the reasons for these states and its related consequences (Schaufeli & Bakker, 2004). The Job Demand-Resources model (hereafter JD-R) also explains how employee well-being may result from two specific sets of working conditions: job demands and job resources (e.g., Bakker & Demerouti, 2007 ;Bakker et al., 2007; Demerouti et al., 2001; Nahrgang et al., 2011).

Job demands are the physical, psychological, social, and organizational aspects of the job that require sustained physical, cognitive, or emotional effort and can potentially evoke strain. Although job demands are not necessarily negative, they can become job stressors when job demands exceed the employee's adaptive capacity (Bakker & Demerouti, 2007; Dolan et al, 1992b Dolan & Arsenault, 2009; Rich et al., 2010; Sonnentag et al., 2012; Tims et al., 2013).

Job resources refer to those physical, social, or organizational aspects that 1) may reduce job demands, 2) are functional in achieving work goals, or 3) stimulate personal growth and learning development (Bakker & Demerouti, 2007;Schaufeli & Bakker, 2004). Job resources can play an intrinsic and extrinsic motivational role (e.g., Nahrgang et al., 2011).

The relationship between job demands and resources has been widely investigated, and its inverse nature has been demonstrated. In other words, high work pressures and intense emotional interactions may cancel the positive effects of job resources (see Bakker, Demerouti, Taris & Schaufeli, 2003; Demerouti.; Bakker, Nachreiner & Schaufeli, 2001).

Four main assumptions of the JD-R model have been suggested. First, job demands and resources are related, that is, they comprise two general and fundamental categories of factors that may be applied to various occupational settings, irrespective of the particular demands and resources involved (Bakker & Demerouti, 2007). Second, the dual process of the two types of factors has been demonstrated empirically (e.g., Hobfoll, 2002; Llorens et al., 2007; De Lange et al., 2008). That is, the two different psychological processes play a role in the development of job-related strain and motivation: (a) health is thought to be impaired because job demands deplete the energy of the employee such that aspects like work overload generate long-term negative

consequences for the organization, including absenteeism (Bakker et al., 2003), (b) a motivational process caused by job resources may come into play, which is assumed to increase job engagement, or in the case of resource shortages, impedes the ability to cope effectively with high job demands, promoting isolation (e.g., Demerouti et al., 2001; Schaufeli & Bakker, 2004). Third, an interaction has been proposed between job demands and resources. In this case, Demerouti and Bakker (2011) argue that job resources play an important role as a buffer in the development of job stress, and of motivation such as job engagement. Finally, the fourth and most recent relevant proposition about job engagement is that job resources are most beneficial and have a pronounced influence on motivation under conditions of higher job demands (Bakker et al., 2007; Bakker et al., 2010).

### **Job resources and demands on nurses**

Research conducted with health care employees has shown how the relevance of job resources increases the development of job engagement when job demands are high (Smith & Konczak, 2012). For example, a study conducted with health care personnel found that job resources (job control, self-esteem, and organization) were the best predictors of job engagement (Mauno et al., 2007). Three relevant and common job demands in this health sector have been proposed for inclusion in studies to expand our understanding of the buffering role that job resources have on job engagement: work overload, emotional demands, and home-work imbalance (Bjarnadottir, 2011). Work overload has been defined as employees' own perception of having more work than they could manage even if given a longer time to do it (Shirom et al., 2006). There is evidence that work overload has the potential to overwhelm the individual, thus hindering the development of job engagement (Ten Brummelhuis & Bakker, 2012). Other studies claim that work overload can be interpreted by the individual as a challenge, and not as a hindrance, and can thus actually increase job engagement (Van den Broeck et al., 2008). Emotional demands have been defined as dealing with strong feelings such as sorrow, anger, desperation, and frustration at work. Employees facing these emotional demands must react by carefully digesting their feelings to create an observable scenario through their facial and body expressions, which can generate greater emotional overload (Peng et al., 2010). Therefore, emotional demands can become important obstacles to the development of job engagement (Van den Broeck et al., 2008). Work and home imbalance is a

form of role conflict, and is specifically an incompatibility between job pressures and family role demands. A high imbalance implies that family demands may suffer because of job pressures (Ten Brummelhuis & Bakker, 2012). Some studies focus the inverse relationship between job engagement and home-work imbalance due to the fact that home-work imbalance generates a loss of motivation and interest in work, including burnout (Peeters, Montgomery, Bakker & Schaufeli, 2005). Nonetheless, the theory of Conservation of Resources (COR, Hobfoll, 2002) indicates that, in reality, the relationship between home-work imbalance and job engagement is indirect. Here, job engagement may stimulate individuals to concentrate on using job resources, which may decrease the availability of resources to fulfil other roles (e.g., family role) (Halbesleben, Harvey & Bolino, 2009).

In addition, research has shown that there are three basic resources that facilitate job engagement for nurses: social support, self-development opportunities, and autonomy in the workplace, since these can allow them to cope with their stressful work and lower the impact of emotional demands (e.g., Bakker et al., 2007; Billings et al., 2000). Social support is defined as the degree to which individuals perceive their sources of support within and outside the organization (supervisor, colleagues, and couple) as concern for their well-being. Such support enables positive social interaction and provides resources with the objective of increasing well-being on the job (Fried & Ferris, 1987). Social support is one of the most researched resources in the workplace as it has been shown to have an important and positive effect on a wide range of organizational results such as job engagement (e.g., Bakker et al., 2005; Bjarnadottir, 2011; Dolan et al., 1992b). Opportunities for self-development on the job are the possibilities that the workplace offers individuals to acquire knowledge, to improve, and to enhance their abilities (Bakker et al., 2003). Evidence shows that the presence of opportunities for professional self-growth allows employees to better cope with job demands, reduces job fatigue, and increases job engagement (Bakker et al., 2003; Salanova et al., 2005). Work Autonomy refers to the degree of freedom that each individual has in determining how to perform their job duties, that is, being owners of their own behaviours, and being able to act voluntarily (Fried & Ferris, 1987; Shirom et al., 2006). A sense of autonomy is considered to be a basic psychological need (along with competence and relatedness) and leads to job engagement over time (Mauno et al., 2007).

### **Job resources as potential buffers between job demands and job engagement in nurses**

The JD-R model proposes that job engagement may be explained by the effects of job demands and inaccessibility of job resources (Bakker & Demerouti, 2007). This model assumes two processes: First, a process in which job demands deplete the energy of the employee. These aspects of demanding jobs (e.g., work overload) generate long-term negative consequences for the organization, such as absenteeism (Bakker, Demerouti, De Boer, & Schaufeli, 2003). Second, a motivational process encouraged by job resources, which are assumed to increase job engagement. On the other hand, if resources are lacking, employees may no longer be able to cope effectively with high job demands. This latter circumstance promotes isolation. (e.g., Demerouti et al., 2001; Schaufeli & Bakker, 2004).

In addition, the JD-R model proposes that job resources can moderate the impact that job demands have on job engagement (Bakker et al., 2003; Bakker et al., 2005; Bakker et al., 2007). This means that when the interaction between job demands and job engagement is negative, the disposal of job resources can change the type of association between these two variables, while the same time promoting job engagement (Bakker et al., 2003; Hakanen et al., 2006).

The interaction hypothesis of job resources in the JD-R model is also consistent with other important theoretical models. For example, the Demands-Control model (DCM) of Karasek (1998) states that autonomy may, among other things, exert control over the execution of tasks and buffer the effects of work overload on job stress. Similarly, the Effort-Reward Imbalance model (ERIM) of Siegrist (1996) states that rewards (in terms of salary and esteem rewards) can moderate effort (extrinsic demands and intrinsic motivation to face these demands). The buffer hypothesis is consistent with the argument Kahn and Byosiere (1992), who claimed that the interaction occurs when one variable can reduce the effect of stress and its consequences on the other variable.

The JD-R model conceptually expands these models by claiming that different types of job resources may buffer the effects of several job demands (Bakker et al., 2007; Bakker et al., 2005). The JD-R proposal regarding the buffering role of job resources in the relationship between job demands and job engagement has

received relatively little attention up to now (Bakker et al., 2003; Billings et al., 2000). There are only few studies on job engagement in health care personnel (especially nursing) compared to other professional groups (Fasoli 2010; Nerstad et al., 2010).

Based on the aforementioned literature, the following core hypothesis are suggested

H1. Job Resources (self-development opportunities, social support and autonomy) buffer the impact of job demands (emotional demands, work overload and home-work imbalance) on job engagement.

H1.1. Job Resources buffer the impact of Job Demands on the dimensions of Job Engagement; vigor, absorption and dedication.

### **Control variables**

Studies have singled out multiple substantial variables that affect the well-being of nurses. With the objective of reducing errors in our hypothesized relationships, we have identified a series of sociodemographic and organizational variables as control variables. These include individual differences such as age, gender, and marital status, which can have an important impact on the perception of the workplace in a professional nursing group (Bakker et al., 2003; Bjarnadottir, 2011; Hakanen et al., 2006). We have also included a set of organizational and job factors such as: job tenure as a nurse, years in current position, work schedules, anticipation of work changes, medical leaves of absence, and total hours of leave of absence over the last two years (Bakker et al., 2003).

### **Methodology**

#### **Sample**

The study was carried out among nurses who currently work in health care centres in 109 private (37.4%) and public (61.1%) health organizations, across 46 cities in Uruguay. In total, 481 nurses participated in this study. The sampling was not probabilistic; as such it was not our purpose to use a representative statistical sample of the entire nursing population in Uruguay. In addition, a visual analysis of the data was performed, to determine an apparent bias, and it was observed that there were no systematic discrepancies. Most of the study's participants were Uruguayan (91%), while the remainder came from Argentina and Brazil. The average age of the sample was 39 (SD=10.25) and 93.8% were

female. The average number of years of work experience was 12.8 years (SD=10.60), and 84.4% of the sample worked in hospitals or sanatoriums. Furthermore, 60.5% indicated that they worked only one shift, while the remainder affirmed working more than one shift. The average work week was 45 hours, and 51% affirmed working graveyard shifts regularly, resulting in an average of 14 monthly graveyard shifts (DS= 33.98). By contrast, 42% of participants reported having another job to which they dedicated an average 15.6 hours (DS=15.55). Finally, 55.3% of participants indicated that they requested medical leaves of absence during the last two years. The average leave of absence was of 18 days (DS=52.15).

### **Instruments**

Job Engagement is measured using the Utrecht Work Engagement Scale (Schaufeli et al., 2002). The instrument includes three subscales: Vigor, Dedication, and Absorption. Vigor was assessed with six items (e.g., "At my work, I feel bursting with energy"). Dedication was measured with five items (e.g., "I am enthusiastic about my job"). Absorption was assessed with six items (e.g., "I am immersed in my work"). Items were rated on a 7-point scale, ranging from 0 = never to 6 = always. The Cronbach Alpha reliabilities for the total scale were of .93, and the sub-scales were of .83, .86, and .82, respectively.

The Emotional Demands scale was developed by Van Veldhoven and Meijman (1994) and includes six items that evaluate the perception of demands at the emotional level when performing tasks in the workplace (e.g., being confronted with people who complain continuously). It was measured on a 5-point scale (1 = never, 5 = always). The Cronbach Alpha result was .85.

The Work Overload scale was developed by Karasek et al. (1998). The scale includes four items that refer to quantitative, demanding aspects of the job (e.g., you have to work very quickly.). Items are scored on a 5-point scale, ranging from 1 = never to 5 = always. The Cronbach Alpha for the scale is .81.

The Home-Work Imbalance scale is measured using the short version of Moodie, Dolan, and Arsenault, (2011) that was by itself modified from the original version of De Bruin (2004). The instrument includes three items and was measured using a Likert frequency scale of 5 points (1=never, 3=regularly, 5=always). These items evaluate the obstacles between work and

the fulfilment of household tasks. A higher score in the answers implies a greater imbalance between these two vital areas. The Cronbach Alpha for this scale is .80.

Self-Development Opportunities were measured with a scale developed by Bakker et al. (2004). The scale included six items (e.g., I have the opportunity to develop my strengths in my job) and was measured on a 5-point scale, ranging from 1= never to 5 = always. The Cronbach Alpha is .71.

Social Support is a twelve-item scale developed by Dolan et al. (1992a & 1992b) and was measured on a 5-point scale, ranging from 1 = never to 5 = always. The instrument includes three subscales: supervisor support, colleague support, and couples support, each composed by four items. The Cronbach Alpha total scale result is .83, and the sub-scales are of .91, .85 and .83 respectively.

Work Autonomy, elaborated by Bakker et al. (2004), is composed of 3 items in a Likert scale of 5 points (1=never, 3=regularly, 5=always). This scale evaluates the degree of perceived autonomy by the individual in the workplace. A sample item is: "Are you free to conduct your work duties?" The Cronbach Alpha is .87.

Control Variables include demographic and workplace situation characteristics. Control variables included in this study were age, gender, marital status, working experience measured in years, years in the current position, work schedule, anticipation of work changes, medical leaves of absence, and total days of leave of absence in the last two years.

### **Procedure**

First, a pilot study was conducted with the objective of adapting the Spanish version of our instruments in the Uruguayan nursing population. Then, all health centres in Uruguay were registered. All departments in public hospitals were contacted systematically by telephone, and with the largest private institutions in Uruguay, contact was maintained with the chiefs of nursing in each institution. They, in turn, sent a virtual survey to be completed by all nursing licensed personnel of their charge of. The survey was open for the period of October 2009 to April 2011). Participation in this study was voluntary. Confidentiality was assured by means of anonymous participation in the survey.

## **Results**

Table 1 provides information about the measurements, standard deviations, and correlations among variables. The latter shows significant links between all variables in the study.

The core hypothesis in this study highlights three job resources, work autonomy, social support, and self-development opportunities, which have a buffering effect on the relationship between job demands (home and work imbalance, emotional demands and work overload) and job engagement. Each buffer interaction between job demands and job resources was analysed using a series of hierarchy regressions, with job engagement as a dependent variable, and a posteriori, each one of the three dimensions, vigour, dedication, and absorption. It is important to emphasize that prior to each of the regressions, a previous step was conducted in which demographic, organizational, and job characteristics variables were input as control variables.

Findings suggest that all interactions, except three, were statistically significant. Tables 2-4) display the results of the effects of job resources with regard to the links between job demands and total job engagement, and the three dimensions.

### **Interaction effect of job resources and job demands on overall job engagement**

Results of the interactions between the three job resources and the three job demands on overall job engagement, is most interesting. First, we found a significant interaction effect (see table 2,3 and 4) between social support (a dimension of job resource) and the three job demands work overload ( $b = .13, p < .01$ ), emotional demands ( $b = .59, p < .001$ ) and home-work imbalance ( $b = .31, p < .01$ ) on job engagement. Second, it was also found that the interaction between work autonomy (another dimension of job resource) and the three job demands on job engagement to be also significant: work overload ( $b = .15, p < .001$ ), emotional demands ( $b = .59, p < .001$ ) and home-work imbalance ( $b = .13, p < .05$ ). Finally, we found a significant impact in the interaction of the third dimension of job resource, self-development opportunities, with three job demands, work overload ( $b = .20, p < .01$ ), emotional demands ( $b = .23, p < .001$ ), and home-work imbalance ( $b = .24, p < .01$ ) on job engagement. Our results confirm that job resources buffer the effects of job demands on job engagement in nurses.

Table 1: Correlation and Descriptive Statistics

Main Variable	M	DS	1	2	3	4	5	6	7	8	9
1. Work Overload	3.63	0.87									
2. Emotional Demands	3.24	0.87	.56**								
3. Imbalance Between Work and Home	2.41	0.95	.35**	.44**							
4. Social Support	2.86	0.51	-.14**	-.37**	-.29**						
5. Autonomy	3.71	0.96	-.19**	-.27**	-.15**	.29**					
6. Self-Development Opportunities	3.81	0.80	-.09*	-.20**	-.14**	.36**	.49**				
7. Job Engagement	4.35	1.32	-.13**	-.30**	-.21**	.41**	.39**	.41**			
8. Vigor-Job Engagement	4.21	1.46	-.14**	-.31**	-.23**	.40**	.36**	.36**	.91**		
9. Dedication-Job Engagement	4.55	1.39	-.16**	-.32**	-.21**	.43**	.39**	.43**	.94**	.81**	
10. Absorption –Job Engagement	4.30	1.47	-.07	-.20**	-.15**	.31**	.33**	.33**	.90**	.70**	.78**

### **Interaction effect of job resource and job demands on the three dimensions of job engagement:**

The results of the analysis of the buffering impact over the three dimensions of job engagement, vigor, dedication and absorption points out clearly that in most cases, the impact of the interaction of the three labor resources (social support, autonomy and self-development opportunities) with the three job demands (work overload, home-work imbalance and emotional demands) are significant in respect to their interactions with the three dimensions in a range of  $b = .05$  to  $b = .56$  for vigor, of  $b = .15$  to  $b = .54$  for dedication, and of  $b = .20$ , to  $b = .69$  for absorption (see table 2,3 and 4).

Nevertheless, in three specific cases of interactions with vigor, the job resources work autonomy and self development opportunities were not found to have an impact on the relationship between the job demands work overload and home-work imbalance.

### **Discussion**

The principal objective of this study was to evaluate the predictive effect of indirect factors in sustaining job engagement in nurses. The empirical test was conducted amongst Uruguayan nurses. The core hypothesis was to examine the buffering effects of the job resources in relation to job demands and job engagement in nurses. The hypothesis was examined in the framework of the JD-R model (e.g., Bakker & Demerouti, 2004; Schaufeli & Bakker, 2004).

The results of the series of multiple hierarchical regression analyses show that 33 of the 36 two-way interactions were significant. Consequently, in 92% of the cases, the results support the hypothesis of this study. That is, the three different job resources buffer the link between job demands and job engagement in their three dimensions, vigor, dedication, and absorption.

This study has sought to broaden our understanding on the buffering effects on engagement in different workplace settings using the JD-R model (Bakker et al., 2003; Bakker et al., 2005). We argue that one of the main contribution of this study is the analysis of three job demands and three basic and specific job resources that are well documented in the nursing research (e.g., Bakker et al., 2007; Billings et al., 2000). This approach was also adopted by Bakker et al. (2007) in their study of teachers, using a JD-R model. We can definitely extend their conclusions and apply them to the nursing profession.

### **The Buffering Impact of Job Resource on the relationship between job demands and job Engagement in Nurses**

Our results shows that social support, autonomy, and self-development opportunities are clearly important job resources for nurses, because each of them buffer the impact of the job demands: work overload, emotional demands, and home-work imbalance on total job engagement. The aforementioned findings are discussed in more detail hereafter.

Table 2: Multiple Hierarchical Regressions of Job Resource – Social Support as Buffer of Links Between Job Demands and Job Engagement

Step	Model	Dimensions of Job Engagement															
		Overall Job Engagement				Vigor				Dedication				Absorption			
		b	DR <sup>2</sup>	DF		b	DR <sup>2</sup>	DF		b	DR <sup>2</sup>	DF		b	DR <sup>2</sup>	DF	
1	Social Support	1.02***	.39***	13.36***		1.08***	.37**	13.49***		1.10***	.40***	14.15***		.89***	.306***	7.19**	
	Work Overload	-.08	-.05			-.12	-.07			-.12	-.08			-.01	-.003		
2	Social Support X Work Overload	.35**	.77**	13.08***		.28**	.55**	12.74***		.33**	.701**	13.66**		.43**	.852**	7.49**	
1	Social Support	.91***	.35***	14.43***		.94***	.33***	14.74***		.98***	.36***	15.21***		.81***	.28***	7.53**	
	Emotional Demands	-.21**	-.14**			-.26***	-.16***			-.24***	-.15***			-.14	-.08		
2	Social Support X Emotional Demands	.59***	1.11***	15.74***		.53***	.90***	15.11***		.54***	.98***	15.88***		.69***	1.17***	9.16**	
1	Social Support	.99***	.38***	13.53***		1.03***	.35***	13.75***		1.07***	.39***	14.07***		.86***	.30***	7.28**	
	Home-Work Imbalance	-.10	-.08			-.14*	-.10*			-.11	-.07			-.06	-.04		
2	Social Support X Home-Work Imbalance	.31**	.60**	13.16***		.29**	.52*	13.13***		.27***	.50*	13.38***		.36***	.64**	7.41**	

\*p < .05, \*\*p < .01, \*\*\*p < .001, n=481

Note: The variables of demographic control (age, gender, marital status) and the job characteristics (years as a nurse, years in the current position, work schedule, anticipation of work changes, medical leaves of absence, total leaves of absence in the last two years) were controlled in a previous stage.

Table 3: Multiple Hierarchical Regressions of Job Resource –Autonomy as a Buffer of Links Between Job Demands and Job Engagement

Step	Model	Dimensions of Job Engagement															
		Overall Job Engagement				Vigor				Dedication				Absorption			
		b	DR <sub>2</sub>	DF		b	DR <sub>2</sub>	DF		b	DR <sub>2</sub>	DF		b	DR <sub>2</sub>	DF	
1	Autonomy	.49***	.35***	11.44** *		.48***	.31***	10.75** *		.51***	.35***	11.76** *		.47***	.30***	7.18***	
	Work Overload	-.06	-.04			-.10	-.06			-.10	-.06			.10	.01		
2	Autonomy X Work Overload	.15***	.52***	11.03** *	.21	.09	.26	9.91***	.17	.16***	.53***	11.34** *	.19	.21**	.65**	7.40***	
	Autonomy	.43***	.31***	13.44** *	.22	.42***	.27***	13.04** *	.22	.46***	.32***	13.91** *	.23	.42***	.28***	7.79***	
1	Emotional Demands	-.27***	-.18***			-.33***	-.20***			-.31***	-.19***			-.18***	-.11***		
	Autonomy X Emotional Demands	.22***	.67***	13.73** *	.24	.17***	.45***	12.53** *	.23	.25***	.73***	14.50** *	.25	.24***	.66***	8.29***	
1	Autonomy	.47***	.34***	.46**	.21	.30***	-.14**	11.87** *	.20	.51***	.35***	12.50** *	.21	.45***	.29***	7.50***	
	Home-Work Imbalance	-.17**	-.13**			-.22**	-.14**			-.18**	-.12**			-.12	-.08		
2	Autonomy X Home-Work Imbalance	.13*	.41*	11.86** *	.22	.05	.13	10.83** *	.20	.15*	.44*	12.09** *	.22	.20**	.56**	7.82***	
	Autonomy																

\*p < .05, \*\*p < .01, \*\*\*p < .001, n=481

Note: The variables of demographic control (age, gender, marital status) and the job characteristics (years as a nurse, years in the current position, work schedule, anticipation of work changes, medical leaves of absence, total leaves of absence in the last two years) were controlled in a previous stage.

Table 4: Multiple Hierarchical Regressions of Job Resource – Self-Development Opportunities as a Buffer of Links Between Job Demands and Job Engagement

Step	Model	Overall Job Engagement										Dimensions of Job Engagement									
		Vigor					Dedication					Absorption									
		b	DR <sub>2</sub>	DF	b	DR <sub>2</sub>	DF	b	DR <sub>2</sub>	DF	b	DR <sub>2</sub>	DF	b	DR <sub>2</sub>	DF					
1	Self-Development Opportunities	.61***	.19	12.30**	.58***	.32***	.17	11.02**	.68***	.39***	.21	13.92**	.56***	.30***	.12	7.26**					
	Work Overload	-.11			-.15*	-.09*			-.16*	-.10*			-.03	-.10							
2	Self-Development Opportunities X Work Overload	.20**	.20	11.87**	.13	.38	.18	10.23**	.17***	.53*	.22	13.13**	.29**	.88**	.13	7.68**					
1	Self-Development Opportunities	.56**	.24	14.90**	.53***	.29***	.23	13.81**	.63***	.36***	.26	16.64**	.52***	.28***	.15	8.23**					
	Emotional Demands	-.31***			-.38***	-.22***			-.34***	-.22***			-.22***	-.13**							
2	Self-Development Opportunities X Emotional Demands	.23***	.26	14.62**	.22***	.58***	.24	13.30**	.24***	.68***	.28	16.26**	.23**	.62**	.16	8.19**					
1	Self-Development Opportunities	.59***	.22	13.09**	.56***	.31***	.20	11.97**	.67***	.38***	.24	14.40**	.55***	.30***	.14	7.63**					
	Home-Work Imbalance	-.19**			-.24***	-.15***			-.19**	-.13**			-.13	-.08							
2	Self-Development Opportunities X Home-Work Imbalance	.24**	.23	13.05**	.19*	.52*	.21	11.46	.21***	.61***	.25	13.97**	.30***	.82***	.16	8.22**					

\*p < .05, \*\*p < .01, \*\*\*p < .001, n=481  
 Note: The variables of demographic control (age, gender, marital status) and the job characteristics (years as a nurse, years in the current position, work schedule, anticipation of work changes, medical leaves of absence, total leaves of absence in the last two years) were controlled in a previous stage.

Social support from colleagues and a high quality relationship with the supervisor were shown to buffer the impact of work overload, emotional demands on job engagement. These results are supported by previous published research that called attention to the fact that nurses believe that social support from colleagues and supervisors may diminish the influence of challenging situations in the workplace (Harter et al., 2002; Schaufeli & Bakker, 2004; Tourangeau & Cranley, 2006). Moreover, lack of social support can influence the level of productivity and performance in nurses (Dolan et al, 1992a). Social support involves emotional, caring, informational, and instrumental support derived from colleagues or supervisors (House, 1981). Therefore, some authors argue that social support may 1) facilitate and provide nurses' valuable job information and feedback from supervisors and colleagues, 2) provide emotional support in difficult workplace settings, and 3) reduce specific job stressors or demands such as role ambiguity and work overload (Joiner & Bartram, 2004; Schroeder & Worrall-Carters, 2002). In addition, several studies have shown that social support in nurses is linked to empowerment, autonomy, job strain, and motivation and is crucial in positively influencing coping and well-being (for review, see Nolan and Smojkis, 2003; Shirey, 2004). Nurses, in fact, show a growing tendency to seek support from people in their workplaces as they try to cope with difficult job challenges and maintain their job engagement (e.g., Bakker et al., 2011; Le Blanc et al., 2010; Hakanen et al., 2006; Mauno et al, 2007; Richardsen et al., 2006).

Job autonomy was also shown to have a buffering effect, boosting job engagement in the face of work overload and emotional demands. This finding is consistent with previous published research. The latter, show that high levels of autonomy in the workplace facilitate the accessibility of resources and greatly help employees cope with job demands (Leana, Appelbaum & Shevchuk, 2009; Petrou, Demerouti, Peeters, Schaufeli & Hetland, 2012). Autonomy, thus, is a potential buffer, and is clearly consistent with the proposed conceptual model. It predicts effective nursing care and improves decision making capacity for nurses (e.g., Chen & Johantgen, 2010). Furthermore, having understood autonomy as a positive force in itself, it should be viewed as an intrinsic motivational factor and job resource by nurses in daily practice (e.g., Manion, 2009; Zangaro & Soeken 2007).

Finally, self-development opportunities were also shown to play a key role in the development of job

engagement as it moderates the impact of job demands. A support for the interaction effect of self-development opportunities can be found also in previous studies which conclude that job resources is part of the motivational process that underlies the JD-R model. Such resources stimulate personal growth, learning, and development; they also reduce costs associated with physiological (quantitative demands) and psychological (qualitative demands, such as emotional demands) and tend to increase nurses' job engagement proportionally (e.g., De Braine & Gert, 2011; Giallonardo et al., 2010). It is important to emphasize that the job resources social support, autonomy, and self-development opportunities were found to affect and buffer the relationship between the three job demands work overload, emotional demands, and home-work imbalance and the job engagement dimensions of dedication and absorption, although interestingly, the same does not happen with vigor.

A possible explanation for why vigor is not associated with such linkage is that although job resources are expected to be an important predictive tools for job engagement, some specific job demands inevitably diminish the vigor of the employee (Halbesleben & Buckley, 2004). Some authors have argued that the vigor felt by employees in their workplace may be a proxy for the availability of such resources as autonomy. One may argue that perhaps the links between the resources and the displayed vigor are of a bidirectional nature; as a consequence, working in an organization that does not facilitate access to resources and that simultaneously has high demands may result in employees performing their tasks with less vigor (Salanova, Agut & Peiro 2005).

All in all, the findings confirm our proposed hypotheses. We should bear in mind that the motivational nature of job resources has been well supported by the Conservation of Resources theory (COR, Hobfoll, 2002), which confirms the positive effect on job engagement. Access to more job resources such as social support and opportunities promotes the learning of new skills and generates greater job engagement (Nerstad et al., 2010; Smith & Konzack, 2012; Schaufeli et al., 2008; Tims et al., 2013; Ten Brummelhuis & Bakker, 2012). In addition, the job characteristics theory (Hackman & Oldham, 1980) and research conducted in other fields (Billings et al., 2000; Seers et al., 1983), have confirmed that job resources are directly associated with the creation, maintenance, and accumulation of resources. This vision includes job resources as functional aspects of job organization for the achievement and accomplishment of job goals; they also reveal their

potential for reducing perceived job demands, along with their physiological and psychological costs (Demerouti, et al., 2001; Schaufeli & Bakker, 2004). Second, the role of job resources as a buffer that affects the relationship between job demand and job engagement has given additional support to the proposition that job resources play an important role in developing motivation processes in particular under conditions of higher job demands. This, in turn, leads to increasing job engagement. (e.g., Demerouti and Bakker, 2011; Salanova et al., 2005). In conclusion, the findings of the present study clearly shows the utility of the expanded JD-R model to the nursing community and suggest that the right job resources can help buffer the impact of demanding working condition on job engagement.

**Limitations of the study and possible implications for future research**

The results found herein have some limitations. The data utilized in the current study was collected by means of a self-reported questionnaire, and naturally can be subject to some common method variance biases (Crompton & Wagner, 1994). Attempt was made to reduce this bias by utilizing classic procedures, such as those suggested by Podsakoff et al (2003), who noted that protecting the anonymity of the surveyed party could reduce the wariness associated with answering questions. Furthermore, the participants were assured that there were no “correct” or “incorrect” answers, and they were asked to answer as honestly as possible. In addition, a Harman’s single-factor test was conducted and the results showed that common method variance can not be considered a serious deficiency in the dataset of this study (Podsakoff et al., 2003).

Nevertheless, even taking into account that the workplace perceptions of the employees are an important source of information, these perceptions do not necessarily reflect objective reality. As a consequence, future research should attempt to collect data from multiple sources with the objective of ensuring that the obtained results are not just the results of shared variant methods.

The cross-sectional nature of this research is another important limitation as it implies the impossibility of affirming the causality of interactions between job demands and resources and job engagement. Nonetheless the findings of the study herein are consistent with two important conceptual theories, the JD-R model (Bakker et al., 2003; Demerouti et al., 2001), and the

COR theory (Hobfoll, 1989, 2002). These longitudinal and experimental studies provide definitive conclusions about the causal effect on job engagement and expand on how social interchange can be attributed to these links.

A third substantial limitation is that this research was conducted in only one country in Latin America, Uruguay. Nevertheless, conclusions based on meta-analyses involving the communities of nurses, suggest similar patterns (e.g., Zangaro & Soeken, 2007). It would naturally be important to replicate and compare the results reported in this study with those of other countries, focusing on different job spaces and different types of nurses, with the aim of generalizing the results to nursing communities in other countries.

In addition, the sizes of the effect of the interactions must be taken into account, even though evidence of 92% significant interaction effects were demonstrated. However, it should be noted that the effects of the interactions were usually small. The results herein are confirmed by other scholars who argue that it is usually difficult to track the effects of significant interactions, especially in non-experimental studies (e.g., Frazier et al., 2004).

Finally, this study is limited by the present status of and recent innovative theory-guided studies on the JD-R model. Recent trends in the JD-R model offer a promising direction and new emphasis for future research. In this regard, some call for the inclusion of other motivational variables such as personal resources and organizational and cultural characteristics. In addition, some scholars offer a challenging view of job demands and suggest integrating multilevel constructs in the JD-R model (see Demerouti & Bakker, 2011; Moodie et al., 2014, in press). Further research that considers these aspects of the nursing community will provide a more comprehensive understanding of the job engagement of nurses. Despite limitations, some practical implications may be proposed, especially where it seems to demonstrate the buffering role played by job resources in the relationship between job demands and job engagement. This research adds an important contribution to the concept of interaction. It allows the recognition of the existence of a combination within work conditions that promotes job engagement in general and in nurses in particular.

### Practical implications

It is possible to derive two main practical implications from this study. First, the health care sector should try to provide adequate and effective job resources to the nursing community. Second, healthcare facilities should reduce job demands, thus promoting nurses' job engagement (e.g., Bakker et al., 2005). Along the same lines, it is important to recognize that social support of colleagues and supervisors and opportunities to learn and develop new skills in the workplace are resources that buffer the emotional demands and work overload, and that doing so can increase job engagement.

This implies that experiencing work as existentially meaningful, being able to express one's fundamental values through one's work (job engagement), being able to perceive cooperation and the possibility of dialogue with supervisors during difficult situations (social support), and feeling that there is a common goal within the organization focused on the well-being of patients are of decisive importance for nursing professionals, allowing them to work more effectively. The practical implications for health care organizations include first, the development of procedures and structural processes that stimulate mutual support among supervisors and peers such as 360 work-values evaluations with criteria from both supervisors and peers. Second, it would be beneficial to facilitate constructive feedback training sessions with the objective of seeking the construction of social supports for the nursing team and specific courses that will increase specific skills and autonomy in nursing professionals.

### Conclusions

Given the importance of identifying the factors that contribute to sustaining positive job engagement, these results contribute to our understanding of the Job Demands-Resources model (Demerouti et al., 2001). The results show how critical is the interaction between job demands and job resources linked to job engagement in nurses. Researchers should be encouraged to continue use this refined model with the objective of gaining a broader understanding of the impact of work conditions in healthcare facilities, and their results at the organizational level. In addition, these results clarify how organizations and the direction of nursing professionals could create a working environment that promotes job engagement. Finally, the creation of job environments that allow job engagement in nurses is a central point for the

nursing profession, for the safety of the patient, and economically important for all nations.

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