

**The role of psychosocial risks in burnout, psychosomatic disorders, and job satisfaction:
lineal models vs a QCA approach in non-university teachers**

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Abstract

This study aims to assess the effect of psychosocial risks and resources on burnout, psychosomatic disorders, and job satisfaction using Hierarchical Regression Modelling (HRM) and Qualitative Comparative Analysis (QCA). Method. The sample consisted of 9020 non-university public education teachers (Mage = 45.33 years, SD = 9.15; 72.5% women). Results. Demands variables (Workload, Emotional labour, Imbalance, and Interpersonal conflict) were better predictors than resources variables (Job autonomy, Social support, and Resources at work). Resources also significantly improved the model's predictive capacity, except in the case of Indolence. In the QCA results, none of the conditions seems to be necessary. Regarding sufficiency, the combination of the different conditions explains between 44–49% of high levels of Burnout and between 40–47% of low levels of Burnout; between 44–47% of high levels of Psychosomatic disorders and 40–47% of low levels of Psychosomatic disorders; 49% of high Job satisfaction levels and 45–56% of low Job satisfaction levels. Conclusions. The results show that QCA models have better explanatory capacity than HRM. Some variables were not significant in HRM, but they were present in combination with other QCA model variables. The findings contribute to understanding how psychosocial risks affect workers' health and job satisfaction.

The Role of Psychosocial Risks in Burnout, Psychosomatic Disorders, and Job Satisfaction: Lineal Models vs a QCA Approach in Non-University Teachers

The European Agency for Safety and Health at Work defines a psychosocial risk as a work situation characterised by a poor work design, organisation, and management in an inadequate social and economic context. These situations can cause negative physical, social, and psychological outcomes (European Agency for Safety and Health at Work (EU-OSHA), 2014). From an organisational point of view, psychosocial risks can reduce effectiveness and productivity (Stamatogianni et al., 2019). From the standpoint of workers, between 18% and 60% of workers in Europe indicated that they had problems with psychosocial factors (European Agency for Safety and Health at Work (EU-OSHA), 2020). These factors can have various consequences, such as low levels of well-being (Jain et al., 2021), low levels of motivation (Tu et al., 2020), illness (Igboanugo et al., 2021), absenteeism (Payá, 2020), low productivity (Asante et al., 2019), work-related stress (Jonne et al., 2018), burnout (Ghannam et al., 2020), low levels of job satisfaction (Dhakate et al., 2022), and psychosomatic disorders (Jradi et al., 2020). Psychosocial risks exist in all professions, although some occupational sectors—such as healthcare (Asante et al., 2019) and education (Wischlitzki et al., 2020)—have higher levels.

Among other consequences, burnout, psychosomatic disorders, and job satisfaction stand out due to their importance and prevalence (Ibrahim et al., 2022). The Eurofound (2018) study in Europe found a prevalence of burnout of between 10 and 40% in employees. For teachers, the prevalence was between 11 and 35.5% (Villaverde et al., 2019). With regard to job satisfaction, 15% of employees in Europe are dissatisfied with their jobs (European Agency for Safety and Health at Work (EU-OSHA), 2014), whereas 16.7% of non-university teachers in Spain are dissatisfied or have a neutral perception (Eirín-Nemiña et al., 2022). Finally, regarding psychosomatic problems, some studies show that between 14.6 and 56.2%

of employees have psychosomatic disorders (depression, insomnia, fatigue, and anxiety) related to their job (Niedhammer et al., 2021). Some studies show that 38–41.2% of teachers have anxiety, and 4–77% suffer from depression (Agyapong et al., 2022).

Karasek's model shows that these consequences are related to work stress (Xu & Yang, 2021). Work-related stress occurs when the labour demands exceed the resources available (Hatch et al., 2019). Some studies define job demands as the physical, psychological, social, or organisational aspects of a job that require sustained physical and/or psychological effort (Michel et al., 2022). In addition, job resources variables are defined as work aspects that can support employees in dealing with the work demands (Scanlan & Still, 2019).

Different studies have related job demands and resources to psychosocial risks (Junne et al., 2018). Specifically, high levels of job demand variables or a lack of resource variables increase psychosocial risk at work (Michel et al., 2022; Solomonidou & Katsounari, 2022).

Specifically, demands variables are related to increased burnout symptoms (Solomonidou & Katsounari, 2022), a decrease in job satisfaction (Skaalvik & Skaalvik, 2018), and an increase in psychosomatic problems (Han et al., 2020). Conversely, resources variables are related to a reduction in burnout symptoms (Dreison et al., 2018), improved employee health (including psychosomatic problems) (Han et al., 2020), and an increase in job satisfaction (Skaalvik & Skaalvik, 2018). Moreover, resources variables—Job autonomy (Adebayo & Olowodunoye, 2018), Social support (Xu & Yang, 2021), and Resources at work (Hatch et al., 2019; Skaalvik & Skaalvik, 2018)—have a negative relationship with burnout and psychosomatic disorders and a positive relationship with job satisfaction.

The present study analyses the influence of different psychosocial risks on burnout, psychosomatic disorders, and job satisfaction in teachers. The variables selected to evaluate psychosocial risks were chosen based on the extensive body of literature (Backhaus et al.,

2018) and the UNIPSICO model (Gil-Monte, 2016a, 2016b). Not many studies have considered all these causes and consequences at the same time, and even fewer have included so-called emotional work (Han et al., 2020; Skaalvik & Skaalvik, 2018). Existing studies have focused on linear relationships, ignoring other types of non-linear relationships such as those explored in a qualitative comparative analysis (QCA).

Whereas regressions are based on linear relationships between one or several antecedent variables and the consequent variable and consider the individual impact of each antecedent without considering the possible incidence of their combination, QCA models are based on Boolean logic and, rather than focusing only on the individual contribution, also analyse the possible combinations or interactions of the antecedent variables in a given result. In addition, QCA models also offer what is referred to as equifinality: different models or paths that lead to the same results (Eng & Woodside, 2012; Ragin, 2008).

Therefore, this study is particularly interesting because it includes three of the most relevant consequences of work-related stress (burnout, job satisfaction, and psychosomatic disorders) in the same study in one of the most affected populations -i.e. non-university teachers-, and it considers emotional labour a psychosocial risk that has not been studied in such a significant way. In addition, this study considers the demands (Emotional labour, Interpersonal conflicts, Imbalance, and Workload) and resources (Social support, Job autonomy, and Resources at work) that have the greatest impact, combining two complementary methodologies (regression models and fuzzy qualitative comparative analysis, fsQCA).

The aim of this study was to identify the role of job demands and resources in predicting burnout, job satisfaction, and psychosomatic disorders in non-university teachers using HRM and QCA.

Our hypotheses were:

Hypothesis 1. A significant positive relationship is expected between job demands at work (Emotional labour, Interpersonal conflicts, Imbalance, and Workload) and Burnout and Psychosomatic disorders, whereas a negative relationship with Job satisfaction is expected.

Hypothesis 2. A significant negative relationship is expected between job resources at work (Job autonomy, Social support, and Resources at work) and Burnout and Psychosomatic disorders, whereas a positive relationship with Job satisfaction is expected.

Hypothesis 3. The HRM and QCA results will be different but complementary.

Method

Participants

The sample consisted of 9,020 non-university public education teachers in the Valencian Community (Spain), of whom 6,535 were women (72.5% of the total). The age of the sample ranged from 22 to 70 ($M_{\text{age}} = 45.33$ years, $SD = 9.15$), and the average length of time in the profession was 17.57 years ($SD = 10.30$, rank = 1 to 50 years). The educational level distribution was the following: 14.6% of the sample were kindergarten teachers, 34% primary school teachers, 26.2% secondary school teachers, 10.5% vocational training teachers, 7.2% special education teachers, and 5.5% language, art, or design-school teachers.

Instrument

The UNIPSICO (Organisational Behaviour Psychosocial Research Unit) questionnaire (Gil-Monte, 2016a, 2016b) was used to evaluate: (1) Interpersonal conflicts ($\alpha = .73$) (six items; e.g. How often do you have conflicts with your colleagues?); (2) Imbalance ($\alpha = .79$) (five items; e.g. I am rewarded very little for the effort I make at work); (3) Workload ($\alpha = .74$) (items; e.g. Do you think you have to do a job that is too difficult for you?); (4) Job autonomy ($\alpha = .80$) (five items; e.g. I think my job gives me enough autonomy); (5) Social support ($\alpha = .87$) (six items; e.g. How often does your supervisor help you when problems arise at work?); (6) Resources at work ($\alpha = .80$) (seven items; e.g. To what extent are there

technological resources in your workplace?); (7) Job satisfaction ($\alpha = .71$) (six items; e.g. satisfaction with the salary you receive, the opportunities you have in your job to do things you like); (8) Psychosomatic disorders ($\alpha = .88$) (nine items; e.g. Were you bothered by having an upset stomach or stomach ache?).

In addition, (10) Emotional labour was evaluated with a short version of the Frankfurt Emotional Work Scale (FEWS) (Ortiz et al., 2012; Zapf et al., 1999), which contains 12 items (e.g. being required to express pleasant emotions to pupils and their families) ($\alpha = .80$).

Burnout was evaluated using the Spanish Burnout Inventory (Gil-Monte, 2019; Figueiredo-Ferraz et al., 2013), consisting of 15 items distributed in three dimensions: Enthusiasm toward the job (five items, e.g. I see my job as a source of personal accomplishment) (reversed); Psychological exhaustion (four items, e.g. I feel emotionally exhausted); and Indolence (six items, e.g. I don't like taking care of some colleagues) ($\alpha = .83$). Low scores on Enthusiasm towards the job together with high scores on Psychological Exhaustion and Indolence indicate high levels of burnout.

All items were answered on a five-point Likert-type scale ranging from 0 (never) to 4 (very frequently: every day) (range = 0–4).

Procedure

This study respected the fundamental principles of the Declaration of Helsinki (World Medical Association, 2013), with particular emphasis on the anonymisation of the data collected, confidentiality, and non-discrimination of participants. All participants were of legal age and voluntarily agreed to participate in the study. All non-university educational centres in the Valencian Community were asked to participate, and the teacher's collaboration was voluntary. Teachers were informed about the purpose of the study and the possible benefits and consequences of their participation.

This study was part of a psychosocial assessment of the Valencian Occupational

Health and Safety Institute (INVASSAT – Instituto Valenciano de Seguridad y Salud en el Trabajo). Prior to the start of the assessment, this institute's ethics department was consulted, and it concluded that the research did not need to be checked by a bioethics committee. However, a group of experts checked the method and concluded that it followed the legislation and ethical norms. Data collection was carried out between October 2015 and December 2019 by the Health & Safety employees of the Valencian Occupational Health & Safety Institute (INVASSAT). The psychosocial assessment is mandated by law; in this case, INVASSAT was obligatory for primary school, secondary school, training school, special education teachers, and language, art, or design-school teachers. INVASSAT employees went to each school and informed the headteacher, union, and teachers about the procedure. They described the confidentiality, anonymity, and privacy of the study. The INVASSAT employees then gave each teacher a questionnaire and an envelope, and members of the Health and Safety team were on hand to answer any questions about the questionnaire or the procedure. The teachers were given privacy to complete the questionnaire. When each teacher finished, they returned the questionnaire in the envelope.

Data analysis

First, the descriptive statistics for the sample were calculated. Second, six hierarchical regression models and six fuzzy-set qualitative comparative analyses (fsQCA) were run, and the effects of job demands (Emotional labour, Interpersonal conflicts, Imbalance, and Workload) and resources (Job autonomy, Social support, and Resources at work) on Burnout, Job satisfaction, and Psychosomatic disorders were analysed. To carry out the descriptive and regression analyses, SPSS (IBM Statistical Package for the Social Sciences, Version 28, Armonk, NY: IBM Corp) was used, and fsQCA 2.0 (Claude & Christopher, 2014) was used for the fsQCA models.

Results

Descriptive statistics

Table 1 shows the results of descriptive statistics for the study variables. The highest mean value was reached by Social support ($M = 2.95$, $SD = 0.84$), and the lowest was obtained for Interpersonal conflict ($M = 0.65$, $SD = 0.50$). In addition, some variables had values higher than 2 (midpoint), such as Job satisfaction ($M = 2.60$, $SD = 0.61$), Emotional labour ($M = 2.56$, $SD = 0.59$), Job autonomy ($M = 2.91$, $SD = 0.72$), and Resources at work ($M = 2.29$, $SD = 0.71$). The standard deviation in all cases was less than one. Social support and Imbalance had the highest standard deviation ($SD = .88$), and Burnout had the lowest ($SD = 0.39$).

TABLE 1 ABOUT HERE

Table 2 shows significant correlations between all the variables ($p < .001$), except Emotional labour and Job satisfaction ($p > .05$) and Emotional labour and Resources at work ($p > .05$), whose correlations were not significant. The results showed positive and significant relationships between the demands variables and Burnout and Psychosomatic disorders and negative and significant relationships between the resources variables and Burnout and Psychosomatic disorders. In addition, Job satisfaction had negative and significant relationships with the demand variables and positive and significant relationships with the resources variables.

TABLE 2 ABOUT HERE

Hierarchical regression model

Three hierarchical regression analyses were performed in two steps, first adding job demands and then job resources (Table 3). The results of the hierarchical regression model showed that psychosocial factors predicted between 28% and 41% of the different outcomes. On the one hand, the highest predictions were for Job satisfaction ($R^2_{adj} = .41$; $p < .001$), followed by Burnout ($R^2_{adj} = .37$; $p < .001$) and Psychosomatic disorders ($R^2_{adj} = .28$, $p <$

.001). In general, the demands variables seemed to be better predictors than the resources variables, given that the first step showed a greater increase in the regression models. However, both steps resulted in a significant change in R^2 .

TABLE 3 ABOUT HERE

First, in the case of Burnout, the demands variables explained 34% of the variance ($\Delta R^2_{\text{adj}} = .34, p < .001$). All the demands variables were positively and significantly related to Burnout, except Emotional labour ($\beta = -.01, p > .05$), which was not significant. In the second step, the inclusion of the resource variables improved the model by 3% ($\Delta R^2_{\text{adj}} = .03, p < .001$), and all the resources negatively predicted Burnout. In the last step, the demands with the greatest weight were Workload ($\beta = .25, p < .001$) and Imbalance ($\beta = .21, p < .001$), whereas the resources with the greatest weight were Job autonomy ($\beta = -.14, p < .001$) and Social support ($\beta = -.10, p < .001$).

Second, in the case of Psychosomatic disorders, the demands variables explained 26% of their variance ($\Delta R^2_{\text{adj}} = .26, p < .001$). All the demands variables were positive predictors of Psychosomatic disorders. In the second step, the inclusion of the job resources variables improved the model by 2% ($\Delta R^2_{\text{adj}} = .02, p < .001$). All the resources negatively predicted psychosomatic disorders. In the final result, the demands with the greatest weight were workload ($\beta = .28, p < .001$) and Interpersonal conflicts ($\beta = .13, p < .001$), whereas the resources with the greatest weight were Job autonomy ($\beta = -.08, p < .001$) and Resources at work ($\beta = -.07, p < .001$).

Lastly, for Job satisfaction, the demands variables explained 21% of its variance ($\Delta R^2_{\text{adj}} = .21, p < .001$). In the second step, the inclusion of the job resources variables improved the model by 21% ($\Delta R^2_{\text{adj}} = .21, p < .001$), and all the resources positively predicted Job satisfaction. The results of the last step showed that the demands with the greatest weight were Imbalance ($\beta = -.17, p < .001$) and Interpersonal conflict ($\beta = -.06, p < .001$), whereas

the resources with the greatest weight were Resources at work ($\beta = .35, p < .001$) and Social support ($\beta = .18, p < .001$). The demands variables Emotional labour ($\beta = .01, p > .05$) and Workload ($\beta = -.01, p > .05$) were not significant in the second step.

TABLE 4 ABOUT HERE

TABLE 5 ABOUT HERE

TABLE 6 ABOUT HERE

TABLE 7 ABOUT HERE

Fuzzy-set qualitative comparative analysis (fsQCA)

The raw data responses were transformed into fuzzy-set responses. Any cases with missing data were first removed. Second, all the constructs were obtained by calculating the average obtained on the items that make up each construct. Third, the values of the conditions were recalibrated using three thresholds (Woodside, 2013): Percentile 10% (low levels; fully outside the set), 50% (intermediate levels; neither inside nor outside the set), and 90% (high levels; fully inside the set) (Ragin, 2008) (Table 1). Finally, the analysis of necessity (Tables 4 and 5) and analysis of sufficiency (Tables 6 and 7) were carried out.

According to the results, none of the conditions seemed to be necessary for the presence (high levels) or absence (low levels) of the different outcomes (Burnout, Job satisfaction, and Psychosomatic disorders), given that the consistency in all cases was lower than .90 (Ragin, 2008). The analysis of sufficiency was then performed (Tables 6 and 7). The frequency cut-off value was set at seven, and the consistency cut-off ranged between .86 and .90, which is above Ragin's recommendations (.75). As suggested in the literature (Ragin, 2008), the intermediate solution is presented here.

Burnout

For Burnout, the result showed 12 combinations of causal conditions that can produce high levels of Burnout and accounted for 71% of the cases (Overall Consistency: .80; Overall

Coverage: .71). Moreover, ten combinations of causal conditions led to low levels of Burnout and explained 68% of the variance (Overall Consistency: .81; Overall Coverage: .68).

On the one hand, in predicting high levels of Burnout, the three most important combinations were: (1) high levels of Interpersonal conflict, Imbalance, and Workload (Raw coverage: .49; Consistency: .87); (2) high levels of Imbalance and Workload and low levels of Job autonomy (Raw coverage: .47; Consistency: .88); and (3) high levels of Imbalance and Workload and low levels of Job autonomy (Raw coverage: .44; Consistency: .88). These combinations, respectively, explained 49%, 47%, and 44% of the causes in teachers with high levels of Burnout.

On the other hand, in predicting low levels of Burnout in teachers, the three most important combinations were: (1) low levels of Interpersonal conflict, Imbalance, and Workload (Raw coverage: .47; Consistency: .86); (2) low levels of Interpersonal conflict and Imbalance and high levels of Job autonomy (Raw coverage: .44; Consistency: .88); and (3) low levels of Imbalance and Workload and high levels of Job autonomy and Resources at work (Raw coverage: .40; Consistency: .87). These combinations, respectively, explained 47, 44, and 40% of low Burnout levels in teachers.

Psychosomatic disorders

Regarding Psychosomatic disorders, the results showed 17 combinations of causal conditions that can produce high levels of Psychosomatic disorders and explained 72% of the variance (Overall Consistency: .77; Overall Coverage: .72) and 13 combinations of causal conditions that led to low levels of Psychosomatic disorders and explained 68% of the variance (Overall Consistency: .77; Overall Coverage: .68).

For high levels of Psychosomatic problems, the three most important pathways were: (1) high levels of Interpersonal conflict, Imbalance, and Workload (Raw coverage: .47; Consistency: .85); (2) high levels of Interpersonal conflict and Workload and low levels of

Job autonomy (Raw coverage: .45; Consistency: .84); and (3) high levels of Imbalance and Workload and low levels of Job autonomy (Raw coverage: .44; Consistency: .85). These combinations explained 47, 45, and 44% of the cases of high levels of Psychosomatic disorders in teachers.

For low levels of Psychosomatic disorders, the three most important combinations were: (1) low levels of Interpersonal conflict, Imbalance, and Workload (Raw coverage: .47; Consistency: .83); (2) low levels of Interpersonal conflict and Workload and high levels of Resources at work (Raw coverage: .47; Consistency: .83); and (3) low levels of Imbalance and Workload and high levels of Job autonomy and Resources at work (Raw coverage: .40; Consistency: .85). These combinations, respectively, explained 47, 47, and 40% of the cases of low levels of Psychosomatic disorders in teachers.

Job satisfaction

Finally, regarding Job satisfaction, the results showed 16 combinations of causal conditions that can produce high levels of Job satisfaction and explained 68% of the variance (Overall Consistency: .78; Overall Coverage: .68). Moreover, for low levels of Job satisfaction, there were nine combinations that accounted for 77% of the variance (Overall Consistency: .78; Overall Coverage: .77). For high levels of Job satisfaction, the three most important combinations were: (1) low levels of Imbalance and high levels of Social support and Resources at work (Raw coverage: .49; Consistency: .86); (2) high levels of Job autonomy, Social support, and Resources at work (Raw coverage: .49; Consistency: .86); and (3) low levels of Workload and high levels of Social support and Resources at work (Raw coverage: .49; Consistency: .85).

These combinations, respectively, explained 49, 49, and 49% of the cases of high levels of Job satisfaction in teachers. For low levels of Job satisfaction, the three most important combinations were: (1) high levels of Imbalance and low levels of Resources at

work (Raw coverage: .56; Consistency: .84); (2) low levels of Social support and Resources at work (Raw coverage: .55; Consistency: .86); and (3) high levels of Imbalance and low levels of Job autonomy and Social support (Raw coverage: .45; Consistency: .87). These combinations, respectively, explained 56, 55, and 45% of the cases of low levels of Job satisfaction in teachers.

Discussion

Despite the importance of Burnout, Psychosomatic disorders, and Job satisfaction, especially in non-university teachers, few studies have considered these consequences at the same time, and even fewer if we consider the effect that demands and resources have on them, including so-called emotional labour (Han et al., 2020; Skaalvik & Skaalvik, 2018). Furthermore, no studies have analysed these elements using two complementary methodologies, HRM and QCA. Thus, this study uses HRM and QCA to identify the role of job demands and resources in predicting Burnout, Job satisfaction, and Psychosomatic disorders in non-university teachers.

As expected, the results suggest that demands positively predict Burnout and Psychosomatic disorders and negatively predict Job satisfaction (H1), whereas resources obtain the opposite result (H2). These results are in line with Karasek's model (Xu & Yang, 2021) and previous studies with non-university teachers on Burnout (Dreison et al., 2018; Hatch et al., 2019; Guo et al., 2022; Lawrence et al., 2019; Mi-Na et al., 2022; Skaalvik & Skaalvik, 2010; Solomonidou & Katsounari, 2022), psychosomatic problems (Adebayo & Olowodunoye, 2018; Bratberg et al., 2020), and Job satisfaction (Arafat et al., 2018; Han et al., 2020; Hong & Cho, 2021; Yoruk & Acikgoz, 2022; Xu & Yang, 2021). Contrary to the literature, no relationship was found between burnout and emotional labour (Mi-Na et al., 2022).

As Karasek's model postulates, the demands variable creates a negative environment

for employees and causes a decrease in Job satisfaction, whereas the resources variables help employees to deal with the demands variables and reduce work stress, decrease Psychosomatic disorders and Burnout, and increase Job satisfaction (Xu & Yang, 2021).

When considering the QCA results, we can observe that, as is common in the literature, none of the variables seemed to be a necessary condition for the presence or absence of the different outcomes. Although different combinations of conditions explain high and low levels of the variables under study, when observing all the combinations it seems that Workload is a predictor of almost all the outcomes (Burnout, Psychosomatic disorders, and Job satisfaction). Likewise, the variables Social support and Resources at work were present in all the combinations leading to Job satisfaction.

The third hypothesis posited that QCA models would be better predictors than HRM, although they would be complementary. Our results appear to be in line with previous studies (González-Serrano et al., 2019) and seem to confirm the working hypothesis. QCA models seem to have a greater explanatory capacity than HRM models, and the two offer complementary results. In this regard, for example, the Workload variable in the QCA models was an important predictor of Job satisfaction when combined with Social support and Resources at work, although it was not a predictor in the HRM models.

Although no studies have analysed the combinations of these variables, the results seem to be similar to the literature on the relationships between the variables without combining them (Bratberg et al., 2020; Xu & Yang, 2021). QCA analyses showed more detailed results because they revealed which variables were more important for high or low levels, given that not all the variables that are important for high levels are required to have low levels. For example, the Social support variable was necessary in high levels of Burnout, but it was not necessary in low levels. It is important to know about these subtle differences in order to better prevent psychosocial risks and create effective interventions. Despite the

interest in using these two methodologies in a complementary manner, we have not been able to find any studies that do so with regard to psychosocial risks.

In conclusion, the results showed the importance of Workload, Imbalance, and Interpersonal conflict in the development of Burnout and Psychosomatic disorders. In the case of Job satisfaction, Social support and Resources at work seem to be more important. On the other hand, Social support and Job autonomy seem to be the resources variables that have more weight in Burnout. Therefore, to increase organisational and individual well-being in the workplace, the Workload levels must be decreased, and the employees have to be protected with Social support and Job autonomy. In addition, the QCA results will help to create several interventions, paying attention to different aspects of the work, because there is more than one way to improve working conditions. The possibility of reaching the same result, improvements in workers' well-being and performance through different routes, allows us to plan interventions in situations where certain demands or resources cannot be addressed but others can, which leads to better results and helps to create more complex interventions. This study showed the contribution of QCA models, which presented combinations of variables that are essential in reducing Burnout or Psychosomatic disorders and improving Job satisfaction, results that cannot be replicated in HRM.

Finally, this study has some limitations. First, a non-probabilistic method was used to obtain the sample, and so it is difficult to generalise these results. However, the large sample size seems to offer a good approximation to the study of the phenomenon. Second, the results of this study were obtained through self-reporting, a common practice in health and social science studies; however, it can produce some bias in the results. Third, the Sex variable could contaminate the results because women made up 72.5% of the sample. Fourth, the sample was collected over a long period of time, which could negatively influence the results. Future studies should consider these limitations and extend the research to other labour

sectors.

Disclosure statement

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Data availability statement

Data for this study are not available due to their proprietary nature.

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Table 1*Descriptive Statistics and Calibration Values*

	<i>Mean</i>	<i>SD</i>	Range	Percentile		
				10	50	90
Burnout	1.00	.54	0–4	.44	1.07	1.81
Psychosomatic problems	.86	.61	0–4	.13	.73	1.67
Job satisfaction	2.60	.61	0–4	1.83	2.67	3.33
Emotional labour	2.56	.59	0–4	1.83	2.58	3.25
Interpersonal conflict	.65	.50	0–4	.00	.50	1.33
Imbalance	1.77	.84	0–4	.60	1.80	2.80
Workload	1.76	.68	0–4	1.00	1.83	2.67
Job autonomy	2.91	.72	0–4	2.00	3.00	3.80
Social support	2.95	.84	0–4	1.83	3.00	4.00
Resources at work	2.29	.71	0–4	1.28	2.29	3.14

Table 2*Pearson Correlations*

	1	2	3	4	5	6	7	8	9	10
1. Burnout	1									
2. Psychosomatic disorders	.46*	1								
3. Job satisfaction	-.43*	-.32*	1							
4. Emotional labour	.13*	.17*	-.00	1						
5. Interpersonal conflicts	.41*	.35*	-.30*	.14*	1					
6. Imbalance	.46*	.34*	-.40*	.12*	.30*	1				
7. Workload	.52*	.46*	-.30*	.25*	.42*	.43*	1			
8. Job autonomy	-.38*	-.28*	.40*	.03*	-.29*	-.28*	-.32*	1		
9. Social support	-.33*	-.23*	.44*	.08*	-.31*	-.32*	-.20*	.36*	1	
10. Resources at work	-.30*	-.27*	.53*	-.02	-.24*	-.32*	-.32*	.29*	.37*	1

* $p < .001$

Table 3*Hierarchical Regression Models*

Predictor	Criterion variables					
	Burnout		Psychosomatic disorders		Job satisfaction	
	ΔR^2_{adj}	β	ΔR^2_{adj}	β	ΔR^2_{adj}	β
Step 1	.34**		.26**		.21**	
Emotional labour		-.01		.05**		
Interpersonal conflicts		.21**		.17**		
Imbalance		.26**		.15**		
Workload		.29**		.31**		
Step 2	.03**		.02**		.21**	
Emotional labour		.03**		.07**		.01
Interpersonal conflicts		.16**		.13**		-.06**
Imbalance		.21**		.11**		-.17**
Workload		.25**		.28**		-.01
Job autonomy		-.14**		-.08**		.17**
Social support		-.10**		-.05**		.18**
Resources at work		-.03*		-.07**		.35**
Total R^2_{adj}	.37**		.28**		.41**	

* $p < .01$; ** $p < .001$

Table 4*Necessary Conditions (Presence)*

	Burnout		Psychosomatic disorders		Job satisfaction	
	Cons	Cover	Cons	Cover	Cons	Cover
Emotional labour	.64	.64	.65	.67	.61	.61
~ Emotional labour	.59	.60	.58	.59	.62	.61
Interpersonal conflicts	.74	.71	.72	.70	.58	.54
~ Interpersonal conflicts	.49	.53	.51	.55	.66	.68
Imbalance	.73	.72	.70	.71	.54	.52
~ Imbalance	.51	.53	.54	.56	.71	.71
Workload	.70	.75	.69	.75	.53	.54
~ Workload	.53	.51	.54	.53	.71	.66
Job autonomy	.54	.54	.56	.57	.70	.69
~ Job autonomy	.70	.71	.67	.69	.54	.53
Social support	.56	.54	.59	.58	.74	.70
~ Social support	.67	.70	.64	.68	.50	.51
Resources at work	.58	.55	.58	.56	.78	.72
~ Resources at work	.65	.69	.64	.70	.47	.49

Note. ~: absence of condition; Cons: consistency; Cover: coverage; Condition

needed: consistency $\geq .90$

Table 5*Necessary Conditions (Absence)*

	~Burnout		~Psychosomatic disorders		~Job satisfaction	
	Cons	Cover	Cons	Cover	Cons	Cover
Emotional labour	.59	.59	.58	.57	.61	.63
~ Emotional labour	.64	.64	.66	.64	.61	.62
Interpersonal conflicts	.55	.52	.57	.52	.71	.68
~ Interpersonal conflicts	.69	.73	.68	.70	.52	.56
Imbalance	.53	.52	.55	.53	.71	.72
~ Imbalance	.72	.73	.70	.69	.52	.54
Workload	.48	.50	.49	.50	.65	.70
~ Workload	.76	.72	.75	.70	.58	.56
Job autonomy	.70	.70	.68	.66	.54	.55
~ Job autonomy	.54	.53	.56	.55	.70	.71
Social support	.72	.68	.69	.64	.54	.53
~ Social support	.52	.53	.55	.56	.69	.73
Resources at work	.70	.67	.71	.65	.52	.51
~ Resources at work	.53	.55	.53	.54	.71	.77

Note. ~: absence of condition; Cons: consistency; Cover: coverage; Condition needed: consistency ≥ 0.90 .

Table 6

Three Main Sufficient Conditions for Burnout, Psychosomatic Disorders and Job satisfaction.

	Burnout			Psychosomatic disorders			Job satisfaction		
	Consistency cutoff: .99			Consistency cutoff: .89			Consistency cutoff: .89		
	1	2	3	1	2	3	1	2	3
Emotional labour									
Interpersonal conflicts	●			●	●				
Imbalance	●	●	●	●		●	○		
Workload	●	●	●	●	●	●			○
Job autonomy		○			○	○		●	
Social support			○				●	●	●
Resources work							●	●	●
Raw coverage	.49	.47	.44	.47	.45	.44	.49	.49	.49
Unique coverage	.03	.02	.01	.01	.01	.01	.01	.01	.01
Consistency	.87	.88	.88	.85	.84	.85	.86	.86	.85
Overall solution consistency		.80			.77			.78	
Overall solution coverage		.71			.72			.68	

Note. ● = presence of condition, ○ = absence of condition; Expected vector for Burnout (1,1,1,1,0,0,0), for Psychosomatic disorders (1,1,1,1,0,0,0), for Job satisfaction (0,0,0,0,1,1,1) using the nomenclature of Fiss (2011).

Table 7

Three Main Sufficient Conditions for Absence of Burnout, Psychosomatic Disorders and Job Satisfaction

	~Burnout			~Psychosomatic disorders			~Job satisfaction		
	Consistency cutoff: .89			Consistency cutoff: .89			Consistency cutoff: .8~8		
	1	2	3	1	2	3	1	2	3
Emotional labour									
Interpersonal conflicts	○	○		○	○				
Imbalance	○	○	○	○		○	●		●
Workload	○		○	○	○	○			
Job autonomy		●	●			●			○
Social support								○	○
Resources work			●		●	●	○	○	
Raw coverage	.47	.44	.40	.47	.47	.40	.56	.55	.45
Unique coverage	.03	.02	.01	.01	.02	.004	.03	.03	.01
Consistency	.86	.87	.87	.83	.83	.85	.84	.86	.87
Overall solution consistency		.81			.77			.78	
Overall solution coverage		.68			.68			.77	

Note. ~: absence of condition, ● = presence of condition, ○ = absence of condition; Expected vector according ~ Burnout (0,0,0,0,1,1,1), for ~ Psychosomatic disorders (0,0,0,0,1,1,1), and for ~Job satisfaction (1,1,1,1,1,0,0,0) using the nomenclature of Fiss (2011)