



Relational Job Characteristics and Well-Being of Brazilian K-12 Teachers

Natan Klein¹ · Carlos Costa¹ · Cicero Roberto Pereira² ·
Maria José Chambel³ · João P. Marôco⁴

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Abstract

A teacher's relationship with students can be a source of more than stress. The attributes of relational jobs either promote positive (*e.g.*, work engagement) or inhibit negative (*e.g.*, exhaustion) psychological states that constitute potential predictors of teachers' general well-being (*e.g.*, health perception). The present study tests hypotheses regarding the relationships between the psychological effects of relational job characteristics and teachers' work-related and context-free well-being indicators. Preschool, primary, and secondary Brazilian school teachers ($n = 2205$) responded to a cross-sectional survey. Data were analyzed by multiple mediator structural equation modeling. The psychological effects of relational job characteristics predicted exhaustion, engagement, and health perception. Findings support indirect effects on health perception of exhaustion and engagement. Data were interpreted according to the job demands-resources model, where the relational job characteristics constitute essential resources that foster work engagement, diminish burnout, and indirectly affect more generalized well-being states such as general health. Possible explanations for the relationships are discussed.

Keywords Relational job characteristics · Well-being · Teachers · Exhaustion · Work engagement

Education is key to individual and social development, and teachers play a significant role among educational actors. Society expects teachers to effectively deliver quality teaching and develop a good relationship with students. Achieving these outcomes, however, depends on personal and contextual conditions like teachers' well-being (Duckworth et al., 2009), motivation (Han & Yin, 2016), and job design (Parker, 2014), that impact their effectiveness. In this sense, well-being has been associated with various positive outcomes for workers (*e.g.*, better health) and organizations (*e.g.*, increased performance) (Page & Vella-Brodrick, 2009); in the particular case of teachers, research suggests, for example, that well-being is

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associated with the quality of teaching, the experience of meaningful work, and even students' well-being (Hascher & Waber, 2021). Moreover, job design characteristics have long been recognized as central factors in promoting well-being, motivation, and performance (Oldham & Fried, 2016). Research has recently shown that relational characteristics of a job lead to a distinguished form of motivation, namely, prosocial motivation, and promote positive personal and organizational outcomes (Grant & Parker, 2009). That is, students can be a source of more than stress for teachers; their job's relational characteristics could be associated with well-being indicators.

A growing body of research has shown an association between relational job characteristics and employees' well-being, especially in relationally-enriched professions, such as hospital nurses (Castanheira et al., 2020; Santos et al., 2018). Accordingly, the present study was designed to test how relational job characteristics might significantly impact teachers' well-being indicators at work and outside work. The present study proposes that the relationship between relational job characteristics and teachers' health perception is mediated by exhaustion and work engagement.

Teachers' Work-Related and Context-Free Well-Being Indicators

Well-being can be separated into work-related and context-free indicators (following Santos et al., 2017b). The leading work-related indicators are burnout and work engagement (Bakker et al., 2014), while life satisfaction and health perception provide an assessment of a more general, context-free state of well-being (Lopes & Chambel, 2014; Santos et al., 2017b). This distinction is relevant because theory suggests that work-related well-being has a spillover effect on other domains of life and welfare (Bakker & Demerouti, 2013).

Health perception, our outcome variable, is a general index of health. In a theoretical model which specifies relationships between physical and mental health concepts, the general evaluation of health is predicted by both generic components (*e.g.*, distress and well-being) and specific symptoms or conditions (Ware, 1995). Such a model implies that adverse or favorable health, quality of life, or well-being conditions should be reflected in the general health perception, underscoring this variable's usefulness as a general indication of personal well-being.

Burnout is an occupational condition developed as a response to chronic stress at work, characterized by exhaustion and cynicism (Maslach & Leiter, 2016). It is a work-related condition associated with various adverse health outcomes, such as psychopathological symptoms (*e.g.*, depression, anxiety) and physical health deterioration (*e.g.*, sleep disorders, headaches, and musculoskeletal problems; Bakker et al., 2014). Exhaustion, referring to emotional and physical fatigue, depression, psychosomatic complaints, and anxiety, is the core dimension of burnout and the most noted indicator of strain at work (Chambel et al., 2022; Klusmann et al., 2008; Van Den Broeck et al., 2008). This stress dimension is experienced as a depletion of one's resources and results from a prolonged situation of high demands at work (Bakker et al., 2014; Schaufeli & Bakker, 2004). Thus, in this study, we used exhaustion to indicate teachers' work-related strain.

Work engagement is the antipode of exhaustion and can be defined as a “positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” (Schaufeli & Bakker, 2004, p. 295). It is a motivational component predominantly associated with increased performance (Tripathi & Sharma, 2016). However, some studies suggested associations of work engagement with self-reported health outcomes (Bakker & Leiter, 2010); even among teachers, significant relationships were found between vigor, dedication, and self-reported health (Hakanen et al., 2006). Albeit many studies conceptualize engagement as a three-factor construct, a single-factor model is also viable (Schaufeli et al., 2006) and valuable when researchers test complex nomological networks. In this way, work engagement is used here as a single motivational component of well-being.

The Job Demands-Resources (JD-R) model defines the antecedents and consequences of burnout and engagement. According to the JD-R framework, all job characteristics can be understood as demands and resources. Demands are aspects of a job that require effort (physical, emotional, or cognitive) and are associated with physiological and/or psychological costs (*e.g.*, elevated pressure, exhaustion). Resources are aspects of a job that help one deal with demands and its costs or promote employee development. While job demands are the leading causes of exhaustion, job resources encourage work engagement and buffer the effect of demands on exhaustion. The JD-R model proposes two distinct but related processes: a health impairment process, where high demands and low resources predict exhaustion which in turn predicts adverse health outcomes, and a motivational process, where high resource availability leads to engagement, which, in turn, predicts performance outcomes and positive organizational outcomes. Despite this pattern, exhaustion also impairs performance, and engagement leads to well-being (Bakker et al., 2014; Lesener et al., 2019; Llorens et al., 2006; Schaufeli & Taris, 2014). This pattern suggests that demands and resources influence health outcomes through psychological work-related factors, amongst which exhaustion and engagement are major mediating processes.

The Psychological Effects of Relational Job Characteristics

Relationally-enriched professionals such as nurses and teachers are prone to high demands and exhaustion (Lanners, 2020). However, research on job design suggests these workers also have higher levels of unique resources at their disposal (Grant & Parker, 2009). In their case, the social job design characteristics, namely, the interaction outside the organization (Grant & Parker, 2009; Morgeson & Humphrey, 2006), can be a source of many desirable personal and organizational outcomes, such as motivation, performance, and well-being (Parker, 2014). Although essential, relational characteristics have been a long-forgotten element of job design (Grant & Parker, 2009).

Building upon these propositions, Grant (2007) developed a theoretical framework affirming that the relational architecture of a job, regarding interactions with the beneficiaries of one’s work, fosters psychological states that leads to specific outcomes. According to Grant’s framework, jobs have a relational design composed of

greater or lesser opportunities that positively impact the beneficiaries of one's work life and make contact with them. These work design aspects promote the psychological effects of relational job characteristics (PERJCs), which are: (a) perceived social impact (PSI), the awareness that employees' work positively impacts beneficiaries' lives; (b) perceived social worth (PSW), which refers to employees' perceptions about whether beneficiaries appreciate their work; and (c) affective commitment to clients (ACC), the emotionally charged commitment that employees develop with the beneficiaries of their work (Grant & Campbell, 2007; Grant et al., 2007; Grant, 2008a, b; Santos et al., 2017a). Moreover, drawing on research with hospital nurses, suggests that PSI, PSW, and ACC have a common theme, indicating the perceived quality of the relationship with the beneficiary (Castanheira et al., 2020). Likewise, the PERJCs may be an essential resource for teachers, leading to lower exhaustion, greater engagement levels, and better health perception.

Psychological Effects of Relational Job Characteristics and Well-Being Indicators

Although Grant (2007) focused on how relational job design explains the prosocial motivation and leads to performance outcomes, a growing body of research has investigated how PERJCs are associated with employees' work-related and context-free well-being indicators (Santos et al., 2018). Studies have found distinct patterns of associations, mainly between the PERJCs, work strain, and engagement. The PSW and PSI consistently predicted burnout and engagement in samples of hospital nurses (Brazilian and Portuguese; Santos et al., 2017b, 2020), officers, sergeants, and soldiers of the Portuguese army (Castanheira et al., 2016), employees of contact centers (Gonçalves et al., 2020), and secondary school teachers (Grant & Campbell, 2007). However, PSW was more consistent than PSI among the studies. The ACC was not measured in all studies, but it was found to positively predict engagement in a sample of Portuguese hospital nurses (Santos et al., 2017b). Furthermore, only PSW showed a direct and indirect effect (by way of burnout and engagement) on health perception in samples of Brazilian and Portuguese hospital nurses (Santos et al., 2017b).

Of studies linking the PERJCs and well-being, notably, as far as we know, only one was conducted with a sample of secondary school teachers (Grant & Campbell, 2007), suggesting a gap in the literature. As with many occupations, however, the JD-R theory has been confirmed to operate in a sample of teachers (Hakanen et al., 2006). Moreover, important demands imposed on teachers (*e.g.*, student misbehavior; Aloe et al., 2014) and resources (*e.g.*, supervisory support, social climate; Bakker et al., 2007) for teachers have a social aspect. Moreover, to our knowledge, a study investigating JD-R theory and the PERJCs was not yet conducted with a sample of Brazilian teachers. This implies that such characteristics of teachers from Brazil are still unknown. Therefore, the abovementioned aspects call for a study investigating the PERJCs and the well-being of teachers in Brazil.

However, why can the PERJCs be seen as resources? Essentially, having a positive impact on other people's lives and having one's work valued by them are things employees value (Grant, 2007), which is, indeed, the definition of resources proposed by the Conservation of Resources Theory (Hobfoll et al., 2018). Furthermore, the PERJCs provide meaning and value to work (Grant & Parker, 2009), can satisfy basic needs (*e.g.*, autonomy, belongingness, and competence; Van Den Broeck et al., 2008), and set a behavior-outcome contingency that sparks motivation (Castanheira et al., 2016; Grant, 2007). Therefore, motivated employees will be psychologically energized (Van Den Broeck et al., 2008). Such a state could lead to accomplishing goals and developing skills, which may reduce the strain brought on by demands and lead to higher levels of well-being. Psychologically energized teachers, for instance, may cope better with demands (*e.g.*, students' misbehavior) and feel satisfied in doing good to others. Moreover, feeling one's work is valued by others and perceiving it as relevant to make a difference can promote positive emotions, which broaden-and-build theory has been proposing to affect health (Fredrickson & Cohn, 2008). These points highlight the potential impact of the PERJCs on teachers' well-being and work-related and general indicators.

Despite the fuzzy pattern of associations between the PERJCs and well-being indicators, the present evidence is insufficient to conclude which of the three PERJCs is most closely associated with well-being and which is not. Moreover, we suggest that the three PERJCs show a common theme: they indicate the employees' perception of the relevance of their work to the clients with whom they are affectively committed. Grant and Parker (2009) even refer to these psychological effects as task significance. Also, according to Grant's (2007) model, the three PERJCs are necessary to ensure the positive outcomes proposed by the author. In addition, interventions to promote the PERJCs will probably tap the three components since all arise from client interactions. Therefore, looking for a parsimonious model, we have decided to treat the PERJCs as a second-order factor in this study.

Given past studies' contributions and the theoretical relevance of the PERJCs to teachers' well-being, the present study was designed to test the following hypotheses regarding the relationship between PERJCs and teachers' well-being indicators:

- H₁: The PERJCs negatively predict exhaustion (H_{1a}), positively predict engagement (H_{1b}), and positively predict health perception (H_{1c});
- H₂: Exhaustion negatively predicts health perception (H_{2a}), and engagement positively predicts health perception (H_{2b});
- H₃: The PERJCs have an indirect effect on health perception mediated by both exhaustion (H_{3a}) and by engagement (H_{3b}).

Method

Participants and Procedures

The study used a cross-sectional design incorporating a convenience sampling method. Two thousand two hundred five ($n=2205$) Brazilian from northern Rio

Grande do Sul State responded to the survey, of which 965 taught at preschool (33%), 1654 at primary school (57%), and 299 at secondary school (10%). Participants' mean age was 40.37 ($SD=9.73$) years, 93% were women, and 90% were teaching at public schools.

Teachers' educational levels were: 20% had an incomplete undergraduate degree, 65% had a complete undergraduate degree, and 15% had an incomplete or full graduate degree (Master's or Doctoral). Participants had been teaching for a mean of 15.02 ($SD=9.23$) years, with a mean of 7.28 ($SD=6.92$) years in the current school and a weekly class workload of 28.66 h ($SD=11.82$). When responding to the questionnaire, most teachers had not taken sick leave in the previous two weeks (97%) or in the last year (81%).

During teachers' school meetings, the instruments were applied in paper-and-pencil format (organized in a single questionnaire). Participants only responded to the questionnaire after agreeing with the research's nature and signing an Informed Consent Form. Teachers took approximately 35 min, on average, to answer the instruments. The answers were anonymized. The local research ethics committee approved the study.

Instruments

Psychological Effects of Relational Job Characteristics

The PERJCs Scale was used. The three subscales that form the instrument were applied separately in different studies (Grant & Campbell, 2007; Grant et al., 2007; Grant, 2008a, b) and further grouped and adapted to the Portuguese and Brazilian contexts (Santos et al., 2017a). The instrument assesses three associated psychological states fostered by relational job design. The PSI ($\alpha=0.81$) was measured through six items (e.g., "My work really makes others' lives better"), the PSW ($\alpha=0.84$) through three items (e.g., "I feel that others appreciate my work"), and the ACC ($\alpha=0.70$) through two items (e.g., "The people who benefit from my work are very important to me"). Responses were scored on a seven-point Likert scale (1-I totally disagree, 7-I totally agree).

Exhaustion

The exhaustion subscale of the Maslach Burnout Inventory General Survey was used (Schaufeli et al., 1996), and the adapted version for the Brazilian context was applied in a previous study (Castanheira & Chambel, 2010). The scale assesses exhaustion ($\alpha=0.85$) through five items (e.g., "I feel used up at the end of a work day"). Responses were scored on a seven-point Likert scale (1-never, 7-always).

Work Engagement

The Utrecht Work Engagement Scale Short version (Schaufeli et al., 2006) was used, and an adapted version for the Brazilian context was applied in a previous study (Castanheira & Chambel, 2010). The instrument measures engagement ($\alpha=0.88$)

through nine items (e.g., “I am enthusiastic about my job”). Although a three-factor structure was used in the original and adapted studies, we employed a single-factor structure for purposes of parsimony, which (Schaufeli et al., 2006) deemed a viable alternative. Responses were scored on a seven-point Likert scale (*1-never, 7-always*).

Health Perception

The positive items of the current health subscale of the Health Perceptions Questionnaire were used (Ware et al., 1978), and the adapted version for the Brazilian context was applied in a previous study (Chambel & Farina, 2015). The instrument measures health perception ($\alpha=0.91$) through four items (e.g., “I am as healthy as others”). Responses were scored on a five-point Likert scale (*1-definitely false, 5-definitely true*).

Data Analysis

Confirmatory Factor Analyzes (CFA) were run to assess the internal structure’s adequacy for each construct included in the model. The full measurement model was also evaluated. The Spearman correlation coefficient was used to provide a correlation matrix between variables under study and the Cronbach’s Alpha coefficient was used to assess the reliability of each scale. Multiple-Mediator Structural Equation Modelling (SEM) was used to evaluate a theoretical model in which exhaustion and engagement mediate the relationship between the PERJCs and teachers’ health perception. The PERJCs was treated as a second-order factor to generate a parsimonious model with fewer relationships. A residual covariance was added to the model between exhaustion and engagement because one is the antipode of the other, in line with the JD-R model (Hakanen et al., 2006; Schaufeli & Bakker, 2004).

The Robust Diagonally Weighted Least Squares estimator was used since all variables were treated as ordinal categorical (DiStefano & Morgan, 2014; Li, 2016). Items were used as indicators of latent variables, and missing values were handled by pairwise deletion. All the analyses were conducted in Laavan as implemented in JASP software (v. 16.2.0) for the SEM module (Rosseel, 2012).

The goodness-of-fit indexes used to evaluate the model were: χ^2 , Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). For a good fit, χ^2 values should not be significant, CFI and TLI should be ≥ 0.90 , preferably > 0.95 , and RMSEA should be ≤ 0.08 , preferably ≤ 0.06 , with the upper boundary of the confidence interval not > 0.10 (Brown, 2015).

Results

Preliminary Analysis and Measurement Model

This study aimed to test the relationships between the PERJCs and teachers’ health perception, exhaustion, and engagement. The fit indices for each construct and the full measurement model were calculated (Table 1).

Good fit indices were found for the PERJCs and engagement factorial structures. However, RMSEA values for exhaustion and health perception structures were found to be above the ideal cut point. As suggested by the modification indices, the RMSEA value of the exhaustion structure was due to a residual covariance between two similar items. Moreover, the RMSEA value for the health perception structure was also due to residual covariances between all items, which were identical in content. Despite the RMSEA values, good CFI and TLI values were found for both constructs internal structure. Modifications were not implemented in the models because the fit indices were not consistently pointing to a poor adjustment and we did not find convincing theoretical reasons that would justify implementing covariances between items in the model. Furthermore, good fit indices were found for the full measurement model, and all the factor loadings were > 0.40 .

Descriptive statistics and correlations between variables are presented (Table 2) indicated: (i) negative and low associations between the PERJCs (represented by PSI, PSW, and ACC), and exhaustion, (ii) positive and low-to-moderate associations between the PERJCs and engagement, (iii) positive and low correlations between the PERJCs and health perception, (iv) negative and low-to-moderate associations between exhaustion and health perception, (v) positive and moderate associations between engagement and health perception, as well as (vi) negative and moderate-to-high magnitude associations between exhaustion and engagement. All relationships were in the expected direction.

Structural Model

To test the hypothesized model where PERJCs predict health perception mediated by exhaustion and engagement, a double mediator SEM analysis was performed. The model showed good indices of fit ($\chi^2 = 4484.183$, $df = 368$; $p < 0.001$, CFI = 0.993, TLI = 0.993, RMSEA = 0.050, 90% CI [0.048, 0.052]), suggesting its plausibility (Fig. 1).

The regression paths (Fig. 1) show that PERJCs negatively predicted exhaustion and positively predicted engagement. The PERJCs also had a direct effect on health perception. These results support hypothesis H₁. Furthermore, exhaustion negatively predicted health perception, and engagement positively predicted health perception. Such findings support hypothesis H₂. The indirect effects suggested that exhaustion as well as engagement partially mediated the relationship between the PERJCs and health perception, supporting hypothesis H₃ (Table 3).

The PERJCs predicted engagement in a greater magnitude than exhaustion and health perception. Also, health perception was predicted by exhaustion to a greater extent than the PERJCs and engagement. Notwithstanding that the indirect effects of the PERJCs on health perception by exhaustion and work engagement were significant, the standardized coefficients of these effects were similar in magnitude to the direct impact of the PERJCs on health perception.

Discussion

The present study was designed to test the relationships between the PERJCs and indicators of teachers' well-being. The PERJCs were found to predict exhaustion, work engagement, and health perception. The PERJCs also indirectly affected health perception as mediated by exhaustion and engagement. The relationships found concur with previous studies' results (Castanheira et al., 2016; Gonçalves et al., 2020; Santos et al., 2017b, 2020). These relationships can be interpreted in the JD-R model, which states that resources like the PERJCs buffer exhaustion and foster engagement, leading to positive health outcomes (Bakker et al., 2014).

Resources have consistent negative relationships with strain and exhaustion (Bakker et al., 2014), and our results point out that such a premise holds in the case of PERJCs in Brazilian teachers. Indeed, the PERJCs showed an association with exhaustion ($\gamma = -0.29$) of a similar magnitude to the association between resources (social support, coaching, and feedback) and burnout ($\gamma = -0.23$ in two samples) found by Schaufeli and Bakker (2004). Moreover, Hakanen et al. (2006) also showed an association between resources and burnout ($\gamma = -0.28$) in a sample of teachers of a similar magnitude to the one we found. In the particular case of the PERJCs, however, Santos et al. (2017b) found a stronger association than that we have found between perceived social worth (PSW) and burnout in two samples of hospital nurses ($\gamma = -0.39/-0.45$), while Santos et al. (2020) found a similar association to what we saw between PSW and exhaustion ($\beta = -0.27$) in a sample of hospital nurses, after controlling for quantitative demands and job control. These comparisons imply that the PERJCs as important as other resources in reducing teacher strain levels.

The association between the PERJCs and exhaustion can be explained in a direct and an indirect way. COR theory, for example, proposes that stress emerges as a response to a threatened or actual loss of resources (Hobfoll et al., 2018). In such a vein, the presence of resources should be negatively related to exhaustion, as we have demonstrated. In another perspective, resources like the PERJCs can impact exhaustion indirectly through the satisfaction of basic psychological needs (Van Den Broeck et al., 2008). A third and complementary way to look at the association between the PERJCs and exhaustion is that in boosting prosocial motivation, these psychological states help teachers to cope with relational demands (Grant, 2007), promoting a positive and empathetic view of the students. This coping function is relevant in buffering the impact of demands, since many demands teachers face arise from students' misbehavior (Aloe et al., 2014).

Resources also consistently predict work engagement more strongly than exhaustion (Bakker et al., 2014); a premise replicated in Brazilian teachers' PERJCs. The association we have found between the PERJCs and engagement ($\gamma = 0.52$) was similar to what Schaufeli and Bakker (2004) found between resources and engagement across three samples ($\gamma = 0.51/0.53$). However, Hakanen et al. (2006) found a weaker association between resources and engagement ($\gamma = 0.10$), perhaps due to differences in the specific resources that composed the second-order resources factor, *i.e.*, Schaufeli and Bakker (2004) included only resources comprised by social characteristics (Morgeson & Humphrey, 2006). Furthermore, investigating the

associations of each PERJC individually with engagement, different studies found weaker associations than the one we found (Castanheira, 2016; Castanheira et al., 2016; Santos et al., 2017b, 2020); nevertheless, if summed up, the association of the individual PERJCs became similar in magnitude to the association between our second-order factor and engagement. These comparisons imply that the PERJCs are as relevant as other social characteristics with respect to its job resource role.

The association between the PERJCs and work engagement can also be explained directly and indirectly. Directly, a resource abundance situation fosters motivation (Hobfoll et al., 2018), and engagement is a motivational state especially relevant because of its potential to multiply essential resources. For instance, engaged employees showing augmented performance are in a better position to earn rewards and progress in their careers. From another perspective, the satisfaction of basic psychological needs (Van Den Broeck et al., 2008) or prosocial motivation (Castanheira et al., 2016) can be indirect ways to explain the association of the PERJCs and work engagement.

Exhaustion is part of a health impairment process in the JD-R model, leading to adverse health outcomes (Bakker et al., 2014). Therefore, the negative association between exhaustion and health perception found in this study was already predicted by the model's assumptions and confirmed a previous study's findings with teachers (Hakanen et al., 2006). The association we found was similar to the association between burnout and health perception found by (Santos et al., 2017b).

Work engagement, the antipode of exhaustion, primarily constitutes part of a motivational process in the JD-R model, leading to positive organizational outcomes and better performance (Schaufeli & Taris, 2014). However, engagement is also associated with positive health outcomes (Upadyaya et al., 2016), and a previous study found an association of a more substantial magnitude than the one we found between engagement and health perception ($\gamma=0.25/0.28$) in Brazilian and Portuguese hospital nurses (Santos et al., 2017b). Observing the associations within our model, engagement was associated with health perceptions in an equal magnitude than the PERJCs. Such considerations imply that engagement does not weigh more than social resources in explaining health perceptions and that engagement may impact health perceptions differently across occupations.

Finally, the magnitudes of the effects point that the PERJCs affects work-related components of teachers' well-being (exhaustion and engagement) more strongly than it affects health perception, a context-free well-being component. This concurs with the view that the PERJCs are resources of the job, having a contextualized effect. In addition, the indirect effects of the PERJCs on health perception through exhaustion and engagement confirm previous findings (Santos et al., 2017b) and support the JD-R model (Hakanen et al., 2006). In the present study, however, the magnitude of the indirect effects was similar to the magnitude of the direct effect of the PERJCs on health perception. Although the indirect effects were significant, which supports that a mediation mechanism exists, they were not

more important than PERJCs alone in explaining health perception. We speculate that this result implies that some resources could impact well-being directly or indirectly through a mechanism other than exhaustion or engagement. COR theory can provide some insights into the direct path (Hobfoll et al., 2018) and, from a broaden-and-build theory perspective (Fredrickson & Cohn, 2008), positive affect could be a valuable mechanism through which the PERJCs impact health.

Final Remarks

The present study confirms that the PERJCs relate to teachers' well-being, acting as resources that primarily affect work-related well-being, directly affect health perception, and indirectly affect health perception through exhaustion and work engagement. The results imply that teachers who perceive their work as relevant for students and have an affective commitment will experience better welfare at work and outside it. These results fulfill a gap in the literature linking the PERJCs and well-being indicators, as, to the best of our knowledge, no other study evaluated such relationships in a sample of Brazilian teachers. This advances JD-R theory in establishing the PERJCs as job resources equally important to more consecrated resources like social support and feedback. Furthermore, our results advance theory in teachers' well-being by demonstrating that interaction with students is an essential source of resources for these workers. This can provide a job design-grounded explanation for teachers' resilience, meaning a high level of engagement despite overwhelming demands and scarce resources.

Some limitations of the study should be acknowledged: participants were sampled by convenience, which may lead to biases; the cross-sectional design does not enable us to draw causal inferences; and all measures were self-report questionnaires, which may be a source of standard method variance. Future research could address these limitations and compare directly versus mediated relationships (*e.g.*, basic psychological needs, self-efficacy) between the PERJCs and well-being indicators. Furthermore, future studies could verify if the PERJCs have different direct and indirect relationships with health perception in other occupations and if additional resources show equal magnitudes for direct and indirect effects.

As a practical implication of this study, schools could foster teachers' well-being by creating opportunities in which they could perceive how impactful and socially valuable to students their work is. These outcomes could be achieved, for example, through meetings with actual or previous students giving their testimonies of the teachers' work impact on their lives. Institutional videos or surveys in which students could provide feedback to teachers about the positive effects of their work could also achieve the same purpose.

Appendix

Table 1 Fit indices statistics for the study's constructs and for the full measurement model

Model	χ^2		CFI	TLI	RMSEA	
	Value	df			Value	90% CI
PERJCs Three-Factor Model	508.159***	41	0.995	0.993	0.073	[0.067, 0.078]
Exhaustion Single-Factor Model	96.230***	5	0.997	0.994	0.092	[0.077, 0.109]
Engagement Single-Factor Model	223.754***	27	0.997	0.996	0.058	[0.051, 0.065]
Health Perception Single-Factor Model	49.710***	2	0.999	0.998	0.104	[0.080, 0.130]
Full Measurement Model	4484.183***	368	0.993	0.993	0.050	[0.048, 0.052]

PERJCs psychological effects of relational job characteristics, *CFI* comparative fit index, *TLI* Tucker-Lewis Index, *RMSEA* root mean square error of approximation

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 2 Descriptive statistics and spearman correlation

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. PSI	5.94	0.76	–					
2. PSW	5.52	0.94	.50	–				
3. ACC	5.98	1.07	.41	.34	–			
4. EX	2.83	1.57	-.14	-.25	-.13	–		
5. ENG	5.16	0.83	.31	.38	.23	-.51	–	
6. HP	3.58	0.87	.18	.25	.08	-.38	.33	–

PSI perceived social impact, *PSW* perceived social worth, *ACC* affective commitment to the clients, *EX* exhaustion, *ENG* engagement, *HP* health perception

All the relationships were significant at $p < .001$

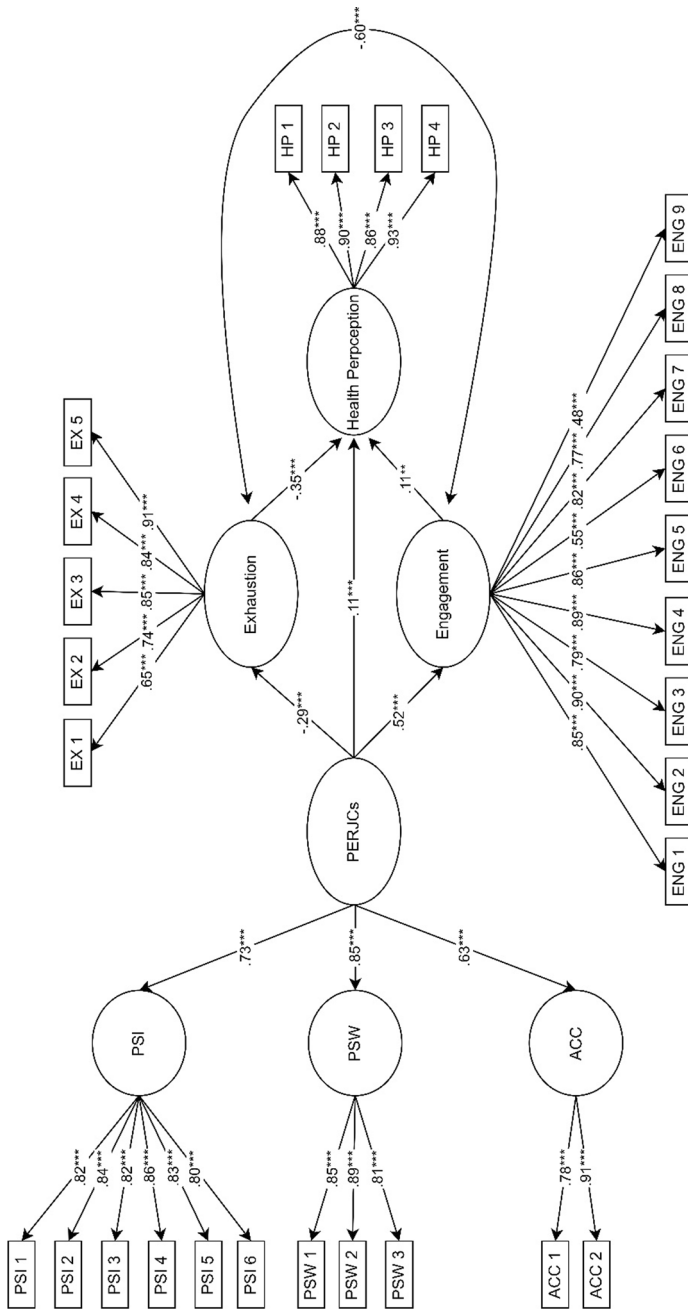


Fig. 1 Structural Model where the Psychological Effects of Relational Job Characteristics predict Health Perception through Exhaustion and Engagement. The arrows show standardized estimated parameters between latent variables. The diagram is a representational figure. The PERJCS are a second-order factor. PSI = Perceived Social Impact, PSW = Perceived Social Worth, ACC = Affective Commitment to the Clients, PERJCS = psychological effects of relational job characteristics, EX = Exhaustion, ENG = Engagement, HP = Health Perception. * $p < .05$, ** $p < .01$, *** $p < .001$

Table 3 Regression paths and indirect effects of the hypothesized model

	<i>B</i>	95% CI for <i>B</i>		<i>SE</i>	γ	<i>R</i> ²
		LL	UL			
Direct Effects						
PERJCs → EX	-.32***	-.37	-.26	.03	-.29	.09
PERJCs → ENG	.73***	.66	.80	.04	.52	.27
PERJCs → HP	.16***	.08	.24	.04	.11	
EX → HP	-.47***	-.54	-.40	.04	-.35	
ENG → HP	.11**	.04	.18	.03	.11	
Indirect Effects						
PERJCs → EX → HP	.15***	.11	.18	.02	.10	
PERJCs → ENG → HP	.08**	.03	.13	.03	.06	
Total Effect	.39***	.32	.46	.04	.27	.22

PERJCs psychological effects of relational job characteristics, *EX* exhaustion, *ENG* engagement; *HP* health perception, *LL* lower limit, *UL* upper limit, *SE* standard error

* $p < .05$, ** $p < .01$, *** $p < .001$

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Data Availability The data that support the findings of this study are available from the corresponding author upon request.

Declarations

Ethics Approval This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the CEP/CONEP system ethics research committee.

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References

- Aloe, A. M., Shisler, S. M., Norris, B. D., Nickerson, A. B., & Rinker, T. W. (2014). A multivariate meta-analysis of student misbehavior and teacher burnout. *Educational Research Review*, *12*, 30–44. <https://doi.org/10.1016/j.edurev.2014.05.003>
- Bakker, A. B., & Demerouti, E. (2013). The Spillover-Crossover model. In J. G. Grzywacz & E. Demerouti (Eds.), *New Frontiers in Work and Family Research* (pp. 54–70). Psychology Press.

- Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. I. (2014). Burnout and work engagement: The JDR approach. *Annual Review of Organizational Psychology and Organizational Behavior, 1*, 389–411. <https://doi.org/10.1146/annurev-orgpsych-031413-091235>
- Bakker, A. B., Hakanen, J. J., Demerouti, E., & Xanthopoulou, D. (2007). Job resources boost work engagement, particularly when job demands are high. *Journal of Educational Psychology, 99*(2), 274–284. <https://doi.org/10.1037/0022-0663.99.2.274>
- Bakker, A. B., & Leiter, M. P. (2010). Where to go from here: Integration and future research on work engagement. In A. B. Bakker & M. P. Leiter (Eds.), *Work Engagement: A Handbook of Essential Theory and Research* (pp. 181–196). <https://doi.org/10.4324/9780203853047>
- Brown, T. A. (2015). *Confirmatory for analysis for applied research* (2nd ed.). Guilford Publication.
- Castanheira, F. (2016). Perceived social impact, social worth, and job performance: Mediation by motivation. *Journal of Organizational Behavior, 37*(6), 789–803. <https://doi.org/10.1002/job.2056>
- Castanheira, F., & Chambel, M. J. (2010). Reducing burnout in call centers through HR practices. *Human Resource Management, 49*(6), 1047–1065. <https://doi.org/10.1002/hrm.20393>
- Castanheira, F., Chambel, M. J., Lopes, S., & Oliveira-Cruz, F. (2016). Relational job characteristics and work engagement: Mediation by prosocial motivation. *Military Psychology, 28*(4), 226–240. <https://doi.org/10.1037/mil0000116>
- Castanheira, F., Chambel, M. J., Santos, A., & Rodrigues, F. R. (2020). Healthy healthcare in Portugal: Empirical studies of relational job characteristics and wellbeing. In L. Tevik Løvseth & A. H. de Lange (Eds.), *Integrating the organization of health services, worker wellbeing and quality of care: Towards healthy healthcare* (pp. 335–341). Springer International Publishing. https://doi.org/10.1007/978-3-030-59467-1_17
- Chambel, M. J., Castanheira, F., & Santos, A. (2022). Teleworking in times of COVID-19: the role of Family-Supportive supervisor behaviors in workers' work-family management, exhaustion, and work engagement. *The International Journal of Human Resource Management, 1*–36. <https://doi.org/10.1080/09585192.2022.2063064>
- Chambel, M. J., & Farina, A. (2015). HRM and temporary workers' well-being: A study in Portugal and Brazil. *Cross Cultural Management, 22*(3), 447–463. <https://doi.org/10.1108/CCM-07-2013-0105>
- DiStefano, C., & Morgan, G. B. (2014). A comparison of diagonal weighted least squares robust estimation techniques for ordinal data. *Structural Equation Modeling, 21*(3), 425–438. <https://doi.org/10.1080/10705511.2014.915373>
- Duckworth, A. L., Quinn, P. D., & Seligman, M. E. P. (2009). Positive predictors of teacher effectiveness. *Journal of Positive Psychology, 4*(6), 540–547. <https://doi.org/10.1080/17439760903157232>
- Fredrickson, B. L., & Cohn, M. A. (2008). Positive Emotions. In M. Lewis, J. M. Haviland-Jones & L. F. Barrett (Eds.), *Handbook of Emotions* (pp. 777–796). Guilford Press.
- Gonçalves, C., Chambel, M. J., & Carvalho, V. S. (2020). Combating burnout by increasing job relational characteristics. *Journal of Career Development, 47*(5), 538–550. <https://doi.org/10.1177/0894845319837374>
- Grant, A. M. (2007). Relational job design and the motivation to make a prosocial difference. *Academy of Management Review, 32*(2), 393–417. <https://doi.org/10.5465/AMR.2007.24351328>
- Grant, A. M. (2008a). Designing jobs to do good: Dimensions and psychological consequences of prosocial job characteristics. *Journal of Positive Psychology, 3*(1), 19–39. <https://doi.org/10.1080/17439760701751012>
- Grant, A. M. (2008b). The significance of task significance: job performance effects, relational mechanisms, and boundary conditions. *Journal of Applied Psychology, 93*(1), 108–124. <https://doi.org/10.1037/0021-9010.93.1.108>
- Grant, A. M., & Campbell, E. M. (2007). Doing good, doing harm, being well and burning out: The interactions of perceived prosocial and antisocial impact in service work. *Journal of Occupational and Organizational Psychology, 80*(4), 665–691. <https://doi.org/10.1348/096317906X169553>
- Grant, A. M., Campbell, E. M., Chen, G., Cottone, K., Lapedis, D., & Lee, K. (2007). Impact and the art of motivation maintenance: The effects of contact with beneficiaries on persistence behavior. *Organizational Behavior and Human Decision Processes, 103*(1), 53–67. <https://doi.org/10.1016/j.obhdp.2006.05.004>
- Grant, A. M., & Parker, S. K. (2009). Redesigning work design theories: The rise of relational and proactive perspectives. *The Academy of Management Annals, 3*(1), 317–375. <https://doi.org/10.1080/19416520903047327>
- Hakanen, J. J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology, 43*(6), 495–513. <https://doi.org/10.1016/j.jsp.2005.11.001>

- Han, J., & Yin, H. (2016). Teacher motivation: Definition, research development and implications for teachers. *Cogent Education*, 3(1), 1217819. <https://doi.org/10.1080/2331186X.2016.1217819>
- Hascher, T., & Waber, J. (2021). Teacher well-being: A systematic review of the research literature from the year 2000–2019. *Educational Research Review*, 34, 100411. <https://doi.org/10.1016/j.edurev.2021.100411>
- Hobfoll, S. E., Halbesleben, J., Neveu, J. P., & Westman, M. (2018). Conservation of resources in the organizational context: The reality of resources and their consequences. *Annual Review of Organizational Psychology and Organizational Behavior*, 5, 103–128. <https://doi.org/10.1146/annurev-orgpsych-032117-104640>
- Klusmann, U., Kunter, M., Trautwein, U., Lüdtke, O., & Baumert, J. (2008). Engagement and emotional exhaustion in teachers: Does the school context make a difference? *Applied Psychology*, 57, 127–151. <https://doi.org/10.1111/j.1464-0597.2008.00358.x>
- Lanners, M. S. (2020). Are teachers more affected by burnout than physicians, nurses and other professionals? A systematic review of the literature. In N. J. Lightner & J. Kalra (Eds.), *Advances in human factors and ergonomics in healthcare and medical devices* (pp. 147–155). Springer International Publishing.
- Lesener, T., Gusy, B., & Wolter, C. (2019). The job demands-resources model: A meta-analytic review of longitudinal studies. *Work and Stress*, 33(1), 76–103. <https://doi.org/10.1080/02678373.2018.1529065>
- Li, C.-H. (2016). Confirmatory factor analysis with ordinal data: Comparing robust maximum likelihood and diagonally weighted least squares. *Behavior Research Methods*, 48(3), 936–949. <https://doi.org/10.3758/s13428-015-0619-7>
- Llorens, S., Bakker, A. B., Schaufeli, W., & Salanova, M. (2006). Testing the robustness of the job demands-resources model. *International Journal of Stress Management*, 13(3), 378–391. <https://doi.org/10.1037/1072-5245.13.3.378>
- Lopes, S., & Chambel, M. J. (2014). Motivations of temporary agency workers and context free well-being: Work engagement as a mediator. *Têkhne*, 12, 38–47. <https://doi.org/10.1016/j.tekhne.2015.01.003>
- Maslach, C., & Leiter, M. P. (2016). Burnout. In G. Fink (Ed.), *Stress: concepts, cognition, emotion, and behavior* (pp. 351–357). <https://doi.org/10.1016/B978-0-12-800951-2.00044-3>
- Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology*, 91(6), 1321–1339. <https://doi.org/10.1037/0021-9010.91.6.1321>
- Oldham, G. R., & Fried, Y. (2016). Job design research and theory: Past, present and future. *Organizational Behavior and Human Decision Processes*, 136, 20–35. <https://doi.org/10.1016/j.obhdp.2016.05.002>
- Page, K. M., & Vella-Brodrick, D. A. (2009). The “what”, “why” and “how” of employee well-being: A new model. *Social Indicators Research*, 90(3), 441–458. <https://doi.org/10.1007/s11205-008-9270-3>
- Parker, S. K. (2014). Beyond motivation: Job and work design for development, health, ambidexterity, and more. *Annual Review of Psychology*, 65(August 2013), 661–691. <https://doi.org/10.1146/annurev-psych-010213-115208>
- Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, 48(2 SE-Articles), 1–36. <https://doi.org/10.18637/jss.v048.i02>
- Santos, A., Castanheira, F., & Chambel, M. J. (2018). Desenho Relacional do Trabalho: Conceitos e Desafios para Investigação Futura. *Análisis Académico*, 38(1), 44–53. <https://doi.org/10.21772/ripo.v38n1a04>
- Santos, A., Castanheira, F., Chambel, M. J., Amarante, M. V., & Costa, C. (2017a). Psychological effects of relational job characteristics: Validation of the scale for hospital nurses. *Journal of Nursing Management*, 25(5), 329–338. <https://doi.org/10.1111/jonm.12468>
- Santos, A., Castanheira, F., Chambel, M. J., Amarante, M. V., & Costa, C. (2017b). Relational job characteristics and well-being: A study among Portuguese and Brazilian hospital nurses. *Stress and Health*, 33(4), 415–425. <https://doi.org/10.1002/smi.2729>
- Santos, A., Chambel, M. J., & Castanheira, F. (2020). Wellbeing among hospital nurses: A cross-sectional study of the contributions of relational job characteristics. *International Journal of Nursing Studies*, 105, 103438. <https://doi.org/10.1016/j.ijnurstu.2019.103438>
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of Organizational Behavior*, 25(3), 293–315. <https://doi.org/10.1002/job.248>

- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement*, 66(4), 701–716. <https://doi.org/10.1177/0013164405282471>
- Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). Maslach burnout inventory - general survey. In M. P. Maslach, C. Jackson, & S. E. Leiter (Eds.), *Maslach burnout inventory—test manual* (3rd ed., pp. 22–26). Consulting Psychologists Press.
- Schaufeli, W. B., & Taris, T. W. (2014). A critical review of the job demands-resources model: Implications for improving work and health. In G. F. Bauer & O. Hämmig (Eds.), *Bridging Occupational, Organizational and Public Health: A Transdisciplinary Approach* (pp. 43–68). https://doi.org/10.1007/978-94-007-5640-3_4
- Tripathi, J. P., & Sharma, S. (2016). The key to improve performance: Employee engagement. *IOSR Journal of Business and Management*, 18(10), 19–25. <https://doi.org/10.9790/487x-1810041925>
- Upadaya, K., Vartiainen, M., & Salmela-Aro, K. (2016). From job demands and resources to work engagement, burnout, life satisfaction, depressive symptoms, and occupational health. *Burnout Research*, 3(4), 101–108. <https://doi.org/10.1016/j.burn.2016.10.001>
- van den Broeck, A., Vansteenkiste, M., de Witte, H., & Lens, W. (2008). Explaining the relationships between job characteristics, burnout, and engagement: The role of basic psychological need satisfaction. *Work and Stress*, 22(3), 277–294. <https://doi.org/10.1080/02678370802393672>
- Ware, J. E. (1995). The status of health assessment 1994. *Annual Review of Public Health*, 16, 327–354. <https://doi.org/10.1146/ANNUREV.PU.16.050195.001551>
- Ware, J. E., Davies-Avery, A., & Donald, C. A. (1978). Conceptualization and measurement of health for adults in the health insurance study: vol.V, general health perceptions. In *Rand Santa Monica, Ca.*

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Authors and Affiliations

Natan Klein¹  · Carlos Costa¹  · Cicero Roberto Pereira²  ·
 Maria José Chambel³  · João P. Marôco⁴ 

✉ Carlos Costa
 carlos.costa1@gmail.com

Natan Klein
 natanklein2104@gmail.com

Cicero Roberto Pereira
 crp@labesp.org

Maria José Chambel
 mjchambel@psicologia.ulisboa.pt

João P. Marôco
 jpmaroco@ispa.pt

¹ Graduate Program in Psychology, School of Health, PPG Psicologia - Vila Rodrigues, Atitua Education, Rua Senador Pinheiro 304, Passo Fundo, RS, Brazil

² Institute of Social Sciences, University of Lisbon, Lisbon, Portugal

³ CicPsi, Faculty of Psychology, University of Lisbon, Lisbon, Portugal

⁴ William James Center for Research, ISPA - Instituto Universitário, Lisbon, Portugal