

Job demands and resources as predictors of well-being in portuguese teachers

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ABSTRACT

This cross-sectional study sought to investigate job demands and resources as predictors of teacher well-being. Participants were 319 portuguese teachers in grades 1–11 (elementary up to secondary level). Data were analysed through confirmatory factorial analysis, structural equation modelling and mediation analysis. Main findings revealed that job demand variables are negative predictors of teacher well-being, whereas job resources variables predict positively teacher well-being. Additionally, the results showed two indirect mediation effects: job resources buffered the job demands and well-being relationship. In particular, support from colleagues and autonomy were identified as the main mediators of the relation between job demands and teacher well-being. Overall, the main results are consistent with the Job Demands-Resources model and contribute to the understanding of interplay between job resources and demands and their influence over teacher well-being.

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Psychological; social; physical well-being; colleagues and students' demands; teacher job resources

1. Introduction

Research on teachers' professional lives has consistently reported that teaching is an intellectually, emotionally, and physically demanding job (e.g. Day and Gu 2010) and therefore teachers' well-being may be in risk (Cook et al. 2017; Desrumaux et al. 2015; Liu and Onwuegbuzie 2012). Several studies have shown that teaching is a very stressful job, and that high job demands and prolonged feelings of stress can trigger dissatisfaction, reduced self-efficacy and depression in education professionals (Agyapong et al. 2022; Daniel and Van Bergen 2023; Herman, Hickmon-Rosa, and Reinke 2018; Skaalvik and Skaalvik 2010). According to several authors, these feelings will lead to low job satisfaction and motivation, reduced self-efficacy, low commitment, and increased motivation to leave the profession (e.g. Collie, Shapka, and Perry 2012; Liu and Onwuegbuzie 2012; Skaalvik and Skaalvik 2018). Aspects of the work and the work environment that may be stressful are often termed as job demands (Demerouti et al. 2001).

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An exhaustive number of studies investigating factors related to teacher well-being have found that teachers report poorer well-being when they perceive elevated levels of inattentiveness, classroom disturbances, or disciplinary problems (Aloe et al. 2014). It is also recognised that stress and negative feelings are caused by different aspects of the profession (Collie, Shapka, and Perry 2012; Liu and Onwuegbuzie 2012). Several authors identified some job demands such as time and pressure, peer conflict, discipline problems, low student motivation, poor administrative support, large student diversity, conflict of values and ambiguity of roles (Collie, Shapka, and Perry 2012; Skaalvik and Skaalvik 2011, 2015). On the other hand, the job resources include levels as organisational, physical, and social aspects of work that are functional in accomplishing goals and reducing work demands (Bakker and Demerouti 2007, 2017; Demerouti et al. 2001). Regarding the teaching profession, it is possible to see job resources such as autonomy, sense of justice, positive and supportive relations with peers, school administration and parents, learning and development opportunities, consonance values and collective culture (Manasia, Pârvan, and Macovei 2020; Skaalvik and Skaalvik 2021, 2023). A culture of collegial supportiveness with empathetic support from school board has positive effects on teacher well-being including buffering against mental health problems (Butt and Retallick 2009; Harvey et al. 2014). In this study we sought to analyse the relations of job resources and job demands with teacher's well-being.

2. Research theoretical background

2.1. *Job demands-resources model (JD-R)*

The Job Demands-Resources model (JD-R) has become popular among researchers, since it proposes that the health and well-being of the employee results from the balance between available resources and job demands (e.g. Demerouti et al. 2001; Schaufeli and Taris 2014). The JD-R model was created to try to understand the background of the burnout syndrome. According to Bakker and Demerouti (2014), JD-R model can be conceptualised as a theory, since it is possible to explain, understand and make predictions about work well-being and employee performance. Plus, all work environments or work characteristics can be involved in this model, since it is possible to suit them into the two distinct categories presented in the model: work demands and work resources (Bakker and Demerouti 2014). Job demands refer to social, organisational, and psychological aspects that demand physical and psychological effort and, in this way, are associated with negative effects at these same levels previously mentioned (Demerouti et al. 2001). Though, teacher well-being is not only influenced by job demands but have also been associated to positive aspects of the work, which are called job resources. For example, positive relations with colleagues and the school administration and higher self-efficacy beliefs have been shown to be positively related to teachers' well-being (Skaalvik and Skaalvik 2018). School leader-teacher relationship plays an influential role and lack of support, recognition, trust, and poor communication impact negatively in teacher well-being (Butt and Retallick 2009). By contrast teacher well-being is cultivated when school leaders show interest in teachers' well-being (Le Cornu 2013; Webb et al. 2009) and build positive relationships and interactions with teachers (Konu, Viitanen, and Lintonen 2010; Peters and Pearce 2012). Additionally, positive collegial relationships among teachers

impact on teacher well-being through fostering quality professional relationships, a sense of belonging and connectedness (Acton and Glasgow 2015; Garbett and Thomas 2020; Le Cornu 2013). Bakker (2011) claims that job resources play an intrinsic motivational role in fostering workers' personal development, reducing the physiological and psychological costs associated with job demands.

JD-R model asserts that processes are triggered by demands and resources, correspondingly, as job demands are the biggest predictors of emotional exhaustion, stress injuries and psychosomatic complaints, while work resources produce psychological satisfaction and fulfill the needs for autonomy and workers competence (Bakker and Demerouti 2014). A core assumption of the Job Demands-Resources Model is that negative (e.g. stress) and positive (e.g. engagement) aspects of well-being are the result of a combination of stressful and motivating job characteristics (Bakker and Derks 2010). More specifically, job resources may buffer the impact of job demands on workers' strain (Bakker et al. 2003) and, according to the Conservation of Resources Theory (Hobfoll and Shirom 2000), job resources become more salient when job demands are high.

Ten years after the publication of the key article entitled 'Burnout and work engagement: the JD-R approach' (Bakker, Demerouti, and Sanz-Vergel 2014), Bakker and collaborators (Bakker, Demerouti, and Sanz-Vergel 2023) highlight four major innovations of the past decade, namely (a) the person \times situation approach of JD-R, (b) multilevel JD-R theory, (c) proactive approaches in JD-R theory, and (d) the work – home resources model. The person \times situation approach of JD-R is grounded in Big Five Personality Traits. According to this theory, personality factors influence the perception and evaluation of job demands and resources and may have direct and indirect effects on well-being. Personality is proposed to moderate the daily effects of job demands and resources on well-being and outcomes. The multilevel approach of JD-R proposes that aspects like teacher teamwork exist within the broader context of school norms and rules. School leaders, for instance, can influence job demands and resources within teams, thus indirectly affecting the well-being and performance of teachers. Proactive approaches of JD-R theory suggest that employees are intrinsically driven to actively seek and acquire resources to effectively address their job demands. And the Work – Home Resources Model suggests that (a) job demands and resources can affect home context outcomes through fluctuating personal resources (e.g. time, mood, and energy), and (b) home demands and resources can simultaneously influence outcomes in the work context through those same fluctuating personal resources (Bakker, Demerouti, and Sanz-Vergel 2023).

2.2. Teacher well-being, job demands and resources

The concept of teacher well-being has gained significant attention in the literature, recognising the importance of supporting the well-being of educators. The definition of teacher well-being can vary across studies and researchers and include both personal and contextual factors. Teacher well-being is understood as the subjective experience of teachers in relation to their overall quality of life and job satisfaction (Skaalvik and Skaalvik 2014). Teacher well-being encompasses psychological and emotional dimensions, including factors such as work-related stress, burnout, job satisfaction, self-efficacy, and positive emotions (Kyriacou 2010). Klassen and Chiu (2010)

suggest that teacher well-being is closely linked to a sense of professional fulfilment and job meaningfulness. Moreover, the work context influences teacher well-being, with factors such as school leadership, school climate, collegial support, and opportunities for professional learning and development exerting an impact (Hakanen, Bakker, and Schaufeli 2006).

Some studies conclude that there is an association between resources and job challenges and the well-being of teachers (Collie et al. 2017; Skaalvik and Skaalvik 2017, 2018). According to the JD-R model, job resources can be expected to increase well-being, commitment, and motivation, while job challenges will decrease well-being and commitment and increase willingness to quit teaching (Skaalvik and Skaalvik 2018). Previous research studies suggest an association between job resources and demands and different indicators of teacher well-being (e.g. Skaalvik and Skaalvik 2018). Research has used components of job resources and job demands to relate with different aspects of well-being. By analysing the relationship between job resources and job demands with well-being using high-order dimensions, this study addresses a research gap on teacher well-being (TWB). According to a recent literature review (Hascher and Waber 2021), research on this topic has predominantly focused on broad well-being concepts, without addressing the specific challenges and demands of the teaching profession. Only a small number of researchers have anchored their studies in TWB within the context of teaching profession. Furthermore, theoretical extensions of JD-R model should further consider extending knowledge of how teacher well-being (Granziera, Collie, and Martin 2021).

2.3. Research goals and questions

This investigation has as main goal to describe how job resources and job demands predict teachers' well-being. The specific objectives of the study were to find out the extent to which teaching work resources such as peer and leadership support affect teachers' psychological, social, and physical well-being, as well as to examine the association between demands of the teaching profession, such as indiscipline and learner diversity, and teachers' well-being (psychological, social, and physical).

Therefore, based on the JD-R model this study attempts to answer the following two research questions: (R1) How are the job characteristics of teaching (e.g. job demands and job resources) related to teacher well-being? (R2) Do teachers' job resources (e.g. support from colleagues) mediate these relationships?

Hence, a conceptual model of teacher well-being (Figure 1) will be empirically validated by testing three major hypotheses:

H1: Teacher job demands are expected to be negative predictors of teacher well-being.

Multiple studies demonstrate that job demands are associated with stress, emotional exhaustion, low teaching self-efficacy and job satisfaction and high motivation to leave the profession (Skaalvik and Skaalvik 2011, 2015, 2017). Thus, we expected that job demands (e.g. discipline problems, time pressure) play a key role as a negative predictor of teachers' well-being.

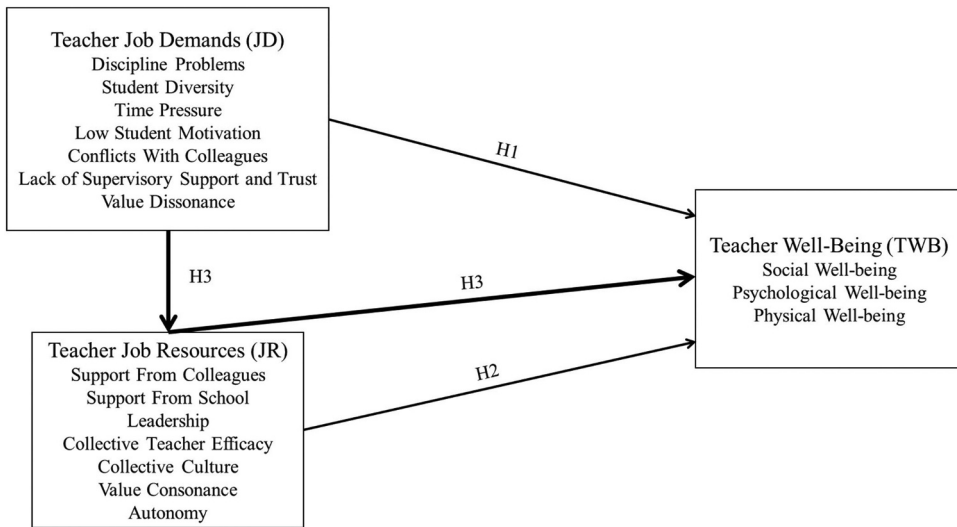


Figure 1. Hypothesized models of relations among job demands, job resources and teacher well-being.

H2: Teacher job resources are expected to be positive predictors of teacher well-being.

Job resources include organisational, physical, and social aspects of work that are functional in achieving goals and reducing work challenges (Bakker 2011). For instance, the resource of collective culture is one of the least studied and the authors emphasise the importance to include this resource in research as it has the power to reduce conflict and increase teachers' beliefs about their practice. The second hypothesis predicted that resources such as support from colleagues, school leadership, and collective culture are likely to be positive predictors of teacher well-being.

H3: Teacher job resources are expected to be mediators of the relationship between job demands and well-being.

The third hypothesis investigated a model which proposes that the relation between job demands and teachers' well-being will be mediated by job resources. This assumption is based in the JD – R theory's buffer hypothesis which posits that costs associated with high job demands are lower for employees with sufficient job resources, because these job resources enable efficient coping (Bakker, Demerouti, and Euwema 2005). The boosting hypothesis, rooted in the conservation of resources theory (Hobfoll 2002), recognises that resources are not only essential for coping with job demands but also hold intrinsic value, especially when employees face high job demands. The boosting hypothesis postulates that the combination of high job demands and high job resources enhances work motivation and stimulates work-related well-being (Bakker et al. 2007). In the presence of abundant job resources, such as support from colleagues, demanding job factors can foster work engagement (Jennings and Greenberg 2009). Furthermore, job resources play

a significant and positive role in boosting the relationships between job demands and well-being (Tadić, Bakker, and Oerlemans 2015).

3. Research method and design

3.1. Participants and sampling procedures

Participants were teachers from elementary to secondary education and working in public and private schools at Lisbon urban area, Portugal. The total sample of participants was 319, from which 267 (83.6%) are women and 53 are male, with an average age of 49.59 years old. Participants have an average of 25 years of teaching service and an average of 14 years of service at the current school. Initially, participants were selected by a non-probabilistic and by convenience sampling method (Cohen, Manion, and Morrison 2018). However, the selection of participants by convenience was not sufficient for the number of responses required, taking in account that to run the factorial validity of an instrument a minimum number of participants 10 subjects per item of the questionnaire or a minimum overall sample of 300 respondents is needed (Samuels 2015). Hence, a snowball (on referrals from initial respondents to generate additional respondents) sampling method (Fricker 2008) was used, and approximately 150 schools were contacted, via email, asking for the collaboration and sharing of surveys to increase the number of responses. The difficult process of data collection leads to the need for informal contacts, such as former teachers and the use of social media to increment the participation of respondents. The survey received responses from 327 teachers, with six beginning the questionnaire without answering any items and two starting but not completing the survey, responding to less than 50% of the items and measures included. To conduct the analyses, we exclusively utilised data from teachers who responded to all items in the survey.

3.2. Data collection procedures

The researchers obtained the necessary clearance from the research Ethics Committee of ISPA – Instituto Universitário (D/015/02/2019) and were committed to conducting this study with integrity and adherence to ethical standards. To maintain the privacy and confidentiality, identifying information has been removed from the data collected and the data was securely stored and accessible only to the research team. Teachers completed the instrument online and emails and requests using social networks were sent asking for teachers' participation and to share the questionnaire with other teachers from their personal and professional networks. Before completing the survey, participants were informed about the aims of the study, and confidentiality and anonymity were assured. Participants completed an online self-report questionnaire that asked for sociodemographic and to respond to three questionnaires assessing job resources (JR), job demands (JD) and teacher well-being (TWB).

3.3. Measures

All the items of the of the survey were translated to portuguese, and then back translated to English to ensure the equivalence of the versions. To validate the

content of the instrument, an expert panel reviewed it in terms of its clarity, conciseness, and readability (Burton and Mazerolle 2011). The five members of this panel (Oluwatayo 2012) were chosen according to a wide range of criteria, such as their expertise in relation to JD-R model and teacher well-being. Experts concluded that the items were suitable to achieve the goals of this research and didn't find any redundancy among items.

3.3.1. Job resources scale (JRs)

Originally developed by Skaalvik and Skaalvik (2011), we used 17 items of this scale distributed by six factors: support from colleagues (3 items, e.g. 'Teachers at this school help and support each other'), support from school leadership (3 items, e.g. 'The school leadership is supportive and helpful'), collective teacher efficacy (3 items, e.g. 'As teacher of this school we handle conflicts constructively because we work as a team'), collective culture (2 items, e.g. 'The teachers at this school have a shared perception of goals and means of the school development'), value consonance (3 items, e.g. 'My educational values are in accordance with the values which are emphasized at this school') and, finally, autonomy (3 items, e.g. 'In my daily teaching I am free to choose teaching methods and strategies'). Responses on all items measuring job resources were given on a 6-point scale from 'Completely disagree' (1) to 'Completely agree' (6).

3.3.2. Job demands scale (JDs)

From this scale developed by Skaalvik and Skaalvik (2016) we used 18 items, distributed into seven factors: discipline problems (3 items, e.g. 'My teaching is often disrupted by students who lack discipline'), student diversity (3 items, e.g. 'In my classes there are large variations in students' needs'), time pressure (3 items, e.g. 'Teachers are loaded with work'), low student motivation (3 items, e.g. 'Many of my students show little interest in schoolwork'), conflicts with colleagues (2 items, e.g. 'I often have conflicts with my colleagues'), lack of supervisory support and trust (2 items, e.g. 'My relationship with my supervisors is characterized by a lack of trust and respect'), and finally, value dissonance (2 items, e.g. 'My colleagues and I have quite different opinions about what is important in education'). Teachers were asked to rate all items measuring job demands using a 6-point scale ranging from 'Completely disagree' (1) to 'Completely agree' (6).

3.3.3. Teacher well-being scale (TWBs)

To assess teacher well-being, we used 13 items from Sadick and Issa (2017) scale, relating to teachers' experiences at work. TWBs measures three factors of teacher well-being: social well-being (3 items, e.g. 'I feel connected to my colleagues in school'), feeling of accomplishment recognition (7 items, e.g. 'The achievements of my students are gratifying'), and physical well-being (3 items, e.g. 'I get bodily pains from standing and movements in class'). Teachers were asked to rate all items measuring job demands using a 6-point scale ranging from 'Completely disagree' (1) to 'Completely agree' (6). The items of the physical well-being dimension were reversed in order that high scores mean positive physical well-being.

3.4. Data analysis

Descriptive and correlational analyses were carried out using SPSS version 26 (IBM 2019). The hypothesis testing was based on Structural Equation Modelling (SEM), using MPlus 8 (Muthén and Muthén 2017), and data analysis was performed in three steps. Firstly, measurement models were constructed by confirmatory factor analysis (CFAs) using the weighted least square mean and variance adjusted (WLSMV) estimator, due to the categorical nature of the data. For each main measure we tested both multidimensional and first order hierarchical models. Considering the sensitivity of the chi-square test to sample size (Kline 2011; Schumacker and Lomax 2010), the decisions about the adequacy of the model to the data were made based in the evaluation of TLI, CFI and RMSEA. For the CFI and TLI indices, values greater than .90 are typically considered acceptable, and values greater than .95 indicate a good fit of the data (Hu and Bentler 1999). For RMSEA values lower than .08 can be acceptable (Browne and Cudeck 1993; Kline 2011). Secondly, the first-order hierarchical models were used to test the hypothesised model. Finally, mediation effects were analysed considering job resources as mediator between job demands and teacher well-being. This analysis was based on 5000 bootstrapping samples following the recommendation of MacKinnon (2008).

4. Results

4.1. Measurement models

We tested two different models (multidimensional and hierarchical, with a single first-order factor) for each one of the main variables: job resources, job demands and teacher well-being. Table 1 shows the Goodness-of-Fit indexes for the models tested for each one of the main variables. For job resources both models, fit well the data likewise for psychological well-being. For job demands the multidimensional model fits well the data, whereas the hierarchical model with a single first order factor does not fit so well. Therefore, we tested an alternative model with two factors, the first one grouping the dimensions linked to students and the other bringing together the three dimensions related to colleagues and school. This alternate model fits very well the data (Table 1).

Table 1. Fit indices of the measurement models tested and the model of relations between job demands, job resources and teacher well-being.

Models	χ^2	<i>df</i>	<i>p</i>	CFI	TLI	RMSEA
Job Resources Multidimensional	289.8	104	<.001	.984	.979	.075 [.065–.085]
Job Resources Hierarchical	264	113	<.001	.974	.969	.091 [.077–.106]
Job Demands Multidimensional	191.4	113	<.001	.987	.983	.066 [.050–.082]
Job Demands Hierarchical 1 Factor	626	127	<.001	.920	.903	.157 [.145–.169]
Job Demands Hierarchical 2 Factors	197.2	126	<.001	.989	.986	.059 [.043–.075]
Teacher Well-Being Multidimensional	159.8	62	<.001	.943	.928	.099 [.080–.118]
Teacher Well-Being Hierarchical	167.1	72	<.001	.947	.933	.091 [.073–.109]

Note: JR = Job Resources; JD = Job Demands; TWB = Teacher Well-Being.

Table 2. Correlations, means, standard deviations, and reliability coefficients for job resources, job demands and teacher well-being variables.

	SFC	SFSL	CTE	CC	VC	Aut	DP	StD	TP	LSM	CwC	LSST	VD	SCS	FAR	PHWB
SFC	—	.60***	.76***	.67***	.64***	.45***	-.01	-.12*	-.14**	-.08	-.59***	-.47***	-.49***	.80***	.39***	.16*
SFSL	.53***	—	.70***	.60***	.72***	.69***	-.09	-.10	-.08	-.20***	-.57***	-.83***	-.39***	.56***	.48***	.24***
CTE	.62***	.58***	—	.86***	.79***	.57***	-.09	-.18**	-.17**	-.17**	-.55***	-.58***	-.47***	.75***	.54***	.26***
CC	.55***	.49***	.68***	—	.87***	.55***	-.10	-.16*	-.22**	-.08	-.43***	-.41***	-.54***	.61***	.45***	.21***
VC	.19**	.23***	.30***	.34***	—	.58***	-.09	-.13*	-.17**	-.20**	-.52***	-.59***	-.64***	.64***	.48***	.22***
Aut	.02	.13*	.09	.13*	.04	—	-.19**	-.17**	-.13	-.29***	-.33***	-.56***	-.33***	.51***	.59***	.27***
DP	-.02	-.08	-.08	-.09	-.05	.01	—	.51***	.45***	.60***	.13	.15*	.08	-.17	-.28***	-.40***
StD	-.09	-.08	-.14*	-.11*	-.03	-.03	.42***	—	.48***	.62***	.10	.12*	.08	-.13*	-.09	-.29***
TP	-.07	-.05	-.10	-.15**	-.06	-.01	.33***	.36***	—	.40***	-.02	-.01	-.01	-.21**	-.01	-.52***
LSM	-.06	-.16**	-.14*	-.05	-.05	-.01	.50***	.53***	.27***	—	.22**	.20**	.13*	-.20**	-.35***	-.37***
CwC	-.43***	-.44***	-.38***	-.26***	-.19**	-.11*	.08	.05	-.06	.15**	—	.82***	.60***	-.61***	-.42***	-.27***
LSST	-.34***	-.65***	-.39***	-.26***	-.20***	-.17**	.12*	.08	-.04	.14**	.62***	—	.51***	-.54***	-.49***	-.27***
VD	-.43***	-.36***	-.38***	-.43***	-.19**	-.01	.08	.07	-.03	.11*	.45***	.36***	—	-.47***	-.32***	-.16**
SCS	.63***	.45***	.57***	.45***	.24***	.01	-.15**	-.12*	-.16**	-.16**	-.41***	-.35***	-.37***	—	.66***	.25***
FAR	.30***	.37***	.40***	.31***	.20***	.04	-.20***	-.06	.03	-.26***	-.28***	-.31***	-.24***	.48***	—	.22***
PHWB	.13*	.20***	.20***	.17**	.09	.13*	-.32***	-.23***	-.34***	-.30***	-.17**	-.21***	-.13*	.18**	.13*	—
M	3.78	3.92	3.67	3.6	3.79	4.12	3.4	3.81	4.66	3.45	1.45	1.46	2.13	3.89	4.26	3.53
SD	0.83	0.98	0.79	0.81	1.94	1.92	1.04	0.88	0.52	0.96	0.74	0.88	0.97	0.77	0.48	1.17
α	0.89	0.92	0.78	0.81	0.84	0.76	0.83	0.84	0.75	0.87	0.86	0.85	0.94	0.80	0.69	0.80

Note: * $p < .05$, ** $p < .01$, *** $p < .001$. Coefficients below main diagonal are manifest correlations. Coefficients above main diagonal are latent correlations based on confirmatory factor analyses. SFC – Support from colleagues, SFSL – Support from School Leadership, CTE – Collective Teacher Efficacy, CC – Collective Culture, VC – Value Consonance, Aut – Autonomy, DP – Discipline Problems, StD – Students Diversity, TP – Time Pressure, CwC – Conflicts with Colleagues, LSST – Lack of Supervisory Support and Trust, VD – Value Dissonance, SCS – Social connectedness in school, FAR – Feeling of accomplishment and recognition, PHWB – Physical Well-Being.

4.2. Relations between job demands, job resources and well-being

Our first research question was whether job characteristics of teaching were similarly related to teacher well-being (H1 and H2). Table 2 shows correlations, means, standard deviations, and reliability coefficients for job resources and job demands variables. Means above the mid-point of the scale were interpreted as high and therefore, the mean score of the dimensions Time Pressure ($M = 4.66$, $SD = 0.52$), Feeling of Accomplishment and Recognition ($M = 4.26$, $SD = 0.48$), and Autonomy ($M = 4.12$, $SD = 1.92$), were the highest, despite the greater variability presented by the Autonomy dimension. Conversely, the mean scores of Conflicts with Colleagues ($M = 1.45$, $SD = 0.74$), and Lack of Supervisory Support and Trust ($M = 1.46$, $SD = 0.88$) were the lowest. The statistical significance and the direction of the correlation coefficients were in line with the hypotheses: the job resources dimensions were positively associated to the well-being variables and job demands dimensions were negatively correlated to most of all main well-being variables. In line with the results from the measurement models, the job demands dimensions related to students showed small or non-significant correlations with the dimensions related to colleagues and institution (Conflict with Colleagues – CwC, Lack of Supervisory Support and Trust – LSST, Value Dissonance – VD). Moreover, these dimensions linked to students also showed non-significant or small correlations with the job resources dimensions.

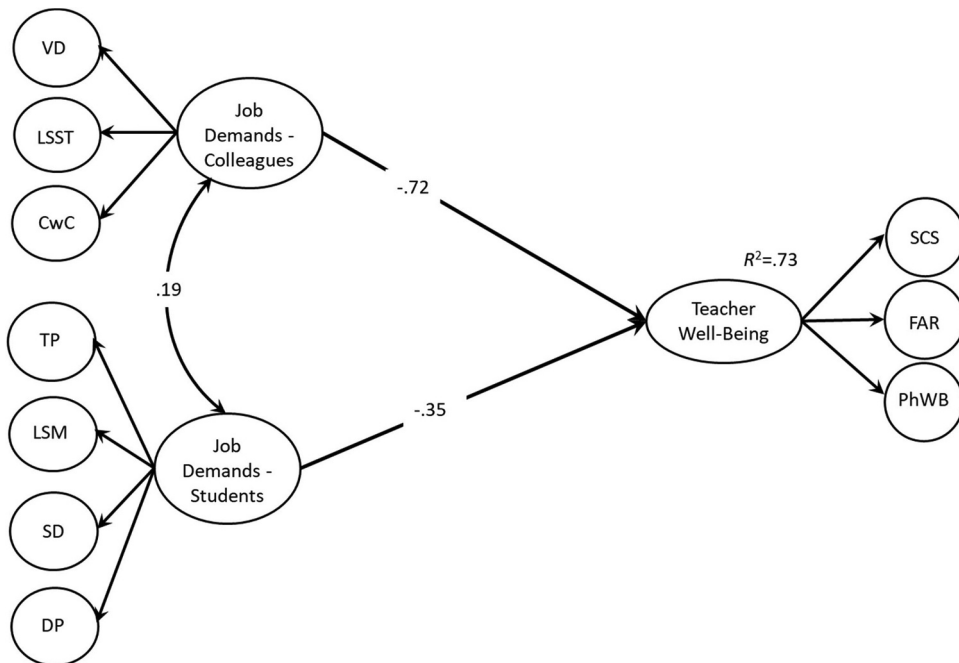


Figure 2. Model of relations between job demands, and teacher well-being. Note: For clarity purposes only the latent variables are shown. DP – Discipline Problems, StD – Students Diversity, TP – Time Pressure, CwC – Conflicts with Colleagues, LSST – Lack of Supervisory Support and Trust, VD – Value Dissonance, SCS – Social connectedness in school, FAR – Feeling of accomplishment and recognition, PhWB – Physical Well-Being.

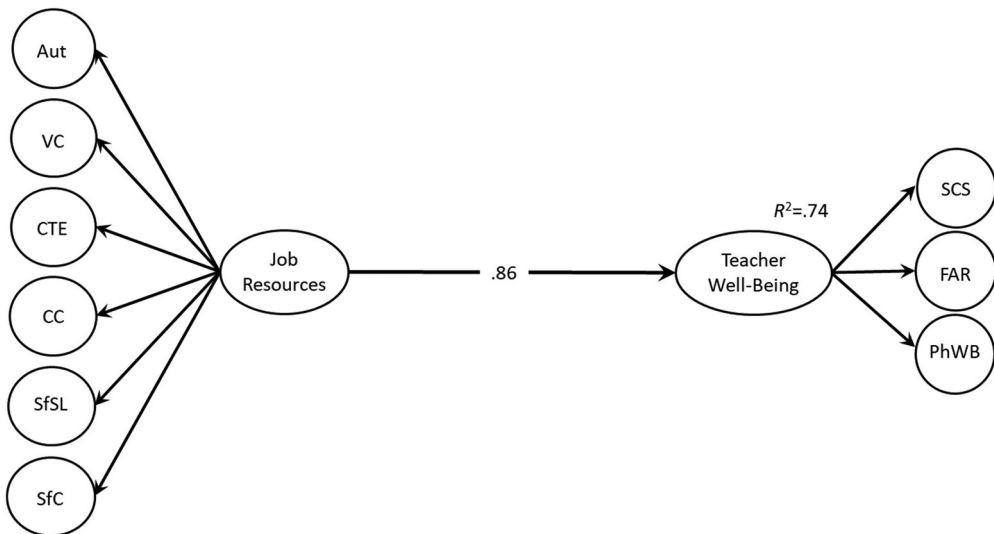


Figure 3. Model of relations between job resources and teacher well-being. Note: For clarity purposes only the latent variables are shown. SFC – Support from colleagues, SFSL – Support from School Leadership, CTE – Collective Teacher Efficacy, CC – Collective Culture, VC – Value Consonance, Aut – Autonomy, SCS – Social connectedness in school, FAR – Feeling of accomplishment and recognition, PhWB – Physical Well-Being.

The model relating job demands to teachers' well-being (H1) showed a very satisfactory fit to the data, CFI = .963, TLI = .959, RMSEA = .062 [.056–.067]. As expected, both dimensions of job demands relate negatively with teacher well-being (Figure 2). The two dimensions of job demands explained 73% of teachers' well-being variance, with the dimension of demands related to colleagues showing a stronger relation with teacher well-being.

As regard the model relating job resources to teachers' well-being (H2), it also showed a very satisfactory fit to the data, CFI = .969, TLI = .966, RMSEA = .060 [.055–.066]. As expected, job resources relate positively with teachers' well-being and explained 74% of its variance (Figure 3).

4.3. Job resources as mediators between job demands and teacher well-being

The second aim of our study was to investigate the job resources as a mediator between job demands and teacher well-being (H3). Once the structural model was established and to check whether job resources mediate the relation between job demands and teacher well-being a mediation analysis was performed based on 5000 bootstrapping samples. According to Hayes (2009) an indirect effect was significant if zero was not between the lower and upper bounds in the 95% confidence interval. Figure 4 depicts the direct effects of the job demands variables over teacher job resources and psychological well-being. The model had acceptable fit to the data, CFI = .956, TLI = .954, RMSEA = .053, [.050–.057], and highlights the negative prediction role of job demands on teacher well-being.

Based on the bootstrapping results (Table 3), the indirect effect of the Job Demands related to colleagues through Job Resources on Teacher Well-Being is significant, whereas

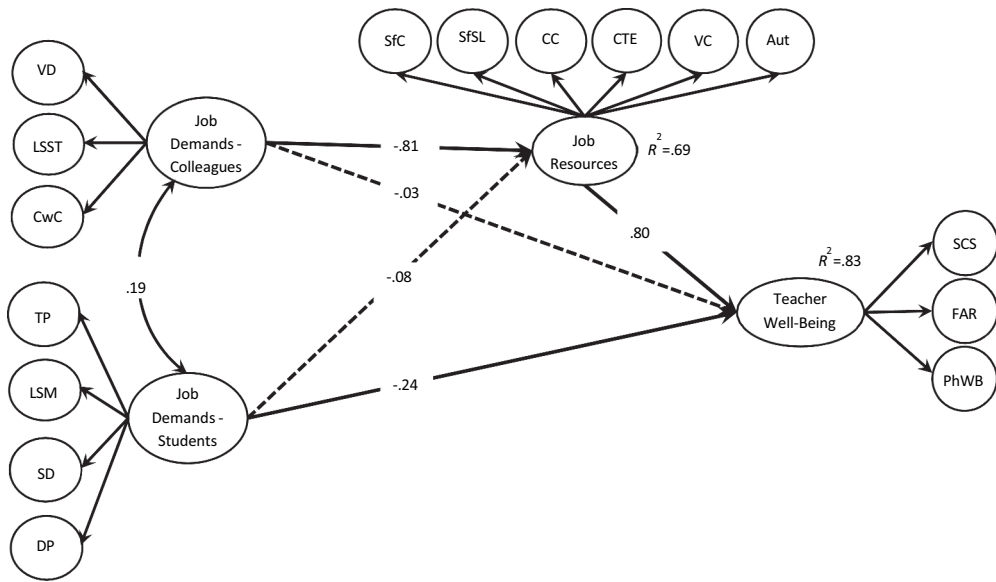


Figure 4. Model of job resources mediation between job demands and teacher well-being. Note: For clarity purposes only the latent variables are shown. Dotted line indicates non-significant relations. SFC – Support from colleagues, SFSL- Support from School Leadership, CTE – Collective Teacher Efficacy, CC – Collective Culture, VC – Value Consonance, Aut – Autonomy, DP – Discipline Problems, StD – Students Diversity, TP – Time Pressure, CwC – Conflicts with Colleagues, LSST – Lack of Supervisory Support and Trust, VD – Value Dissonance, SCS – Social connectedness in school, FAR – Feeling of accomplishment and recognition, PhWB – Physical Well-Being.

Table 3. The estimates of total, direct and indirect effects of the 95% confidence intervals for the mediation of job resources between job demands and teacher well-being.

	Total Effect	95% CIs		Direct Effect	95% CIs		Indirect Effect	95% CIs	
		Lower 2.5%	Upper 2.5%		Lower 2.5%	Upper 2.5%		Lower 2.5%	Upper 2.5%
Job Demands – Colleagues	-.68	-.78	-.55	-.03	-.29	.32	-.65	-.98	-.46
Job Demands – Students	-.30	-.44	-.13	-.24	-.38	-.11	-.06	-.14	.04

Bold numbers indicate significant effects.

no indirect effect was found from Job Demands related to Students over Teacher Well-Being. Both teachers Job Demands and Job Resources explained 83% of Teachers Well-Being variance. In summary, the effect of job demands related to colleagues on well-being are partly mediated by job resources.

Further analysis was performed to identify the main mediators among job resources. The model tested considered the higher-order dimensions of job demands and the first-order dimensions of job resources and teachers’ well-being. The results of the analysis showed that the main mediators among job resources were Support from Colleagues and Autonomy. The model fits well the data, CFI = .975, TLI = .973, RMSEA = .046, [.041–.051] and shows that the relation between job demands-colleagues and social connectedness

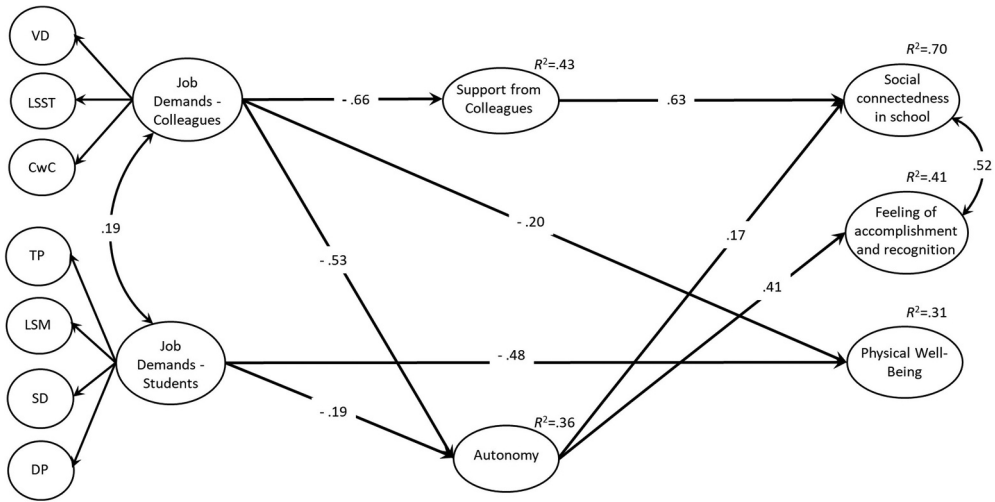


Figure 5. Model of job resources dimensions mediation between job demands and dimensions of teacher well-being.

Table 4. The estimates of total, direct and indirect effects of the 95% confidence intervals for the mediation of support from colleagues and autonomy between job demands and the dimensions of teacher well-being.

	Total Effect	95% CIs		Direct Effect	95% CIs		Indirect Effect	95% CIs	
		Lower 2.5%	Upper 2.5%		Lower 2.5%	Upper 2.5%		Lower 2.5%	Upper 2.5%
JDC on SCS	-.65								
mediated by SFC		-.76	-.54	-.14	-.43	.10	-.51	-.69	-.32
mediated by Aut							-.09	-.19	-.02
JDSt on SCS	-.12								
mediated by SFC		-.24	.04	-.08	-.19	.06	-.03	-.13	.08
mediated by Aut							0	-.07	.09
JDC on FAR	-.47								
mediated by SFC		-.59	-.29	-.19	-.44	.17	-.28	-.52	-.12
mediated by Aut							-.06	-.20	.07
JDSt on FAR	-.19								
mediated by SFC		-.37	-.04	-.12	-.29	.05	-.08	-.17	-.02
mediated by Aut							0	-.01	.02
JDC on PhWB	-.20								
JDSt on PhWB	-.48						-.08	-.16	-.02

Note: Bold numbers indicate significant effects. JDC – Job DemandsColleagues, SCS-Social connectedness in school, SFC–Support from colleagues, JDSt – Job Demands-Students, FAR - Feeling of accomplishment and recognition, Aut – Autonomy.

in school is mediated by the support from colleagues and autonomy (Figure 5). The dimension of autonomy mediated the relation between both the dimensions of job demands (colleagues and students) and the feelings of accomplishment and recognition (Figure 5). The results suggested that job demands and physical well-being are directly related without mediation of none of the job resources dimensions considered. However, because the direct effect from job demands-colleagues on physical well-being seems to be hidden by the mediation (the total effects are significant but neither the direct nor the indirect effects are significant) and because the indirect effects are close to zero both for job demands (colleagues and students) we decided re-ran the analysis deleting the paths from support from colleagues and autonomy to physical well-being. The results (Table 4) show that social support from colleagues is the main mediator between job demands and social connectedness in school, whereas autonomy has the same role for the relation between job demands and feelings of accomplishment and recognition. Job demands linked to colleagues and students are directly related to physical well-being without mediation of job resources. The relation of physical well-being is stronger with job demands linked to students than with job demands from colleagues.

5. Discussion

This study had as main purpose to investigate how teacher perception of job demands and job resources in the school settings were related to teacher well-being. Thus, two research questions were addressed: (1) How are the job characteristics of teaching (e.g. job demands and job resources) related to teacher well-being? (2) To what extent job resources have a mediation effect on the relationship between job demands and teacher well-being? As expected, job resources related positively with well-being, whereas job demands related negatively.

These results are in line with previous research within the framework of Job Demands-Resources Model (Bakker and Demerouti 2014, Collie et al. 2017; Skaalvik and Skaalvik 2017, 2018) showing that job demands decrease well-being, while job resources contribute to raise it. Regarding the first hypothesis, which refer that the job demands are negatively related to teachers' well-being has been validated. The correlation analyses showed that variables such as 'conflict with colleagues', 'lack of supervisory support and trust', and 'values dissonance' presented the highest negative correlations with social connectedness in school, one of the teacher well-being dimensions. Also 'Time pressure' and 'low student motivation' are negatively correlated to teachers' social and physical well-being. The 'Time pressure' demand is associated with the development of burnout symptoms, as mentioned earlier. Conflicts with colleagues bring psychological discomfort, since there is a need for recognition and a sense of belonging, thus interconnecting with social well-being. Regarding the 'low motivation of students', this job demand has many consequences, since, in general, the least motivated students are those who exhibit disruptive behaviours, lack of attention, effort and abstention (Skaalvik and Skaalvik 2017). A lack of student motivation has been found to negatively affect teachers' well-being (Gastaldi et al. 2014). In addition to the effort and attention that teachers need to have towards these students, their low motivation is also associated with teachers' perception of self-efficacy, thus affecting their own perception of competence, motivation to teach and well-being (Skaalvik and Skaalvik 2017).

Main findings reveal that the second hypothesis, which states that job resources are positively related to teachers' well-being, has been confirmed. Concerning teacher social and psychological well-being and considering the results of the correlation analysis, the most significant job resources were 'support from colleagues', 'support from school leadership', 'collective teacher efficacy', 'collective culture' and 'value consonance', thus making them positive predictors of both teacher social and psychological well-being. Teacher well-being is cultivated when school leaders show genuine interest in teachers' overall well-being (Le Cornu 2013; Webb et al. 2009). Positive feedback and supportive relationships between teachers and school board is particularly important for teacher well-being (Gu and Day 2013; Papatraianou and Le Cornu 2014), as well a culture of collegial supportiveness with empathetic support from school principals having positive effects on teacher well-being (Butt and Retallick 2009; Harvey et al. 2014). Previous research found teacher well-being and resilience can be built through collegiality and supportive networks (Konu, Viitanen, and Lintonen 2010) and teacher's emotional well-being was associated with school policies that support and improve their own emotional well-being (Dilekçi and Limon 2020; Lester et al. 2020). Furthermore, we found that collective teacher efficacy and collective culture as job resources are positively associated with the psychological well-being of teachers. When facing a high workload the collective teacher efficacy resource has a significant value for teachers, given that they can mobilise their collective efficacy to better deal with the tasks they have to perform (Bakker and Demerouti 2018). In this sense, the smaller the difference between teacher beliefs and the group they belong to, the more cohesive will be that belief, resulting in less negative interactions between the members of the group and turning the shared belief as a facilitator in performing tasks (Bandura 1997; Goddard, Hoy, and Hoy 2004). Therefore, it is possible to conclude that higher levels of this job resource have positive effects, since it reduces the conflict between colleagues and teachers sharing their values, norms, and ethical considerations, thus creating a sense of belonging, greater motivation and well-being at work (Skaalvik and Skaalvik 2018).

Finally, the model relating job demands and job resources to teachers' well-being showed that job resources relate positively with teachers' well-being whereas one dimension of job demands (linked to students) relate negatively. Research suggests that collegial support from colleagues and school leaders, and a positive social climate are key job resources (Admiraal and Kittelsen Røberg 2023; Droogenbroeck, Spruyt, and Vanroelen 2014; Pomaki, DeLongis, Frey, Short, and Woehrle 2010). Likewise, previous studies have shown that student-rated misbehaviour is correlated with teacher well-being (Aldrup et al. 2018) and a lack of student motivation or conflicting teacher-student relationships have also been found to negatively affect teachers' well-being (Gastaldi et al. 2014). These findings point out that interaction with pupils in socially and pedagogically challenging situations constitutes the core of teachers' pedagogical well-being (Soini, Pyhältö, and Pietarinen 2010) and suggest that teachers' relationships towards students are a resource for the teacher's well-being (Milatz, Lüftenegger, and Schober 2015). Moreover, teachers have a basic need for relatedness with students and teacher-student relationships guide emotional responses in daily interactions with students and change teacher well-being in the long run (Spilt, Koomen, and Thijs 2011). In line with these findings the proposed higher order dimension of job demands was split in two dimensions: the demands related to colleagues and those related to students, showing

the importance to distinguish between these different kinds of demands. Our results also showed that job demands related to colleagues had a stronger impact on teacher well-being than the job demands related to students.

The third and last hypothesis proposed a model in which job resources mediate the relation between job demands and teacher's well-being. This finding is consistent with the ones described by Bakker et al. (2011), who found that job resources, such as supervisory coaching (peers and school administration), attenuated the adverse effect of job demands (i.e. work overload, emotional and cognitive demands). Moreover, our results showed that job resources buffer the negative effects of job demands but only for those demands related to colleagues. The demands related to students impact directly on well-being. Based on the more fine-tuned mediation analysis focused on the dimensions of job resources and of teachers' well-being, we found that 'support from colleagues' and 'autonomy' emerged as the main mediators of the relation between job demands- colleagues and teacher social well-being (social connectedness in school). The support from colleagues is essential to the recognition and feeling of belonging and according to self-determination theory Ryan and Deci (2000) is a basic need of psychological well-being. In line with previous research in this field this study shows that high-quality collegial relationships have the capacity to foster and sustain well-being (Garbett and Thomas 2020), and boost teacher well-being through fostering a sense of belonging and connectedness (Acton and Glasgow 2015; Le Cornu 2013). The centrality of relationships and networks (MacCallum 2020) underlines the relational nature of teacher resilience and the need of teachers to develop a sense of collective resilience (Gu 2014). Additionally, autonomy mediated the relation between both the dimensions of job demands (colleagues and students) and teacher psychological well-being (feelings of accomplishment and recognition). Recent research has demonstrated that more autonomous forms of teacher motivation are related to job satisfaction (Collie et al. 2016), and well-being (Pauli et al. 2018). These results are in line with previous studies (Slemp, Field, and Cho 2020) which indicate that autonomous teacher motivation is positively associated with teacher well-being and the construction of socio-psychological well-being of school staff is promoted through relatedness and autonomy (Hakanen, Bakker, and Schaufeli 2006; Krapp 2005). Moreover, the 'autonomy' resource, allows teachers to face a high workload and to deal better with the tasks they must perform (Bakker & Demerouti, 2018).

In summary, our findings showed that job resources may protect teachers against the negative consequences of job demands buffering its effects on well-being. From a theoretical point of view, these findings are consistent with the buffer hypothesis of the JD-R, which claims that high job resources may offset the harmful impact of job demands on burnout and work-related stress (Bakker and Demerouti 2007, 2017; Bakker, Albrecht, and Leiter 2011; Xanthopoulou et al. 2007). There are two processes referred to the JD-R model, the process of maintaining health, in which job demands can cause emotional exhaustion and negative well-being, and the motivational process, in which job resources have to ability to increase well-being and engagement at work (Bakker and Demerouti 2014; Bakker, Albrecht, and Leiter 2011). Although some authors argue that job resources and demands are connected constructs, inasmuch as emotional challenges need to be compared with the emotional resources of work, Bakker and

Demerouti (2018) point out that their diverse research prove that, regardless of the type of resource or demands at work, they will work together, since resources cushion the demands of work (Bakker and Demerouti 2018; Bakker, Van Veldhoven, and Xanthopoulou 2010; Demerouti, Bakker, and Xanthopoulou 2019).

5.1. Limitations of the study

As regards the limitations of the study, it should be noted, as a main limitation, the current only addressed contextual job demands and did not make a distinction between challenges and hindrances demands. The JD-R model recognises that the balance between job demands (both challenges and hindrances) and job resources plays a crucial role in determining employee well-being and performance. Personal resources such as self-efficacy moderate the impact of job demands on well-being (Bakker, Demerouti, and Sanz-Vergel 2023). We recommend that future studies include both personal and situational job demands and resources and use a research design that assesses to what extent job demands are perceived by teachers as challenges or hindrances and provides a clear distinction between these two types of job demands. Not all job demands are necessarily detrimental (Kühnel, Sonnentag, and Bledow 2012).

A second limitation is due to the cross-sectional design of the study, which precludes any conclusions about the causal direction of the observed relationships. Future studies should investigate the qualitative and quantitative longitudinal relationships between job demands, resources, and teacher well-being, given that past research suggested that these constructs may influence each other (Skaalvik and Skaalvik 2018). Moreover, only the well-being variable was included, but the literature shows that motivation and work engagement are two concepts linked to the feeling of well-being in the teaching profession and influenced by the resources and demands of the teaching profession. Hence, it is suggested that these two concepts can be included in future research and that their relationships be investigated.

Thirdly, all the variables were collected through self-report which constitutes an additional limitation. Despite that self-report is the usual way to collect data related to the variables included in this study, future research should address this issue to provide stronger measures of these constructs. A fourth limitation was the selection method of participants. Using a convenience sample with a snowball approach may have introduced some bias with participants teachers being those more committed with the profession or simply those who like to answer questionnaires. Despite these limitations, this study provides strong evidence of the relationships between job demands, job resources and well-being in teachers. As main results we can argue that job demands should be regarded as being composed by two main components: the demands related to colleagues and the demands related to students. Furthermore, our findings point to that job resources buffer job demands related to teachers but not those related to students. More specifically, our results suggest that 'support from colleagues' and 'autonomy' are the main mediators in the relation between job demands related to teachers and the dimensions of teachers' well-being.

5.2. Implications for practice and for future research

Regarding the practical implications of this study, it is important that school administration consider in their policies the concern to reduce the consequences that demands can represent for the physical and mental health of teachers and identify the school staff who can assume a relevant role in prevention and intervention. It is emphasised that the work of teachers involves the beliefs, norms, and considerations of each one, since their practice is influenced by them, so it would be beneficial to have a greater openness for teachers to discuss and exchange ideas, whenever necessary thus creating, therefore, a greater sense of belonging. School leadership plays an influential role on teachers' well-being (Le Cornu 2013; Webb et al. 2009) by developing positive relationships with teachers (Cherkowski, 2018; Le Cornu 2013; Webb et al. 2009), helping and supporting teachers (Konu, Viitanen, and Lintonen 2010; Peters and Pearce 2012). In this regard, in-service training programmes could help teachers to develop personal resources, such as self-efficacy, time management, resilience, goal setting, motivation and, by this way, contribute to teachers' well-being (Hascher, Beltman, and Mansfield 2021; Richardson and Rothstein 2008). Much empirical data has shown that collegial relationships enhanced teacher well-being through fostering a sense of belonging and connectedness (Acton and Glasgow 2015; Le Cornu 2013) and providing emotional support to both personal and professional lives (Le Cornu 2013; Soini, Pyhältö, and Pietarinen 2010). The mediating effect of job resources via school leader-teacher relationship and support from colleagues support the claim that positive relationships play a powerful role in teachers' overall well-being (Dreer 2022; Weiland 2021). In this sense, school climate indicators within a systemic framework (Collie, Shapka, and Perry 2012) are key resources when planning interventions to foster teacher overall well-being. Fredrickson (2001) suggests that experiences involving positive emotions contribute to personal transformation, fuelling creativity, as well as strengthening awareness and the ability to respond to adverse events. Teachers are agents of their personal and professional lives (Smith and Ulvik 2017) and a call for their active participation and involvement is needed. Learning and development programmes should encourage teachers to proactively try to increase social resources, such as seeking instrumental, social, and emotional support from the school leader when confronted with high demands at work. It is also important to highlight that our results draw the attention to the importance of influences from the institutional and school system context, emphasising teaching profession as a social rather than an individual process. More specifically, attending to the main mediators revealed in our study ('support from colleagues' and 'autonomy'), transforming schools into professional learning communities (Admiraal et al. 2021), through the creation of a learning space highly supportive and interactive in a socially valued activity (Wenger 1998), can be a powerful way of supporting the interaction between job resources and job demands in a situated approach. In summary, policymakers, school heads and senior colleagues could be inspired by the results of this study and adjust working conditions in a way that assists teachers to increase their levels of well-being.

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