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Original Article

Buffering Effect of Job Resources in the Relationship between Job Demands and Work-to-Private-Life Interference: A Study among Health-Care Workers

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ABSTRACT

Background: The present study aims at investigating whether and how (1) job demands and job resources are associated with work-to-private-life interference (WLI) and (2) job resources moderate the relationship between job demands and WLI.
Methods: Data were collected by a self-report questionnaire from three hospitals in Italy. The sample consisted of 889 health-care workers.
Results: All job demands (i.e., quantitative demands, disproportionate patient expectations, and verbal aggression) and job resources (i.e., job autonomy, support from superiors and colleagues, fairness, and organizational support), with the exception of skill discretion, were related to WLI. The effects of quantitative demands on WLI were moderated by support from superiors; fairness and organizational support moderate the effects of all job demands considered. Support from colleagues moderated only verbal aggression. Job autonomy did not buffer any job demands.
Conclusion: The present study suggests that the work context has a central importance in relation to the experience of WLI among health-care workers. The results indicated that intervention in the work context may help to contain WLI. Such interventions would especially be aimed at improving the social climate within the unit and quality of the organizational process.
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1. Introduction

For workers in the health-care sector, work interference with private life has particularly been recognized as a critical issue. Grzywacz et al [1], in a representative sample of 1,538 nurses, found that 91.8% experienced at least episodic work-to-private-life interference (WLI) and that about half reported chronic exposure. Reasons for these can be attributed to a number of factors. Health-care professions are stressful and the high job demands to which these workers are subjected may lead to both time- and strain-based work interference with private life [2,3]. In particular, the shortage of resources that the health sector is experiencing and the increased proportion of elderly in the population have caused more quantitative demands on workers, in terms of both hectic pace and the average of hours worked [4]. Most workers in the health-care sector also work irregular hours and on night shifts [5]. Moreover, the constant involvement in highly emotional, demanding relationships with care recipients, as well as the increased number of episodes of client-initiated violence [6], especially of verbal type, can cause a negative feeling that arises in the workplace to spill over into the private domain [7].

Despite a considerable number of studies focused on the relationship between job demands and WLI, only a few of them, especially in the health-care sector, were aimed at investigating whether any resources, especially of the work domain, are capable of moderating this relationship. The present study is intended to go in this direction by investigating whether and how (1) job demands and job resources are associated with WLI and (2) job resources moderate the relationship between job demands and WLI.

1.1. Theoretical background

Negative WLI can be defined as a process in which a worker's functioning (behavior) in the private domain is influenced by load

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reactions that have been built up in the work domain [8]. WLI is a form of strain particularly caused by work-related stressors [8]. According to the effort-recovery model [9], job demands require mobilization of energy by workers. As a result, when job demands are too high, negative load reactions can arise and spill over into the private domain. According to the effort-recovery model [9], this may due to the fact that the recovery is not adequate from a quantitative and a qualitative point of view; therefore, workers will not have the opportunity to reacquire the energy lost. Although daily work usually involves loads that are not necessarily harmful, conditions of chronic job demands may make the loads excessive, causing WLI.

However, work environments offer many resources that may help workers cope with job demands, increasing the likelihood of successfully accomplishing the job and limiting consumption of energy, and, as a consequence of that, a negative spillover from work to home.

The idea that job demands may lead to the development of WLI and that job resources may act to reduce work interference with private life by buffering the detrimental effects of job demands are drawn from two principles of the job demand–resource model (JD-R) [10,11]. The first, the *health impairment hypothesis*, assumes that chronic job demands deplete the mental and physical resources of workers, leading to decreased worker well-being. The second, the *buffering assumption*, assumes that job resources buffer the impact of job demands on worker health and well-being. This second principle is also consistent with one of the basic principles of the conservation of resources theory [12], which states that those with greater resources are less vulnerable to resource loss and more capable of orchestrating resource gain; conversely, those with fewer resources are more vulnerable to resource loss and less capable of resource gain.

According to the JD-R model [10,11], job demands refer to those physical, psychosocial, or organizational aspects of the job that require sustained physical and/or mental effort, and are, therefore, associated with certain physiological and/or psychological costs [10,11]. By contrast, job resources refer to those physical, psychological, social, and organizational aspects that help achieve work goals, and reduce job demands and associated physiological and psychological costs [10,11].

1.2. Job demands and WLI

Most studies that highlighted a strong and positive relationship between job demands and WLI in the health-care sector focused on quantitative demands [13,14]. Few studies analyzed the relationship between the negative interaction with recipients and WLI [7,15]. Nevertheless, it is plausible that the exposure to disproportionate expectations as well as verbal aggression from patients lead to the development of a negative feeling in the worker (in terms of arousal activation, irritation, and fatigue) that can also overwhelm the private life domain.

According to Dormann and Zapf [16], disproportionate expectations refer to patients' or relatives' attitudes and behaviors demanding what is considered unreasonable and unacceptable from the service providers' points of view. Verbal aggression can be defined as a form of direct psychological aggression, such as yelling at the service provider or making sarcastic or offensive remarks [16,17].

Health-care workers are required to deal with a variety of job demands, especially those of quantitative and social natures. The present study takes these demands into account. Quantitative demands refer to work overload or work pressure, or how fast workers are required to carry out their jobs. Social demands mostly refer to the negative interaction with patients and their relatives, and can include aggressive behavior [17] or disproportionate expectations [16] from care recipients.

1.3. Direct and buffering effects of job resources on WLI

As regards job resources, the present study took into consideration two characteristics of the task level, i.e., skill discretion and job autonomy; two of the social level, i.e., support from superiors and colleagues; and two of the organizational level, i.e., fairness and organizational support.

Job control is considered an essential resource for dealing with job demands at the task level. According to Karasek [18], job control refers to the extent to which workers are capable of controlling their tasks and general work activities. More specifically, job control is subdivided into two major aspects: skill discretion and decision authority. Skill discretion refers to a person's opportunity to use specific job skills in the work process. By contrast, decision authority refers to the extent to which a person is autonomous in task-related decisions, such as timing and method control. According to the effort-recovery model [9] and conservation of resources theory [12], having decision latitude on the organization of the job may reduce WLI. There is empirical evidence both for [8] and against [14] the direct association between WLI and, respectively, skill discretion and job autonomy. Conversely, no studies have been focused on the role of job control in moderating the relationship between job demands and WLI.

Karasek and Theorell [19] defined social support at work as "overall levels of helpful social interaction available on the job from co-workers and supervisors" (p. 69). Both kinds of supports have been found to be negatively associated with WLI [20–23]. In particular, several studies have highlighted the key role of support from supervisors in reducing the negative spillover from the work domain into the private domain. Among these, Yildirim and Aycan [24] also tested the moderating effect of support from supervisors on the relationship between job demands and work–family conflict, finding no support for this hypothesis.

At the organizational level, fairness and organizational support have been considered central dimensions concerning the topic of employee well-being. Fairness can be defined as the extent to which an organization has consistent and equitable rules for all employees. Organizational support refers to the degree to which the organization values worker's contributions and cares about worker's well-being [25]. Several studies highlight the negative association between WLI and support from organization [20,26]. Some studies have also documented the negative relationship between fairness and WLI, as well as the mediating role of WLI between these two organizational resources and workers' health, such as emotional exhaustion and job satisfaction [27,28]. In contrast, no studies have investigated the role of these two resources in moderating the relationship between job demand and WLI.

2. Materials and methods

2.1. Data collection and participants

Data were collected during a multicenter intervention -research conducted in three hospitals in Northwestern Italy in 2013, by means of a self-reported questionnaire. Each hospital administration evaluated, endorsed, and authorized the research, allowing researchers to use the data for scientific purposes. Upon approval, department chiefs and nurse coordinators from each ward were asked for authorization to administer the questionnaire to the nurses. The questionnaires were distributed during work hours in each ward by some members of the research group of the Department of Psychology (University of Turin). The cover sheet clearly explained the research aim, voluntary nature of participation, anonymity of the data, and elaboration of the findings. After questionnaire completion, respondents were asked to close the

questionnaire in an envelope and mail it in a box set by the research group in each ward. Participants volunteered for the research and were not asked to sign consent forms because the return of the questionnaire implied the consent.

The research conforms to the provisions of the Declaration of Helsinki in 1964 (and following updates), and all ethical guidelines were followed as required for conducting human research, including adherence to the legal requirements of the study country (Italy).

In all, 1,248 (Hospital 1: 48%; Hospital 2: 22%; and Hospital 3: 30%) questionnaires were distributed and 948 (Hospital 1: 49%; Hospital 2: 23%; and Hospital 3: 28%) were returned to the research group. After data cleaning, the dataset consisted of 889 health-care workers (Hospital 1: 48%; Hospital 2: 21%; and Hospital 3: 31%) employed in emergency (42.10%) and medical (57.90%) units; 23.3% were physicians and 76.7% nurses. The average job seniority in the health-care sector was 14.34 years (SD = 9.19) and ranged from 1 month to 39 years. More than half of them (57%) work on the night shift.

The majority were women (73.7%, $n = 655$) with the age ranging from 21 years to 62 years ($m = 39.18$, SD = 9.28); 38.6% were married or lived with a partner, 43.3% had a child under 16 years, and 18.6% had care duties toward elderly parents.

Sociodemographic and professional data are listed in Table 1.

2.2. Measures

The data were obtained by a self-reported questionnaire including two sections. The first was dedicated to collecting sociodemographic and professional data. The second section included scales aimed at measuring job demands, job resources, and WLI.

2.2.1. Job demands

With reference to job-related demands, two subscales adapted from the questionnaire Customer-Related Social Stressors [16] were included. The first, called "disproportionate patient expectations," contains eight items (e.g., "Our patients' demands are often exorbitant"), whereas the second "patient verbal aggression" contains four items (e.g., "Patients get angry at us even over minor matters"). To measure quantitative demands, a subscale of the Job Content Questionnaire (JCQ) [29], containing five items (e.g., "I am asked to do an excessive amount of work"), was employed.

Table 1
Sociodemographic and professional data

	Health-care workers ($n = 889$)	
	n	%
Gender		
Female	655	73.7
Male	228	25.6
Age (y)		
≤ 39	399	44.9
> 40	490	55.1
Marital status		
Married/living with partner	343	38.6
Unmarried/divorced/widowed	539	60.6
Kids under 16 y		
Yes	380	43.3
No	497	56.7
Elderly parents needing care		
Yes	165	18.6
No	670	75.4
Profession		
Physicians	207	23.3
Nurses	770	76.7
Night shift		
Yes	507	57
No	382	43
Ward		
Emergency	436	49
Medicine	453	51
Y in the health sector		
≤ 15	511	57.5
> 16	378	42.5

2.2.2. Job resources

As regards job resources, three categories of factors were considered: job content, social level, and organizational level. At the job content level, three subscales were included. Skill discretion (5 items, $\alpha = 0.61$, e.g., "My job requires that I learn new things") and job autonomy (3 items, $\alpha = 0.82$, e.g., "My job allows me to make a lot of decisions on my own") were drawn from JCQ [29]. To measure social resources, two subscales of the JCQ [29] were employed. They investigate support from superiors (5 items, e.g., "My supervisor is helpful in getting the job done") and colleagues (6 items, e.g., "People I work with are helpful in getting the job done"). Three organizational resources were included in the questionnaire. Fairness from the Organizational Checkup System [30] comprises six items (e.g., "In my organization, job resources are equally distributed"). Organizational support is a scale included in a recent revision of the JCQ [29], containing four items (e.g., "My organization really cares about my well-being").

2.2.3. Negative WLI

WLI was measured by a scale from the Survey Work Home Interaction NijmeGen [8] that contained eight items (e.g., "I'm irritable at home because my work is demanding").

Responses on all the abovementioned subscales were given on a four-point Likert scale ranging between 1 ("strongly disagree") and 4 ("strongly agree"). As shown in Table 2, all scales reported a satisfactory internal consistency since Cronbach α values were never lower than 0.66.

2.2.4. Control variables

The literature recognizes gender, age, job seniority, marital status, and type of occupation as potential confounders for WLI [31,32]. In addition, some studies in the work–life-balance field highlighted that, especially in the case of women, home demands such as parental care or childcare may favor this form of negative spillover [13,31]. Finally, several studies carried out in the health sector suggested that also night shift [5] and type of unit (i.e., emergency vs. medicine [33,34]) may affect worker well-being. Therefore, in the present study, all the abovementioned variables were taken into account as potential confounders.

2.3. Data analyses

All the analyses were performed using SPSS 21.

The relationship between control variables and WLI was explored by means of the analyses of variance. In view of that, continuous variables were dichotomized using the mean as the cutoff (i.e., age and job seniority).

Associations between variables under study were examined by calculating Pearson r for each pair of scales.

To examine the main effect of various job demands and job resources as well as their interaction effects on WLI, moderated hierarchical regression analyses were employed. All possible combinations of job demands and job resources were tested. For each moderated hierarchical regression, predictor variables were entered within three successive steps. In the first step, demographic (i.e., gender, age, marital status, age of the youngest child, and duties toward elderly parents) and professional (i.e.,

Table 2
Internal consistency, descriptive statistics, and correlations of the subscales used in the study

	α	M (SD)	Min–max	1	2	3	4	5	6	7	8	9	10
(1) Quantitative demands	0.70 (5)	14.35 (2.6)	6–20	1									
(2) Disproportionate patient expectations	0.91 (8)	19.14 (5.01)	8–32	0.37*	1								
(3) Patients' verbal aggression	0.92 (4)	7.43 (2.9)	4–16	0.28*	0.76*	1							
(4) Decision authority	0.69 (3)	8.25 (1.7)	3–12	−0.14*	−0.11*	−0.13*	1						
(5) Skill discretion	0.66 (6)	18.61 (2.6)	7–23	−0.16*	−0.01	−0.08†	0.40*	1					
(6) Support from supervisor	0.82 (5)	14.16 (3.0)	5–20	−0.20*	−0.12*	−0.12*	0.35*	0.17*	1				
(7) Support from colleagues	0.82 (6)	18.57 (2.9)	7–24	−0.15*	−0.17*	−0.24*	0.29*	0.24*	0.37*	1			
(8) Fairness	0.69 (6)	14.38 (3.1)	6–23	−0.25*	−0.16*	−0.16*	0.29*	0.13*	0.40*	0.34*	1		
(9) Support from organization	0.79 (4)	10.14 (2.4)	4–16	−0.25*	−0.21*	−0.19*	0.42*	0.16*	0.50*	0.30*	0.60*	1	
(10) Negative work-to-life interference	0.88 (8)	15.41 (4.5)	8–32	0.49*	0.41*	0.35*	−0.22*	−0.02	−0.25*	−0.30*	−0.25*	−0.30*	1

* $p < 0.001$.
† $p < 0.05$.

Table 3
Moderated hierarchical regressions to measure main and interaction effects of quantitative demand and job resources on work-to-private-life interference among health-care workers

		M1_JR Job autonomy		M2_JR Support from superiors		M3_JR Support from colleagues		M4_JR Fairness		M5_JR Organizational support	
Step		β	t	β	t	β	t	β	t	β	t
1	Gender (1 = female)	0.05	1.51	0.046	1.29	0.07*	2.09*	0.06	1.71	0.044	1.23
	Age (1 = > 40 y)	−0.03	−0.83	−0.021	−0.50	−0.03	−0.65	−0.04	−1.04	−0.03	−0.65
	Married (1)	0.00	0.084	0.014	0.35	0.01	0.16	0.00	0.04	−0.02	−0.41
	Child < 16 y (1)	0.05	1.12	0.031	0.74	0.04	1.01	0.04	0.94	0.04	1.07
	Elderly parents (1)	0.09†	2.60†	−0.08*	2.35*	0.07*	2.22*	0.10*	2.94*	0.08*	2.27*
	Profession (1 = physicians)	0.12†	3.24†	0.12†	3.09†	0.15‡	4.10‡	0.14†	3.42†	0.13†	3.38†
	Type of unit (1 = emergency)	−0.01	−0.38	−0.02	−0.655	−0.045	−1.275	−0.046	−1.239	−0.03	−0.90
	Year health sector (1 = > 15)	−0.00	−0.07	−0.02	−0.62	0.01	0.24	−0.02	−0.49	−0.02	−0.57
	Night shift (1 = yes)	0.13†	3.50†	0.15‡	3.98‡	0.16‡	4.22‡	0.16‡	4.16‡	0.16‡	4.11‡
2	Quantitative demand	0.45‡	12.73‡	0.45‡	12.35‡	0.36‡	11.26‡	0.433‡	11.63‡	0.34‡	10.40‡
	Job resource	−0.19‡	−5.6‡	−0.18‡	−5.06‡	−0.24‡	−7.65‡	−0.14‡	−3.78‡	−0.23‡	−7.18‡
3	Quantitative demands × job resource	−0.036	−1.06	−0.07*	−2.09*	−0.03	−1.04	−0.11†	−3.09†	−0.11†	−3.37†
2 vs. 1	ΔR^2	0.269‡		0.265‡		0.34‡		0.24‡		0.25‡	
3 vs. 2	ΔR^2	0.001		0.005*		0.001		0.01†		0.01†	
R^2		0.332‡		0.331‡		0.354‡		0.325‡		0.33‡	

* $0.011 \geq p \geq 0.05$.
† $0.001 \geq p \geq 0.01$.
‡ $p < 0.001$.

occupation and unit type, job seniority, and shift) variables were entered as control variables. In the second step, standardized index of job demands (e.g., quantitative demands) and job resources (e.g., skill discretion) were entered. In the third step, the interaction term, which is the product of job demands and job resources, was entered. In cases in which the interaction term showed a significant value, the simple slope procedure recommended by Aiken and West [35] was adopted to further examine the pattern of the relationship.

The risk of multicollinearity between independent variables was controlled by standardizing all indexes. Analyses indicated that there were no signs of multicollinearity in any of the models considered. For each independent variable, the tolerance index (1/variance inflation factor (VIF)) was never lower than 0.90 (cutoff < 0.20) [36].

3. Results

3.1. Preliminary analyses

According to the analyses of variance, gender, age, marital status, having a child aged < 16 years, job seniority, and the type of ward did not predict any difference in WLI scores. However, physicians were more prone to experience WLI than nurses ($F = 12.40$, $p < 0.001$; $m_{\text{physicians}} = 16.38$, $m_{\text{nurses}} = 15.11$). Workers who take care of elderly relatives ($F = 18.27$, $p < 0.001$; $m_{\text{elderly}} = 16.77$, $m_{\text{no_elderly}} = 15.09$) showed significantly higher scores on the WLI subscale compared with those who did not. Likewise, night shift workers showed significantly higher scores compared with those who did not work nights ($F = 7.07$, $p = 0.008$; $m_{\text{nightshift}} = 15.76$, $m_{\text{no_nightshift}} = 14.94$).

Table 2 shows the correlations among subscales. Looking at the correlations among job demands and job resources, the strongest was between disproportionate expectations and verbal aggression ($r = 0.76$), followed by support from organization and fairness ($r = 0.60$). Correlation between disproportionate patient expectations and skill discretion was not significant. As regards the correlations involving WLI, the strongest was with quantitative demands ($r = 0.49$), whereas the weakest was with skill discretion, which was not found to be significant. Based on these results, skill discretion was excluded from subsequent analyses.

3.2. Moderated regression analyses

Tables 3–5 show the results of moderated hierarchical regressions.

Table 3 presents models in which quantitative demand was entered as an independent variable. In each model reported, a different job resource was considered. In the third step, all the models reported significant R^2 and showed a variance ranging from 32% (Model 3 job resource (JR): support from colleagues) to 35%

(Model 4 JR: fairness). Concerning control variables, results indicated that age, marital status, children, job seniority, and the type of unit were not significantly associated with the outcome in any of the models considered. Females were found to be significantly more exposed to WLI than men only in the third model (Model 3 JR: support from colleagues). All models indicated that physicians, night shift workers, and workers who take care of elderly parents are more prone to experience WLI. Quantitative demands were found to be significant in all models and its β coefficients ranged from 0.34 (Model 1 JR: support from organization) to 0.45 (Model 4 JR: job autonomy). All the resources considered showed a significant and direct effect on WLI. The smallest β coefficient was found for fairness (0.13) and the largest for support from colleagues (0.24). The interaction effect between quantitative demands and job resources was found to be significant in Models 2, 4 and 5, indicating that support from supervisors ($\beta = -0.07$), fairness ($\beta = -0.11$), and organizational support ($\beta = -0.11$) moderated the effect of quantitative demands on WLI. Figs. 1–3 report the representation of the significant interactions. The lowest value of WLI was reported by workers who perceive a low level of quantitative demands and a high level of fairness and organizational support. On the contrary, the highest levels of WLI were reported among those who had high quantitative demands and job resources.

Slope test analyses were performed in order to further examine the direction of the effect of job resources on the relationship between quantitative demands and WLI, in those cases in which the interaction term was found to be significant. In all these cases, the simple slope analysis showed that when job resources were high (+1 standard deviation, SD), quantitative demands were positively and significantly related to WLI. However, when the job resources were low (−1 SD), the relationship was stronger. In particular, for support from superiors, the slope at +1 SD showed a β value of 1.74 ($t = 7.52$, $p < 0.001$), whereas at −1 SD, the β value reached 2.36 ($t = 11.02$, $p < 0.001$). Similarly, the association between quantitative demands and WLI was weaker when fairness was high ($\beta = 1.52$, $t = 16.57$, $p < 0.001$), rather than when fairness was low ($\beta = 2.52$, $t = 35.69$, $p < 0.001$). Finally, regarding organizational support, the value of β at −1 SD was equal to 2.41 ($t = 11.66$, $p < 0.001$), whereas at +1 SD, β was equal to 1.43 ($t = 6.36$, $p < 0.001$). Therefore, slope tests further supported that these resources moderated the effect of quantitative demands in increasing WLI.

Table 4 shows the models in which disproportionate expectation was entered as independent variable together with each job resource. Overall, the lowest R^2 was reported by Model 5 (JR: support from organization) at 0.23, whereas the highest was reported by Model 4 (JR: fairness) at 0.28. Within control variables, type of profession, night shift, and providing care to elderly parents showed significant values in all models considered. Gender was found to be significant in two of the seven models tested (Models 1 and 3), indicating that females are more prone than males to experience WLI. Disproportionate expectations were significant in all models considered, and β coefficients ranged from 0.34 to 0.39. All resources were also found to be significantly associated with the outcome ($-0.17 \geq \beta \leq -0.24$). In the third step, entering interaction term produced a significant incremental change of R^2 for support from superiors ($\Delta R^2 = 0.01$), fairness ($\Delta R^2 = 0.01$), and organizational support ($\Delta R^2 = 0.01$).

In all these cases, the simple slope analysis showed that when job resources were high (+1 SD), disproportionate expectations were positively and significantly related to WLI (see Figs. 4–6). However, when the job resources were low (−1 SD), the relationship was stronger. Specifically, as regards support from superiors, the slope at +1 SD showed a β value of 1.39 ($t = 6.95$, $p < 0.001$), whereas at −1 SD, the β value was equal to 1.93 ($t = 10.82$, $p < 0.001$). Likewise, the association between disproportionate expectations and WLI was weaker when fairness was high ($\beta = 1.40$, $t = 5.76$, $p < 0.001$), rather than when fairness was low ($\beta = 2.13$, $t = 9.86$, $p < 0.001$). Finally, regarding organizational support, the value of β at −1 SD was equal to 1.98 ($t = 10.61$, $p < 0.001$), whereas at +1 SD, β was equal to 1.10 ($t = 5.32$, $p < 0.001$). Therefore, also in this case, the slope tests further supported that support from superiors, fairness, and organizational support moderate the negative effect of disproportionate expectations on WLI.

Table 5 shows the results of moderated hierarchical regressions in which verbal aggression was entered as a job demand. In the third step, all models showed significant R^2 (ranging

Table 4
Moderated hierarchical regressions to measure main and interaction effects of disproportionate patient expectations and job resources on work-to-private-life interference among health-care workers

		M1_JR Job autonomy		M2_JR Support from superiors		M3_JR Support from colleagues		M4_JR Fairness		M5_JR Organizational support	
Step		β	t	β	t	β	t	β	t	β	t
1	Gender (1 = female)	0.07*	2.18*	0.063	1.89*	0.08*	2.37*	0.07	1.74	0.06	1.74
	Age (1 = > 40 y)	−0.03	−0.81	−0.01	−0.15	−0.02	−0.49	−0.04	−1.06	−0.02	−0.52
	Married (1)	−0.00	−0.09	0.01	0.26	−0.00	−0.05	0.02	0.44	−0.01	−0.31
	Child < 16 y (1)	0.05	1.21	0.02	0.40	0.03	0.66	0.04	0.87	0.02	0.48
	Elderly parents (1)	0.10*	3.17*	0.08†	2.64†	0.08*	2.60*	0.09†	2.54†	0.08†	2.73†
	Profession (1 = physicians)	0.16‡	4.65‡	0.16‡	4.66‡	0.18‡	5.03‡	0.15‡	3.89‡	0.17‡	4.73‡
	Type of unit (1 = emergency)	0.07*	2.16*	0.05	1.59	0.05	1.57	0.05	1.35	0.05	1.50
	Year health sector (1 = > 15)	0.02	0.54	0.00	0.038	0.022	0.596	−0.011	−0.267	0.01	0.17
	Night shift (1 = yes)	0.05	1.47	0.07*	2.03*	0.07*	1.99*	0.10†	2.55†	0.08	2.35
2	Dispr. Exp.	0.39‡	12.16‡	0.37‡	11.49‡	0.36‡	11.26‡	0.38‡	10.26‡	0.34‡	10.40‡
	Job resource	−0.22‡	−6.97‡	−0.23‡	−7.14‡	−0.24‡	−7.65‡	−0.16‡	−4.56‡	−0.23‡	−7.18‡
3	Dispr. Exp. × job resource	−0.05	−1.61	−0.07*	−2.23*	−0.033	−1.05	−0.09†	−2.45†	−0.11†	−3.37†
2 vs. 1	ΔR^2	0.22‡		0.22‡		0.21‡		0.21‡		0.18‡	
3 vs. 2	ΔR^2	0.00		0.01*		0.00		0.01†		0.01†	
	R^2	0.27‡		0.27‡		0.27‡		0.28‡		0.23‡	

* $0.011 \geq p \geq 0.05$.
† $0.001 \geq p \geq 0.01$.
‡ $p < 0.001$.
Dispr., disproportionate; Exp., expectations.

Table 5
Moderated hierarchical regressions to measure main and interaction effects of patients' verbal aggression and job resources on work-to-private-life interference among healthcare workers

		M1_JR Job autonomy		M2_JR Support from superiors		M3_JR Support from colleagues		M4_JR fairness		M5_JR Organizational support	
Step		β	t	β	t	β	t	β	t	β	t
1	Gender (1 = female)	0.05*	1.46*	0.05	1.40	0.08*	1.98*	0.05*	1.48*	0.04	1.01
	Age (1 = > 40 y)	−0.03	−0.64	−0.00	−0.08	−0.01	−0.14	−0.04	−0.91	−0.01	−0.35
	Married (1)	0.01	0.17	0.01	0.21	0.01	0.15	0.00	0.11	−0.01	−0.28
	Child < 16 y (1)	0.02	0.35	0.00	0.032	0.01	0.24	0.01	0.27	0.00	0.02
	Elderly parents (1)	0.11*	3.05*	0.09†	2.63†	0.10†	2.82†	0.11†	3.12†	0.10†	2.76†
	Profession (1 = physicians)	0.17‡	4.33‡	0.17‡	4.44‡	0.19‡	4.82‡	0.17‡	4.21‡	0.17‡	4.41‡
	Type of unit (1 = emergency)	0.04	0.96	0.04	0.98	0.01	0.25	0.01	0.23	0.01	0.32
	Year health sector (1 = > 15)	−0.02	−0.58	−0.05	−1.26	−0.02	−0.53	−0.04	−0.94	−0.05	−1.28
	Night shift (1 = yes)	0.08	1.84	0.11†	2.71†	0.10†	2.51†	0.11†	2.52†	0.11*	2.60*
2	Verbal aggression	0.32‡	8.51‡	0.29‡	7.91‡	0.27‡	7.09‡	0.29‡	7.59‡	0.26‡	6.95‡
	Job resource	−0.25‡	−6.75‡	−0.26‡	−7.11‡	−0.24‡	−6.38‡	−0.19‡	−5.07‡	−0.25‡	−6.86‡
3	Verbal aggression × job resource	−0.04	−1.17	−0.15‡	−4.08‡	−0.08*	−2.237*	−0.10†	−2.59†	−0.11†	−3.02†
2 vs. 1	ΔR^2	0.18‡		0.19‡		0.13‡		0.16‡		0.21‡	
3 vs. 2	ΔR^2	0.00		0.02*		0.01*		0.01†		0.01†	
R^2		0.24‡		0.27‡		0.18‡		0.23‡		0.27‡	

* $0.011 \geq p \geq 0.05$.
† $0.001 \geq p \geq 0.01$.
‡ $p < 0.001$.

from 18% to 27% of the variance explained). Within control variables, type of profession and night shift were significant predictors of WLI. Moreover, both verbal aggression and all the resources considered were found to be directly associated with the outcome. The interaction term was found to be significant in four of the models considered. According to the results (see also Figs. 7–10), support from superiors ($\beta = -0.14$), support from colleagues ($\beta = -0.08$), fairness ($\beta = -0.10$), and organizational support ($\beta = -0.11$) buffered the detrimental effect of verbal aggression on WLI.

Slope test indicated that for support from superiors, the association between verbal aggression and WLI was significant in both conditions; however, it was weaker at +1 SD ($\beta = 0.78$, $t = 3.22$, $p = 0.001$) than at −1 SD ($\beta = 1.92$, $t = 9.76$, $p < 0.001$). Similar results were obtained for support from colleagues (−1 SD: $\beta = 1.58$, $t = 7.57$, $p < 0.001$; +1 SD: $\beta = 0.97$, $t = 3.67$, $p < 0.001$), fairness (−1 SD: $\beta = 1.80$, $t = 8.31$, $p < 0.001$; +1 SD: $\beta = 0.15$, $t = 0.71$, $p = 0.47$), and organizational support (−1 SD: $\beta = 1.69$, $t = 8.28$, $p < 0.001$; +1 SD: $\beta = 0.79$, $t = 3.11$, $p < 0.001$). These results support the moderating role of all these job resources, in the relationship between verbal aggression and WLI.

4. Discussion

The main aim of this study is to investigate whether any job resources of the task (i.e., skill discretion and job autonomy), social (i.e., support from superiors and colleagues), and organizational (i.e., organizational support and fairness) levels buffer the effect of job demands, thus contributing to reduction of WLI.

WLI was found to be strongly associated with all three demands taken into account in the present study (i.e., quantitative demands, disproportionate expectations from patients, and verbal aggression from patients). These results confirmed the previous literature that suggests that job demands contribute to WLI by depleting the resources needed for participation in nonwork activities [2,8].

As regards job resources, the present study confirmed that they contribute to the reduction of WLI. The sole exception was skill discretion that, according to the Pearson correlation, did not show a significant relationship with WLI. Among the job resources considered, the strongest predictors were support from organization and superiors (both reach an r value equal to −0.30). These results are consistent with those from previous studies [37]. For example, Voydanoff [3] found, in a sample of salaried workers, that significant associations of WLI with autonomy and possibilities for

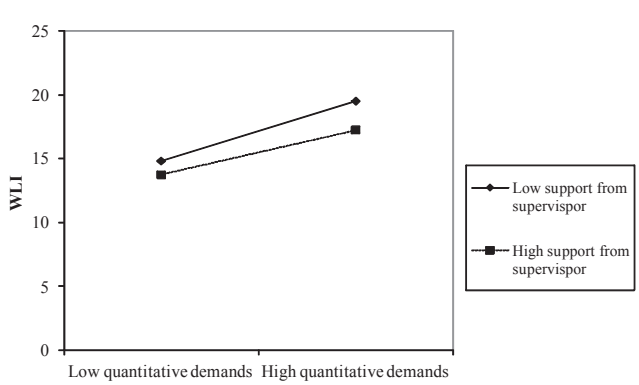

Fig. 1. Interaction effect between quantitative demands and support from supervisor on WLI. WLI, work-to-private-life interference.

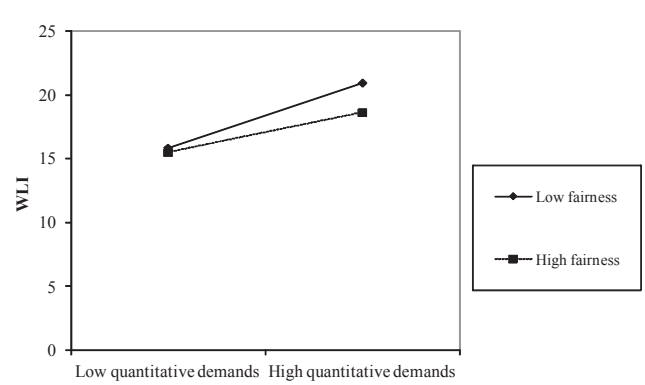

Fig. 2. Interaction effect between quantitative demands and fairness on WLI. WLI, work-to-private-life interference.

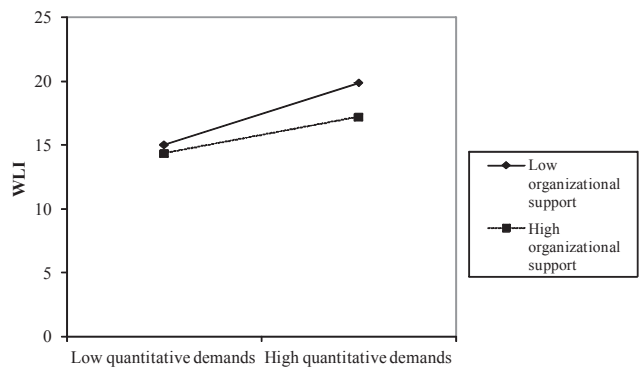

Fig. 3. Interaction effect between quantitative demands and organizational support on WLI. WLI, work-to-private-life interference.

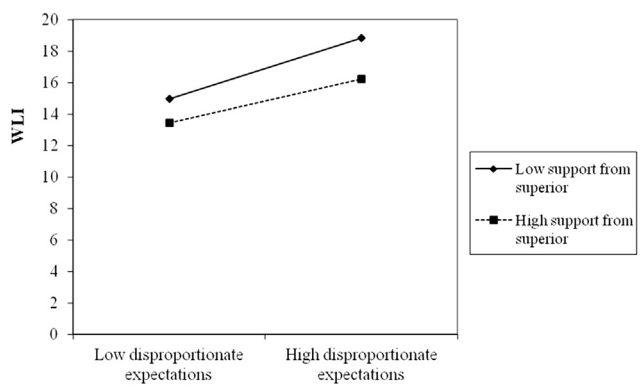

Fig. 4. Interaction effect between disproportionate expectations and support from superiors on WLI. WLI, work-to-private-life interference.

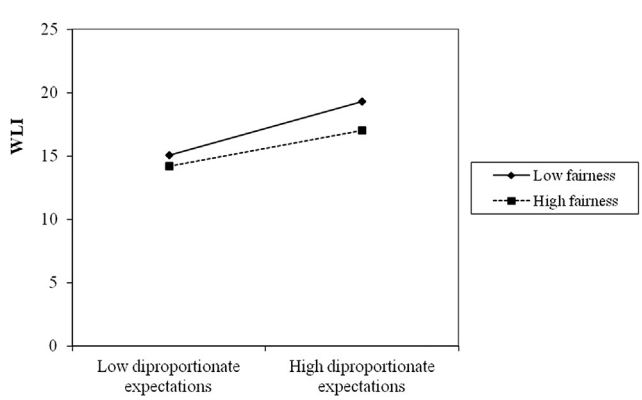

Fig. 5. Interaction effect between disproportionate expectations and fairness on WLI. WLI, work-to-private-life interference.

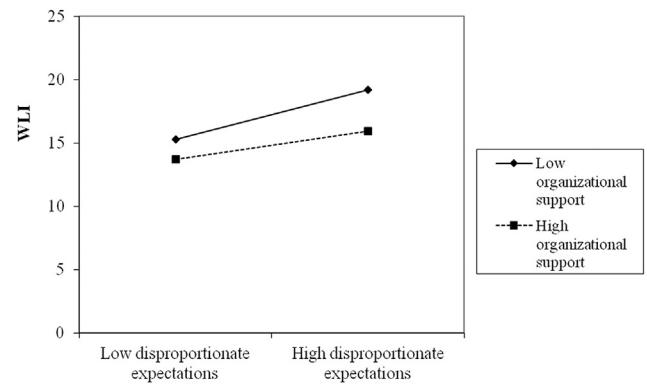

Fig. 6. Interaction effect between disproportionate expectations and organizational support on WLI. WLI, work-to-private-life interference.

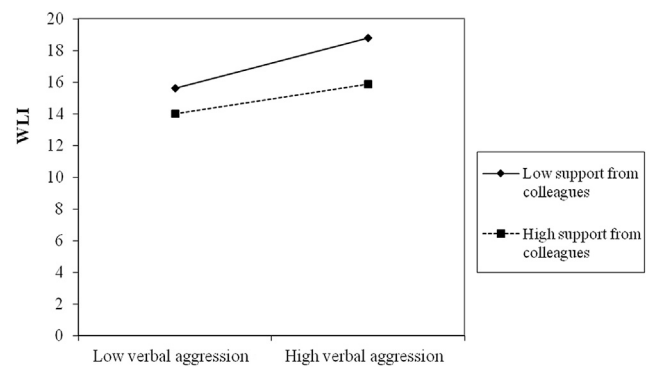

Fig. 7. Interaction effect between verbal aggression and support from colleagues on WLI. WLI, work-to-private-life interference.

learning disappear after controlling support from supervisors and supportive organizational culture.

Concerning the buffering hypothesis, at the task level, only the effect of job autonomy was tested, since skill discretion was not significantly correlated with WLI. However, according to the results, autonomy did not moderate the feelings of WLI due to any demands considered. As suggested by Geurts et al [38], the control on the working time would buffer the adverse effect of high demands on WLI, rather than the control on the task.

At the social level, support from colleagues moderated only the effect of verbal aggression from patients, but not of quantitative demands and disproportionate patient expectations. By contrast, support from supervisors moderated all three demands considered. In general, these results suggest that a positive social climate in the unit helps protect workers from a negative spillover from the work domain into the private domain. Superiors may moderate the load of job demands by being sensitive to the workers' needs related to family obligation and by encouraging them to use work–family policies included in the workers' contract and/or available in the organization. Indeed, in most units of Italian hospitals, the supervisor is responsible for approving work shift scheduling and annual leave. Concerning social stressors, in particular when aggressive behavior occurs, both supervisors and colleagues may make it possible to avoid the spillover of the negative feeling into the

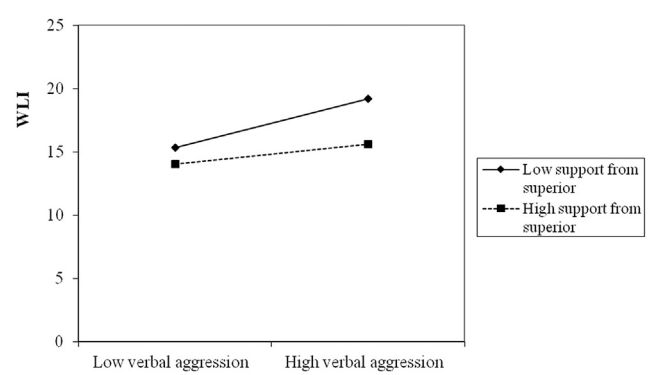

Fig. 8. Interaction effect between verbal aggression and support from superiors on WLI. WLI, work-to-private-life interference.

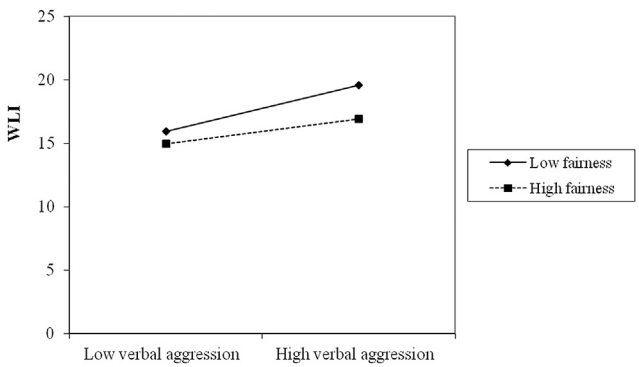

Fig. 9. Interaction effect between verbal aggression and fairness on WLI. WLI, work-to-private-life interference.

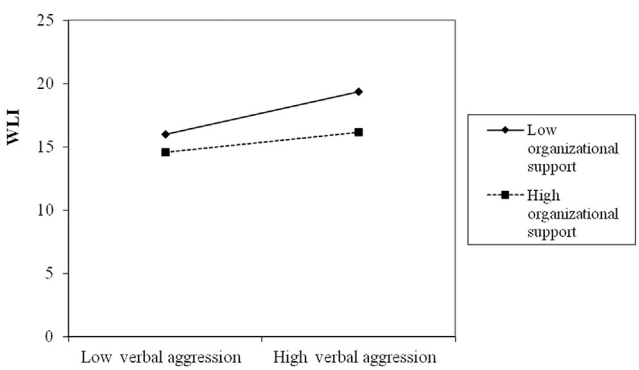

Fig. 10. Interaction effect between verbal aggression and organizational support on WLI. WLI, work-to-private-life interference.

private domain by providing both instrumental (i.e., by helping the workers to manage the relationship with patients/relatives) and affective (i.e., by giving affective support and not blaming the workers for what happens with patients) support.

Finally, the present study indicates that organizational factors have a key role in moderating the relationship between job demands and WLI. Indeed, all combinations tested at this level were significant. Concerning the moderating effect of both organizational resources on patient-related stressors, an explanation could be that fair and supportive procedures that help workers when they are victims of aggressive behaviors may contain the WLI. On the side of quantitative demands, it is possible to assume, as an explanation of the buffering effect of organizational support, that the supportive organizational context also gives workers the opportunity to use instruments to avoid the potential negative consequences on WLI due to quantitative demands, for example, making it easier for workers to take a day off to recover.

The buffering effect of justice is more difficult to interpret. An explanation could be that in a fair organization, there is the likelihood that the expectation of workers to receive the right reward for their efforts would be satisfied, and thus the negative consequences in the home domain due to high quantitative demands would be moderated. This is consistent with a previous study that found that when the exchange is symmetric, although in the presence of high demands, negative load reactions among workers may be reduced [39].

The relevance of the present study was to assess the moderating effect of some job resources on the relationship between job demands and WLI. Whereas there are some studies that focus on the direct effect of job demands and job resources on WLI, those that test the interactive effects, especially considering a great number of job demands and job resources, are very rare. Moreover, besides the classic job demands such as quantitative demands, this study took into account costumer-related social stressors that represent an emerging and central issue for health-care workers and was very rarely explored in association with WLI.

The present study suggests that the work context has a central importance in relation to the experience of WLI among health-care workers. Moreover, the results indicated that, in addition to specific policies on work–family issues, intervention in the work context may also help contain WLI. Such interventions would be especially aimed at improving the social climate within the unit and quality of the organizational process [40].

The present study is not without limitations. One concern is that a nonrandomized sampling procedure was used. Even if the sample is quite large, it can limit the generalizability of the results.

Another important limitation is its cross-sectional design. It is assumed that job demands and skill discretion are antecedents of burnout, but the opposite could also be true. For example, elevated rates of WLI could lead workers to develop negative attitudes toward jobs, workplace contexts, and organizations. In order to test both directions of the relationship, a longitudinal study design should be employed.

Conflicts of interest

The authors declared no potential conflicts of interests with respect to the authorship and/or publication of this article.

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