Do personal resources matter beyond job demands and job resources

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Do personal resources matter beyond job demands and job resources? Main and interaction effects on health-related outcomes among women working within the welfare sector

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Abstract.
BACKGROUND: Overall, health-related correlates of job demands and job resources are well-known. However, in today's working life, personal resources are considered to be of increasing importance. Beyond general mental ability, knowledge regarding personal resources remains limited. This is particularly so among women working in the welfare sector, a sector mainly employing women and with the work typically involving clients.
OBJECTIVE: This study investigated the importance of job demands, job resources, and personal resources for health-related outcomes, as well as the mitigating effects of resources, among women working within the Swedish welfare sector.
METHODS: Self-reports from 372 women employed within the welfare sector were analyzed using hierarchical multiple regression.
RESULTS: Overall, increasing job demands were associated with poorer health outcomes while increasing job resources and personal resources were associated with better health. Additionally, lower control aggravated the effects of quantitative job demands on health outcomes while lower feedback mitigated the effect of qualitative demands. However, personal resources had no moderating effect.
CONCLUSIONS: Job resources seem more pertinent to health than personal resources, at least among women working within the welfare sector in Sweden.

Keywords: Occupational health psychology, work climate, signaling, limit-setting

1. Introduction

Abundant research has focused on how demands at work may impair employee health and well-being. For instance, job demands such as work overload, time pressure and psychological demands have consistently been linked to various health-related outcomes [for an overview, see 1], including impaired mental health [2], symptoms of depression [3], higher sickness absenteeism [4] and higher presenteeism [5]. Parallel to this research, another line of research has aimed at improving the quality of working life

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by identifying job characteristics, typically labeled job resources, that may yield employee growth and development, satisfaction, motivation and work engagement [for an overview, see 6]. Such resources at work, including job control, social support and feedback [7–9], have been linked to better mental health, and lower absenteeism and presenteeism [1, 2, 5].

The two main theoretical models that include both job demands and various types of job resources are the Demand–Control–Support (DCS) model [9] and the Job Demands–Resources (JD–R) model [7]. The DCS model explicitly hypothesizes that job resources, such as the ability to use one's skills and to participate in decision making as well as social support, are directly linked to positive health outcomes. The JD–R model further develops this association and describes two central processes, (1) a stress process, and (2) a motivational process. According to the stress process excessive job demands are assumed to result in burnout, reduced well-being, and sickness absence while the motivational process assumes that abundant job resources yield a higher work motivation, work engagement, and job performance [7, 10, 11]. Both models share the assumption that job resources may balance job demands but also serve as a buffer to reduce the negative effects of job demands on health outcomes [7, 9].

A more recent addition to the JD–R model includes personal resources. Personal resources are individual factors referring to individuals' abilities to successfully influence their work context [12]. In comparison to the vast research showing that job demands and job resources are associated with various health outcomes, considerably fewer empirical studies focus on how personal resources relate to such outcomes. To date, most research on personal resources has focused on individual dispositions and personal traits such as self-efficacy, organizational-based self-esteem, and optimism [12, 13]. However, personal resources can include other factors as well such as individuals' abilities to actively and physically, through behaviors or communication (e.g., language), deal with different types of work situations. This means that personal resources refer to individuals' specific and continuous ways of forming and influencing their individual daily work at their work places [see e.g. 14]. Such personal resources can for instance include setting clear limits at work as a way of conveying that there is no space for additional work tasks when trying to reduce excessive job demands. Another personal resource involves communicating different problems about the work situation to supervisors or to higher organizational levels. Management has the authority to delegate and distribute work between different employees. In Sweden, management also has the responsibility to ascertain a proper psychosocial work environment [15–18]. This means that the work-related health and well-being of employees goes beyond being of interest to the individual employee to also concerning managers. In such a situation, managers may value employees who convey, through signaling and limit-setting, that their jobs are too demanding or that they need additional resources. Signaling and limit-setting may thus help employees and managers to keep up healthy work practices as a way to maintain employee health.

Within the EU, psychosocial factors at work have been estimated to explain different mental health problems [19]. These problems are, in turn, associated with both sickness presenteeism, and absenteeism. Besides adding to the understanding of how psychosocial and personal factors relate to health, the present study also contributes to the research on working conditions in the public welfare sector, a sector typically characterized by a strenuous work environment [17, 20]. Research shows that women and men, both in Sweden and in other countries, tend to work in different sectors [21, 22], with women often holding occupations including service and caring. In Sweden, the labor market is highly segregated with the public welfare sector mainly employing women [22]. This sector includes social welfare, care for elderly, disabled, and for individuals with social problems, health care, and homecare along with economic support to people in financial need. Overall, sectors mostly employing women tend to be characterized by employees reporting more mental health problems and having higher sickness absence rates than do other sectors [e.g. 23, 24]. This suggests that women working in these sectors are exposed to higher job demands and have less access to job resources [23, 25–27]. Typically, the working conditions in the welfare sector seem to be characterized by excessive job demands and a lack of job resources, which suggests that personal resources that go beyond any job resources, may play an important role for health-related outcomes [28, 29].

The overall aim of the present study was to add to the understanding of how job demands, job resources, and personal resources are associated with health-related outcomes among social service workers. Due to the differences in job demands and job resources that typically exist between managers

and non-managers [15–18], only employees without any supervisory role were included. Two types of traditional job demand (i.e., quantitative and qualitative demands) and two commonly investigated job resources (i.e., control and feedback) of the JD–R model were at focus. As regards personal resources, we decided to focus on the abilities to set limits at work (i.e., limit-setting strategies), and to raise work-related questions with their immediate managers (i.e., signaling). As for the dependent variables, the present study included one of the most researched health outcomes (i.e., mental distress), but also included a more recent phenomenon, which has received increasing attention, namely going to work despite being ill (presenteeism). Also, a typical end consequence of work-related health problems was investigated (i.e., sickness absence). We studied both the direct effects of job demands, job resources, and personal resources on these health-related outcomes, and the potential moderating effects of job and personal resources on the association between job demands and health-related outcomes.

1.1. The role of job demands

The first key component of the JD–R model includes job demands. Such job demands, which may be physical, psychological, social, or organizational, require mental and physical effort and may, when sustained, result in impaired health and well-being [7, 10]. Job demands are typically defined in quantitative terms, such as workload and time pressure [30–32]. Broadly conceptualized, job demands also include qualitative aspects such as individual perceptions of work being too difficult or involving too much responsibility or cognitive load [33]. A more demanding job would then involve having too much to do within a too tight time frame (quantitative demands), and/or a job with too much responsibility and difficult tasks (qualitative demands). Jobs characterized by such demands may, over time, result in negative health-related outcomes such as poor mental health (mental distress), going to work when ill (presenteeism), and sick-leave (absenteeism).

Research has consistently shown that job demands are associated with various negative health-related outcomes, such as burnout, depressive symptoms, and mental health problems [for reviews, see for instance, 1, 3]. As for the dependent variables investigated in the present study, psychological job demands, including both quantitative and qualitative overload, have repeatedly been linked to mental distress and general mental health problems [for reviews, see for instance, 1, 2, 32], also among employees in the caring sector [34]. These types of job demands have also been associated with an increased tendency to work while being ill, that is, presenteeism [35, 36, for meta-analytic findings, see 5]. There is also empirical research suggesting that a high workload, including both quantitative and qualitative demands, is related to higher levels of sickness absenteeism [1]. Drawing on these findings, we expect a positive association between job demands and different types of negative health-related outcomes.

> *H1.* Job demands in terms of (a) quantitative demands, and (b) qualitative demands are associated with negative health-related outcomes in terms of mental distress, presenteeism, and absenteeism.

1.2. The role of job resources

The second component of the JD–R model includes job resources. Job resources represent such aspects of work that support goal achievement, may promote well-being and, most importantly, are assumed to help employees in them dealing with their job demands [7, 9, 10]. There are different types of job resources, with control and feedback being among the most researched. Typically, job control involves employees being able to decide themselves in what order and pace (e.g. process, scheduling, and coordination) to carry out their work tasks [e.g., 37). This decision latitude may be manifested in autonomy and the freedom to use various skills [38]. Feedback involves employees receiving information and reactions on how they perform various tasks from their managers but also supportive leadership in general [8].

Job resources have been associated with less negative health-related outcomes, such as lower levels of burnout, cynicism, depressive symptoms, and general mental health problems [for overviews, see 3, 9, 30, 39]. More specifically, job control has been associated with lower levels of mental distress [for meta-analytic findings, see 2, 40, 41]. Moreover, several studies show that job control is associated with lower levels of sickness presence [e.g., 35], while meta-analytic findings show rather low negative associations [5]. Additionally, control is associated with lower levels of absenteeism [42, 43, for meta-analytic findings, see 41]. While research on feedback has typically focused on the positive effects on learning at work [44], orga-

nizational commitment [45], as well as motivation and well-being [8], fewer studies have investigated the association between feedback and health-related outcomes. However, meta-analyses suggest that having overall support from the organization and from supervisors is associated with less mental distress [2] and presenteeism [5] while findings for sickness absence remain inconsistent [4]. Based on existing empirical findings [e.g., 2, 8, 45] and applying both the JD–R model [7, 30] and the DCS model [9], we expect feedback to be associated with more favorable health-related outcomes.

H2. Job resources in terms of (a) control and (b) feedback are associated with more favorable health-related outcomes in terms of mental distress, presenteeism, and absenteeism.

The possibilities of employees to control their work may be particularly valuable in situations with a too high workload [9, 40]. In work situations where employees find themselves busy, have a lot to do but too little time to perform their work tasks, it is essential to be able to prioritize and decide on how to act on different tasks. Moreover, any input on the actual results of individual's work activities may be helpful. Empirical findings suggest that job resources, including control and feedback, may moderate the relationship between job demands (e.g., work overload and emotional demands) and burnout as well as other health-related outcomes [46]. Similarly, a study among employees of a home care organization found that feedback moderated the relationship of workload and exhaustion [47]. Also, control and feedback have been found to moderate the relationship between high job demands and attitudinal outcomes, including task enjoyment and organizational commitment [45]. Moreover, job control has been found to moderate the relationship between quantitative workload and absenteeism. Specifically, higher levels of control when combined with high job demands were associated with lower levels of absenteeism [48]. Thus, using existing theory [e.g., 9, 30] and empirical findings [45–48], we expect job resources to have a moderating effect on the relationship between job demands and health-related outcomes with high levels of job resources weakening the relationships between job demands and the different health-related outcomes.

H3. Job resources in terms of (a) control, and (b) feedback moderate the association between job demands and the health-related outcomes in terms of mental distress, presenteeism, and absenteeism.

1.3. The role of personal resources

The third component of the JD–R model is personal resources. Typically, personal resources are described as individual characteristics that include resilience and a capability to influence the work situation in general, and to handle job demands in particular [10, 11]. Previous research has primarily focused on individual characteristics such as self-efficacy, self-esteem, optimism, personality, and individual dispositions [12, 49]. However, personal resources can also involve more active ways to influence work and can, in contrast to rather stable attributes such as dispositions and individual characteristics, also be acquired and developed further through learning and organizational activities including different preventive educational intervention programs. Such personal resources may be described in terms of coping [50, 51]. However, while coping refers to the general ways in which individuals handle stressful situations, personal resources relate specifically to the ways individual workers handle specific but not necessarily stressful work situations. Research has traditionally considered voice, and possibilities to voice any issues, as such a personal resource. Examples of using voice at work include raising different work-related issues with management and supervisors. The construct of voice has been studied and operationalized in various ways, for instance using the theoretical framework of exit, voice, and loyalty [52]. According to this framework, expressing voice is a powerful way of influencing a dissatisfying and demanding situation—and perhaps a more constructive response as compared to leaving the organization or remaining loyal [see also 53]. Voice can be defined as an individual attempt spanning broadly between actions to explicit protesting, and even mobilizing public opinion, to appeal to higher organizational positions with a purpose to bring about organizational improvement or change [52]. More specifically, voice can be described in terms of signaling, which involves communicating that various issues are too challenging or demanding. Another specific type of voice involves using limit-setting strategies as a way of handling and reducing challenges and demands that an individual has to deal with at work.

When it comes to signaling, previous research has found that this type of voicing in relation to demanding situations at work can be achieved via

upward feedback in efforts to improve the overall work situation and individual well-being [54]. Signaling involves employees communicating to their immediate supervisors or to higher management that they have problems handling their work situation and that some kind of change is needed. Signaling may involve communicating directly, via formal procedures and policies, but can also include informal ways of communication that facilitate raising concerns, addressing challenges and problems, and participating in decisions regarding the individual work tasks, that aim to influence the work situation [55, 56].

Employees' limit-setting strategies at work have been investigated from different perspectives. Such strategies can involve individual ways of handling work situations or work tasks when dealing with situational challenges or demands, for instance by making use of participation at work [57]. Other aspects may relate to setting limits to avoid negative spillover from work to non-work activities [58] or detrimental effects of flexible working arrangements [59]. Another example of limit-setting involves employees altering their formal job descriptions. However, as a personal resource, limit-setting provides an alternative for employees to handle work within their existing job descriptions [cf. 60, 61]. Thus, setting limits may help employees to adjust their jobs to fit better with the current work situation (e.g., temporarily adjusting work-hours, investing or reducing energy and attention in tasks and responsibilities) to manage the highs and lows of their daily workload to maintain individual health and well-being.

Signaling and limit-setting strategies at work are examples of ways for employees to handle their work situations to avoid acute and long-term negative health-related consequences of a high workload. Previous research has linked personal voice to different organizational and employee outcomes, such as learning, work-related attitudes, job performance, and employee turnover [54, 55] For instance, insufficient limits between work and non-work life domains have been associated with decreased job satisfaction and organizational commitment but also with an increased propensity to leave the organization [58] and an increased psychological strain [58, 59]. Yet, empirical research focusing on how specific personal resources such as signaling and limit-setting strategies relate to mental distress, presenteeism, and absenteeism remain limited. However, based on existing research investigating voice [54, 55], limit-setting [58, 59], and the overall JD–R framework [11, 12], we expect linkages between personal resources and different health-related outcomes similar to the relationships between job resources and these outcomes. Specifically, we hypothesize that signaling and limit-setting strategies are negatively related to mental distress, presenteeism, and absenteeism.

> *H4*. Personal resources in terms of (a) signaling, and (b) limit-setting strategies are associated with more favorable health-related outcomes in terms of mental distress, presenteeism, and absenteeism.

Given the well-documented associations between job demands and various types of measures of impaired health and well-being it becomes important to recognize any personal resources that may buffer such negative effects. Based on previous research it is reasonable to assume that personal resources such as signaling and limit-setting strategies may have such buffering qualities. For instance, in a study of women scientists, experiences of voice (e.g., influence over procedures and outcomes) moderated the effect of the relationship between poor workplace climates (e.g., sexist and hostile) and job satisfaction, with the relationship being weaker for women considering themselves to have more voice as compared to those with less voice [62]. While no previous study seems to have used the JD–R framework to investigate specifically signaling and limit-setting strategies as moderators of the association between job demands and health-related outcomes [11, 12, 30], we assume these personal resources to have a buffering effect on the relationship between job demands and health-related outcomes. This means that we expect high levels of personal resources to weaken the relationships between job demands and negative health-related outcomes.

> *H5*. Personal resources in terms of (a) signaling, and (b) limit-setting strategies moderate the association between job demands and the health-related outcomes in terms of mental distress, presenteeism, and absenteeism.

2. Method

2.1. Setting

The data were collected from a public social care and welfare organization in a Swedish municipality. The organization is responsible for care for elderly

and disabled, health care in sheltered housing, day care and home care, housing adaptation allowances, transportation and national mobility service, and the managing of association grants, fund assets, and community facilitators. The Regional Ethics Committee in Stockholm (Ref. No. 2010/1517-31/5) approved of the research.

2.2. Sample and procedure

An email including a welcome message, information about the research project (its purpose, a presentation of the research team, and information regarding research ethics), and a link to an online survey was sent to all employees (excluding those with supervisory positions to avoid adding hierarchical differences to the data). Given that the vast majority were women (approximately 88 per cent), the study included women only. Of the total number of women in the organization (N = 996), 440 responded. This corresponds to a response rate of 44.2 percent. Because of extensive missing data (e.g., a complete block of key study variables was missing), 68 employees were excluded. This resulted in a final sample of 372 women. The proportion of missing data for the final sample amounted to one percent. After Missing Completely at Random (MCAR) tests were found non-significant, that is, values were missing completely at random [63], an expectation-maximization (EM) imputation was performed separately for predictors (job demands, job resources, and personal resources) and the outcome variable mental distress. There were no missing values for the outcome variables presenteeism and absenteeism. The mean age of the effective sample of women was 48.5 years, with 45 per cent having a university degree (Table 2). Most were permanently employed (92%), 77 per cent worked at least 75 per cent of full-time, and had an average tenure at the workplace corresponding to 9.5 years. The majority (77%) lived with a partner and about half (47%) had children living at home.

2.3. Measures

Table 1 presents an overview of the measures of the present study and provides details on the number of items, scale range, example items, and sources for each job demand, job resource, personal resource, and health-related outcome. Demographics (age and education) were included since being younger and having a higher education are factors consistently associated with better health [e.g., 64, 65]. Table 2 shows

Table 1
Overview of self-report measures

Variable	No. of items	Example of item	Range	Reference
Demographic variables				
Age	1	–	Years	–
Education	1	Highest level of education completed?	1 = University; 0 = Lower	–
Job demands				
Quantitative demands	3	I often have too much to do at work.	1–5[a]	[82]
Qualitative demands	4	I consider my work responsibilities as unreasonable.	1–5[a]	[83, 84]
Job resources				
Control	4	I have a sufficient degree of influence regarding my work.	1–5[a]	[based on 8, 85, 86]
Feedback	3	My manager generally lets me know how satisfied he/she is with my work effort.	1–5[a]	[8]
Personal resources				
Signaling	2	I take problems to a higher decision-making level.	1–5[a]	[87]
Limit-setting strategies	3	I do not take on more work than I think I can handle.	1–5[a]	[87]
Health-related outcomes				
Mental distress	12	Have you recently felt capable of making decisions? (reverse coded)	1–4[b]	[88]
Presenteeism	1	Has it happened over the previous 12 months that you have gone to work despite feeling that you really should have taken sick-leave because of your state of health?	1–4[c]	[89]
Absenteeism	1	In the past 12 months, how often have you stayed home from work due to being sick?	1–4[c]	[90–92]

[a]From 1 = Strongly disagree to 5 = Strongly agree. [b]From 1 = Never to 4 = Always. [c]1 = Never, 2 = Once, 3 = 2–5 times to 4 = More than 5 times.

descriptive statistics (means, standard deviations, correlations [Pearson's *r*], and reliability coefficients [Cronbach's α; 66] for relevant variables. Most reliability coefficients were above 0.70, and consequently considered acceptable [67].

2.4. Statistical analysis

To address the research questions and test the five hypotheses, hierarchical multiple regressions were performed. Three regression analyses, each including five pre-determined steps, were performed for the health-related outcomes (i.e., mental distress, presenteeism, and absenteeism). Step 1 included entering the demographic controls age and education to the model. Job demands (quantitative and qualitative demands) were added in Step 2 to investigate their associations with the three health-related outcomes after controlling for demographics. Step 3 included adding job resources (feedback and control), while Step 4 involved entering personal resources (signaling and limit-setting strategies) to the model. Finally, in Step 5, two-way interactions were added between job demands and the different job and personal resources after controlling for all variables in the previous steps. The interaction terms were calculated as the products of the mean-centered predictors and, following conventional procedures, interactions were plotted from the linear regression equations, where the values of the moderators were chosen at 1 SD below and 1 SD above the mean, respectively [68]. Finally, simple slope analyses were performed. We used a significance level of $p < 0.05$.

3. Results

Table 3 shows the results of three hierarchal multiple regression analyses, including the standardized regression weights (betas), the amount of explained variance in each step (ΔR^2), and the total amount of explained variance (R^2). Unless otherwise stated, the significant beta values and their directions for the different job demands, job resources, and personal resources were maintained throughout all steps.

The demographics (age and education) that were entered in Step 1 did not explain any significant variance in sickness absenteeism or presenteeism but accounted for 2% of the variance in mental distress. While higher education was associated with higher levels of distress, this effect became non-significant when adding other variables to the model.

In the second step job demands (quantitative and qualitative) accounted for an additional 19% of the variance in mental distress and 6% in presenteeism but did not explain any significant variance in absenteeism. Both quantitative and qualitative demands were positively related to mental distress, showing that high job demands were related to high mental distress. Quantitative demands also predicted

Table 2
Correlations (Pearson's *r*), mean values (M), standard deviations (SD), and reliabilities (Cronbach's α) for all study variables (N = 372)

	1	2	3	4	5	6	7	8	9	10	11
Demographics											
1. Age											
2. Education (university)	0.05										
Job demands											
3. Quantitative demands	0.01	0.08									
4. Qualitative demands	–0.08	0.09	0.49**								
Job resources											
5. Control	–0.03	0.01	–0.17**	–0.24**							
6. Feedback	–0.08	–0.08	–0.15**	–0.21**	0.28**						
Personal resources											
7. Signaling	0.08	0.11*	–0.06	–0.10*	0.12*	0.04					
8. Limit-setting strategies	0.08	–0.02	–0.31**	–0.24**	0.16**	0.08	0.51**				
Health-related outcomes											
9. Mental distress	–0.08	0.11*	0.37**	0.40**	–0.30**	–0.26**	–0.19**	–0.38**			
10. Presenteeism	–0.04	–0.03	0.23**	0.13*	–0.19**	–0.13*	–0.11*	–0.23**	0.32**		
11. Absenteeism	–0.08	0.01	0.10	0.04	–0.17**	–0.13**	–0.02	–0.02	0.15**	0.29**	
M	48.52	0.45	2.71	1.92	3.44	3.30	3.34	3.42	1.77	2.18	2.24
SD	10.40	–	1.04	0.80	0.75	1.08	0.98	0.85	0.40	1.01	0.90
Cronbach's α	–	–	0.75	0.71	0.66	0.89	0.74	0.75	0.83	–	–

Note: - = not applicable. $^{*}p < 0.05$; $^{**}p < 0.01$.

Table 3
Results of hierarchical regressions of job demands, job resources, and personal resources on health-related outcomes ($N = 372$)

	Mental distress					Presenteeism					Absenteeism				
	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
Step 1: Demographics															
Age	–0.08	–0.06	–0.08	–0.06	–0.05	–0.04	–0.04	–0.05	–0.04	–0.04	–0.07	–0.08	–0.09	–0.10	–0.10
Education (university)	0.11*	0.07	0.06	0.07	0.07	–0.03	–0.05	–0.05	–0.05	–0.04	0.01	0.00	0.00	0.01	–0.01
Step 2: Job demands															
Quantitative demands		0.23***	0.21***	0.15**	0.15**		0.23***	0.21***	0.17**	0.16**		0.11	0.10	0.11	0.13*
Qualitative demands		0.27***	0.21***	0.19***	0.19***		0.02	–0.02	–0.04	–0.05		–0.02	–0.07	–0.07	–0.09
Step 3: Job resources															
Control			–0.018***	–0.15**	–0.15**			–0.14**	–0.13*	–0.15**			–0.15**	–0.15**	–0.12*
Feedback			–0.14**	–0.14**	–0.13**			–0.07	–0.07	–0.08			–0.10	–0.10	–0.07
Step 4: Personal resources															
Signaling				–0.02	–0.04				0.01	–0.01				–0.01	–0.02
Limit-setting strategies				–0.24***	–0.22***				–0.16**	–0.13*				0.04	–0.00
Step 5: Interaction terms															
Control × Quantitative demands					–0.12*					–0.02					–0.20**
Control × Qualitative demands					0.04					–0.08					0.09
Feedback × Quantitative demands					0.01					–0.03					0.06
Feedback × Qualitative demands					0.01					0.00					0.12*
Signaling × Quantitative demands					0.06					0.01					0.07
Signaling × Qualitative demands					–0.08					0.04					0.01
Limit-setting strategies × Quantitative demands					–0.07					–0.06					0.11
Limit-setting strategies × Qualitative demands					0.08					0.08					–0.11
ΔR^2	0.02*	0.19***	06***	0.05***	0.01	0.00	0.06***	0.03**	0.02*	0.02	0.01	0.01	0.04**	0.00	0.06**
R^2	0.02*	0.21***	0.27***	0.32***	0.33***	0.00	0.06***	0.09***	0.11***	0.13***	0.01	0.02	0.05**	0.05*	0.12***

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

presenteeism, with higher quantitative demands being associated with higher presenteeism, while no association emerged between qualitative demands and presenteeism. In step 2, none of the demands were significantly related to absenteeism but, adding more variables to the model, yielded significant the positive association between quantitative demands and absenteeism.

In the third step, the two job resources explained another 6% of the variance in mental distress, 3% in presenteeism, and 4% in absenteeism. Control and feedback predicted mental distress, with the negative associations showing that higher levels of job resources were associated with lower levels of mental distress. Control, but not feedback, was negatively associated with both presenteeism and absenteeism, suggesting that employees with a higher degree of control reported lower levels of both presenteeism and absenteeism.

The fourth step, including personal resources (signaling and limit-setting strategies), added another 5% of explained variance in mental distress and 2% in presenteeism, but did not account for any additional variance in absenteeism. There were no associations between signaling and the three health-related outcomes. Limit-setting strategies were negatively associated with mental distress and presenteeism, while no association emerged for absenteeism.

In the fifth and last step, the interactions of the job demands (quantitative and qualitative) with the job resources (control and feedback) and the personal resources (signaling and limit-setting strategies) were entered to the model. This step did not account for any significant proportion of the variance in mental distress or presenteeism but explained another 6% of the variance in absenteeism. All interaction terms between personal resources and job demands were non-significant, suggesting that personal resources did not moderate the effects of job demands. Regarding the moderating role of job resources on the associations between job demands and health-related outcomes, three significant interaction effects emerged.

The moderating effect of control on the relationship between quantitative demands and mental distress was significant (Fig. 1). The slope for quantitative demands was significant and positive when control was low ($B = 0.10$, $t = 3.44$, $p < 0.05$), but non-significant when control was high ($B = 0.01$, $t = 0.50$, ns). Thus, higher quantitative demands were related to greater mental distress among women reporting low control, while no such relationship between quantitative demands and mental distress emerged for women reporting high levels of control. A similar statistically significant pattern was found for the moderation of control on the relationship between quantitative demands and absenteeism (Fig. 2). The slope for quantitative demands was significant and positive when control was low ($B = 0.28$, $t = 3.62$, $p < 0.05$) but non-significant when control was high ($B = –0.06$, $t = –0.80$, ns). Thus, for women reporting low control, higher quantitative demands were related to higher absenteeism while no such association was found for those reporting high levels of control. A significant moderating effect was found for feedback on the association between qualitative demands and absenteeism. As shown in Fig. 3, this interaction

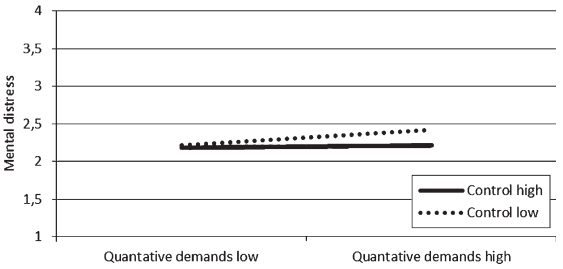

Fig. 1. Moderating effect of control on the relation between quantitative demands and mental distress.

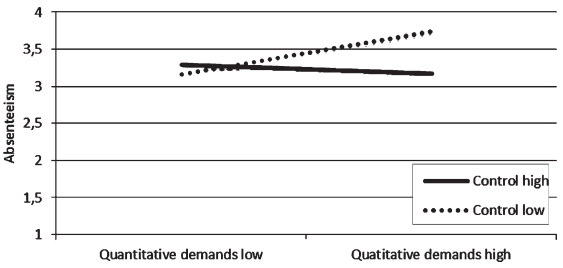

Fig. 2. Moderating effect of control on the relation between quantitative demands and absenteeism.

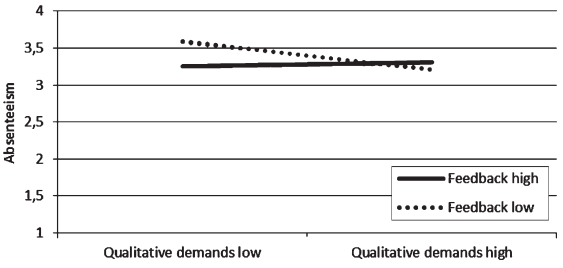

Fig. 3. Moderating effect of feedback on the relation between qualitative demands and absenteeism.

followed a pattern, which was contrary to predictions. The low feedback slope was statistically significant and negative ($B = –0.24$, $t = –2.55$, $p < 0.05$), while the high feedback slope was non-significant ($B = 0.03$, $t = 0.34$, ns). Thus, for women reporting low feedback perceptions, higher qualitative demands were related to less absenteeism. For those reporting high levels of feedback, there was no association between qualitative demands and absenteeism.

In conclusion, the full regression models with all five steps explained 33% of the variance in mental distress ($F_{(16,355)} = 11.11$, $p < 0.001$), 13% of the variance in presenteeism ($F_{(16,355)} = 3.16$, $p < 0.001$), and 12% of the variance in absenteeism ($F_{(16,355)} = 2.96$, $p < .001$).

4. Discussion

The aim of the present study was to investigate how job demands (i.e., quantitative and qualitative demands), job resources (i.e., feedback and control), and personal resources (i.e., signaling and limit-setting strategies) were related to mental distress, presenteeism, and absenteeism, and also, to explore whether job and personal resources would moderate the associations between job demands and the health-related outcomes among women employed in the public welfare sector in Sweden. This setting was chosen given that the sector is considered to suffer from extensive work environment problems, a high prevalence of mental health problems, and high rates of sickness absence among its employees [27, 69].

As for the direct effects of job demands, the present findings generally replicate previous research. In line with H1a, quantitative job demands did predict all the health-related outcomes but absenteeism. However, with qualitative job demands predicting mental distress but not sickness presenteeism and absenteeism, there was only partial support for H1b. As expected and following previous research of high demands in the public welfare sector [see for instance 34, 40], there were main effects of job demands on mental distress. The moderately strong effects found of quantitative demands on mental distress, but also on presenteeism, suggest that quantitative demands may not only result in mental health problems [2] but also in a pressure to be at work despite being ill [5]. The fact that qualitative job demands predicted mental distress is in line with previous research [2, 32]. However, there were no associations between qualitative job demands and either presenteeism or absenteeism. This was unexpected given meta-analytic findings showing such linkages [presenteeism: 5, absenteeism: 1].

The results regarding the direct effects of job resources partially aligned with previous research. Consistently with theoretical assumptions [7, 9] and prior meta-analytic findings, control was related to less mental distress [2, 40, 41], less presenteeism [5], and less absenteeism [4, 41], thus fully supporting H2a. In contrast, with feedback only predicting mental distress but neither presenteeism nor absenteeism, there was only partial support for H2b. As for the potentially buffering effects of job resources on the association between job demands and health-related outcomes, the present results were only partly aligned with the theoretical assumptions [7, 9] and previous empirical research [45–48]: control mitigated the negative effects of quantitative demands on both mental distress and absenteeism, but not on presenteeism. Thus, there was only partial support for H3a. However, and contrary to predictions (H3b), five out of six tested moderation effects of feedback on the associations between job demands and the health-related outcomes were non-significant, and the only significant moderation effect (on the association between qualitative demands and absenteeism) followed a pattern that was contrary to our prediction. This finding may be an anomaly but may reflect the fact that work tasks were of limited challenge meaning that the employees were under-stimulated at work–a situation considered to have negative implications for health [70].

Following previous research [7, 12, 13], we also assumed that personal resources would be related to better health-related outcomes. Partly following previous research [54, 55], and our predictions (H4b), limit-setting strategies were associated with two of the health-related outcomes, namely mental distress and presenteeism. Specifically, limit-setting strategies were related to lower levels of mental distress, suggesting that employees using more limit-setting at work reported less mental distress and were less prone to work when ill. However, no similar effect emerged for sickness absenteeism. This implies that limit-setting strategies may be efficient in reducing mental distress and presenteeism, but not in preventing long-term outcomes such as sickness absence. In contrast to the partial support for H4b, there was no support for any beneficial effects of signaling on the health-related outcomes (H4a). This may relate to signaling, voice, and participation not being aspects strong enough to promote health, which would be con-

trary to predictions [e.g. 58, 57]. However, another explanation may relate to women working in the public welfare sector of the Swedish labor market having fairly equal levels of signaling when communicating with their management at the organizational level, while limit-setting strategies may vary more between individuals. Yet, the descriptive statistics suggest no strong variations when comparing the levels of limit-setting strategies and signaling. Perhaps instead, more behaviorally oriented forms of personal resources, such as limit-setting which involves immediate and preventive behaviors executed by individuals themselves, without having to communicate verbally and await or rely on others, are more effective ways for conveying that work is too challenging and demanding [cf. 52, 53]. Specifically, due to a sense of being overwhelmed, limit-setting strategies of individual employees targeting a too high workload may result in them not properly, or at all, attending to their work tasks. This may alert managers to monitor and intervene in order to maintain production levels.

In contrast to the assumptions of the extended version of the JD–R model [10–12, 49], we found no support for any moderating effects of any of the personal resources on the associations between job demands and the three health-related outcomes, meaning that there was no support for H5. While previous research on personal resources primarily has focused on individual attributes such as self-esteem, self-efficacy, and optimism [12, 49], we chose to focus on more behavioral and active aspects of personal resources such as signaling and limit-setting strategies. While previous theoretical work [e.g., 52, 57] indicates that participation and voice would counteract problems and demands at work, these may involve better health but not counteract high job demands. However, it is important to keep in mind that the women participating in the current study had a good health given the fact that that they were (still) working, took their time to participate in research, and were not currently on sick-leave. Moreover, levels of mental distress, presenteeism, and absenteeism were around medium (around 2 on a 1–4 response scale), also suggesting good health. However, job resources may also be more important than personal resources to counteract excessive job demands. Thus, the organization of work, including the provision of adequate job resources, seems more important than individual characteristics and abilities for coming to grips with demands at work. Considering this, organizational intervention programs targeting the organization of work and aiming at reducing job demands and increasing job resources are key for promoting work-related health and well-being [71, 72].

4.1. Methodological considerations

This study focused exclusively on women within the public welfare sector, which reflects the gender segregated labor market in Sweden where the public welfare sector mainly employs women. Yet, this focus limits generalization to other groups, settings and contexts [external validity; 73]. However, there are previous studies of job demands and different (job and personal) resources from different countries, sectors, and occupations, and the present study findings mainly follow previous findings [see, for instance, 30, 40].

Moreover, the cross-sectional design limits conclusions regarding the direction of the relationships between study variables [74]. However, some of the variables, particularly personal resources, have received limited research attention. Thus, the study design may be considered reasonable with findings serving as a preliminary step in untangling how signaling and limit-setting relate to health, and potentially buffer the negative effects of job demands on various health-related outcomes. As for job resources (i.e., control and feedback), the design is consistent with that of previous studies [see 40] with the results largely aligning with previous theoretical assumptions and empirical findings [7, 9].

Only three out of the 24 tested interactions were significant, which may suggest a less successful study. Also, given the number of tests and adjusting for this, the three interactions would be considered trends. However, the detection of interaction effects in field studies has been proven difficult. Thus, despite detecting only a few interaction effects, the study with its results can be considered a valuable contribution regarding the study of personal resources at work [75].

Another potential limitation concerns the fact that this study used self-reports to measure job demands, job and personal resources, as well as health-related outcomes. This obviously involves a risk of common method variance [76], and thus future studies should strive to combine self-reports with other data types, such as organizational register data of sickness absence. Still, recent research argues that the risk of common method variance has reached the status of an urban legend and is often overestimated

[77]. Also, to access objective data on mental health and presenteeism may be challenging and expensive, which suggests that these, along with job demands, job resources and personal resources need to be measured through self-reports. The use of single-items to measure presenteeism and absenteeism respectively is also a potential limitation. However, such single-item measures are commonly used [78] and also shortened our questionnaire. Another concern relates to the rather low response rate and the missing data. Here the length of the questionnaire may have been an issue. Additionally, conducting the study within the work setting and mainly reaching out to a fairly healthy group while excluding those on sick-leave may have added to a healthy worker effect [79]. Such a healthy worker bias may have been augmented by mainly the more healthy individuals completing their questionnaires, which may explain the lower mean values for the health-related outcomes.

4.2. Concluding remarks

This study set out to cross-sectionally investigate main and interaction effects of job demands, job resources, and personal resources on three different health-related outcomes that are important occupational health indicators, namely mental distress, presenteeism, and absenteeism. As concerns main effects, the results replicate previous findings in detailing how job demands and job resources are associated with such health-related outcomes [7, 9]. However, the present study also extends previous research on personal resources in finding that limit-setting strategies may be effective to promote well-being at work. Our results also provide further knowledge of the mitigating effects of job resources with control moderating the associations between job demands and indicators of poor health, while feedback did not. As regards personal resources, previous research has primarily focused on individual characteristics and dispositions while we underscore the importance of behavioral resources that can be adjusted by individuals themselves. Overall, setting limits at work (limit-setting strategies) were associated with better health-related outcomes while raising work-related issues with an immediate manager and signaling problems at work were not associated with health-related outcomes. Moreover, and in contrast to research on the role of personal resources [12], the personal resources investigated did not mitigate the effects of quantitative and qualitative job demands on the different health-related outcomes.

While societies, organizations and individuals have to carry costs of mental distress, presenteeism, and absenteeism [80, 81], it may be necessary to target both job and personal resources to improve work-related health and well-being. Future studies not only investigating job demands and job resources but also including different types of personal resources are needed. Ideally such studies would include a longitudinal design and educational intervention programs including the acquisition and development of limit-setting skills at work.

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Conflict of interest

None to report.

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