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Unpacking the Role of Work Demands in Teacher Burnout: Cognitive Effort as a Protective Factor

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Abstract

Introduction. This paper contributes to the research on teacher burnout by distinguishing between two aspects of work demands that are usually merged in the "workload" construct: the quantity of the demands (quantitative demands) and the cognitive effort they require (cognitive demands). Such a distinction may offer insight into how educational administrators should manage certain types of work demands.

Method. In an international sample of 209 kindergarten, primary and lower secondary teachers working in 110 schools from four different countries (Brazil, Chile, Ecuador, and Spain), we administered the Maslach Burnout Inventory (MBI) and the Copenhagen Psychosocial Questionnaire II (COPSOQII). We conducted three separate multiple regressions in which the work conditions (COPSOQII) were set (forced entry) as predictors of emotional exhaustion, depersonalization, and personal accomplishment (MBI).

Results. We found that quantitative and cognitive demands predict teacher burnout differently: while quantitative demands predict emotional exhaustion and depersonalization, cognitive demands play a protective role in relation to those two components and also predict personal accomplishment. Additionally, we found that emotional demands positively predict emotional exhaustion and depersonalization, and negatively predict personal accomplishment. We also foud that support from colleagues and community positively predicts personal accomplishment, but shows no significant relationship with either emotional exhaustion or depersonalization.

Discussion and Conclusion. Results suggest that the distinction between the quantity of demands and the cognitive effort they require is meaningful and important for future research and practice in the field of teaching. One important implication for educational administration is that the quantity of work assigned to teachers should be kept relatively low but, at the same time, this work should be cognitively activating and demanding.

Keywords: teacher burnout; work conditions; cognitive demands; quantitative demands; protective factors

Resumen

Introducción. Este artículo contribuye a la investigación sobre el malestar docente mediante la distinción de dos aspectos de las demandas de trabajo que normalmente estan mezcladas en el constructo de "carga de trabajo": la cantidad de demandas (demandas cuantitativas) y el esfuerzo cognitivo que estas demandas requieren (demandas cognitivas). Esta distinción puede ofrecer pistas sobre como la administración educativa debería gestionar ciertos tipos de demandas de trabajo.

Método. En una muestra internacional de 209 docentes en las etapas de educación infantil, primaria y secundaria obligatoria, que trabajan en 110 centros educativos de cuatro países (Brasil, Chile, Ecuador y España), administramos el Maslach Burnout Inventory (MBI) y el Copenhagen Psychosocial Questionnaire II (COPSOQII). Realizamos tres regresiones múltiples en las que las condiciones de trabajo (COPSOQII) fueron introducidas (forced entry) como predictores de cansancio emocional, depersonalización, y realización personal (MBI).

Resultados. Encontramos que las demandas cuantitativas y cognitivas predicen el malestar docente de forma diferente: mientras que las demandas cuantitativas predicen el cansancio emocional y la despersonalización, las demandas cognitivas desempeñan un rol protector con relación a estos dos componentes y predicen la realización personal. Además, encontramos que las demandas emocionales predicen positivamente el cansancio emocional y la despersonalización y negativamente la realización personal. También encontramos que el apoyo de colegas y comunidad predice positivamente la realización personal, pero no encontramos relación significativa con el cansancio emocional ni con la despersonalización.

Discusión y **Conclusion**. Los resultados sugieren que la distinción entre la cantidad de demandas y el esfuerzo cognitivo que estas requieren es una distinción relevante para la investigación y la práctica en el campo de la docencia. Una implicación importante para la administración educativa es que la cantidad de trabajo asignado a los/las docentes debería mantenerse relativamente baja, pero que, al mismo tiempo, este trabajo debería ser cognitivamente demandante.

Palabras clave: malestar docente; condiciones de trabajo; demandas cognitivas; demandas cuantitativas; factores de protección

Introduction

Teacher burnout is a major problem in education systems worldwide. The phenomenon is commonly conceptualized following Maslach (2003, 2017), who defines it as an unbalanced relationship between the individual and the work environment (Maslach, 2003). This approach usually considers three components of burnout: emotional exhaustion, depersonalization, and reduced personal accomplishment (Maslach & Jackson, 1981). Emotional exhaustion refers to the feeling of being overwhelmed by the job and is equivalent to the classical concept of job stress (Maslach, 2003). Depersonalization, in contrast, is not considered in other conceptual approaches to stress and refers to the loss of empathy, a detachment or callous attitude toward the other people involved in the job. Maslach (2003) suggests that depersonalization may be seen as a mechanism for coping with emotional exhaustion, and the two components are usually highly correlated. The third component is the feeling of poor performance or ineffectiveness at work. The incorporation of this third component in the burnout construct has been challenged by some authors, mainly because it is usually poorly correlated with the other two (Schaufeli & Salanova, 2007; Olivares & Gil-Monte, 2009). Maslach (2003) argues that the theoretical relationship between the third component and the other two is complex and that, therefore, the three components cannot be merged into a single undifferentiated measure.

Among teachers, burnout is a widespread problem. Although an exhaustive metanalysis of its international prevalence does not exist, several studies around the world suggest that about one third of in-service teachers present high levels of burnout (Al-Asadi et al., 2018; Carlotto, 2019; Castillo & Alzamora, 2015; Rionda-Arjona, & Mares-Cárdenas, 2011; Stoeber & Rennert, 2016; Martínez-Ramón, 2015; Shukla & Trivedi, 2008; Quattrin et al., 2010). This causes considerable problems for education systems. For example, several studies have reported that, in some countries, a large proportion of the new teachers entering the profession leave it within the first five years (Ingersol & Smith, 2003; Lindqvist & Nordänger, 2016; Skaalvik & Skaalvik, 2011; Struyven & Vanthournout, 2014). In other countries, the high rate of sick leave among teachers causes serious problems at schools (Arvidsson et al., 2019; OCDE, 2013; Jorquera et al., 2014; Swider & Zimmerman, 2011). Research has also found that high levels of teacher burnout predict high levels of student stress (Oberle & Schonert-Reichl, 2016; Becker et al., 2014) and low levels of student autonomous motivation (Shen et al., 2015; Zhang & Saap, 2008).

Faced with such a large problem, much research has sought to identify the factors that predict teacher burnout. The results of this research indicate that work conditions play a predominant role in the teacher burnout phenomenon – much larger than the role played by individual factors such as personality traits (Maslach, 2003; Näring, Briët, & Brouwers, 2006; Kosir, 2015; Alarcon, 2011; Van Droogenbroeck, Spruyt, & Vanroelen, 2014; Aloe, 2016; Espinoza-Díaz, Tous-Pallarès, & Vigil-Colet, 2015; Rabasa et al., 2016). Among work conditions, the quantity of work (quantitative demands) has been found to be a strong predictor of burnout, especially emotional exhaustion and, to a lesser extent, depersonalization (Alarcon, 2011; Carlotto, 2019; Parrello et al., 2019; Kozir, 2015; Näring, Briët, & Brouwers, 2006; Rabasa et al., 2016). Another factor that has been found to strongly predict all three components of teacher burnout is the presence of emotionally intense difficult situations, such as conflicts or bad relationships with students, parents, or colleagues (emotional demands) (Carlotto, 2019; Van Droogenbroeck, Spruyt, & Vanroelen, 2014; Aloe, 2016; Skaalvik & Skaalvik, 2010; Stoeber & Rennert, 2016; McCormick & Barnett, 2010; Nubling, 2011). A third important predictor of teacher burnout is having to play a problematic role at work, in the sense of lacking clarity about what that role is or having to play contradictory roles (Alarcon, 2011; Espinoza-Díaz, Tous-Pallarès, & Vigil-Colet, 2015; Rabasa et al., 2016; Carlotto, 2019). On the other hand, research has also identified factors that predict low burnout. Two factors in particular have been found to strongly predict lower levels in all three components of teacher burnout: social and organizational support (Carlotto, 2019; Parrello et al., 2019; Lawrence, 2019; Näring, Briët, & Brouwers, 2006; Kosir et al., 2015), and autonomy and control over one's own work (Carlotto, 2019; Näring, Briët, & Brouwers, 2006; Kosir et al., 2015; Alarcon, 2011; Arvidsson, 2019).

The body of research on the relationship between work conditions and teacher burnout is, thus, large and consistent. However, some challenges still need to be addressed to further develop it. One such challenge is the need to unpack the "quantity of work" factor in order to distinguish relevant types or aspects of work demands. This would offer insight into how administrators should manage certain types of work demands. In this regard, some authors have proposed distinguishing between teaching-related and non-teaching-related work demands (Van Droogenbroeck, Spruyt, & Vanroelen, 2014, Lawrence, 2019; Smith, 2003). However, these two types of demands do not distinctively predict teacher burnout: both teaching-related and non-teaching-related demands positively predict emotional exhaustion. Additionally,

Lawrence (2019) found that, in contrast to teaching-related demands, non-teaching related demands also predict depersonalization and personal accomplishment. However, Van Droogenbroeck, Spruyt, & Vanroelen (2014) found that both types of work demands predict only emotional exhaustion; neither predicts depersonalization or personal accomplishment. In any case, since the quantity of work demands is an especially strong predictor for emotional exhaustion, any meaningful distinction within these work demands would have to predict emotional exhaustion differently. The distinction between teaching-related and non-teaching-related demands does not meet this criterion.

A promising alternative is the distinction introduced by Cavanaugh (2000) between challenge demands and hindrance demands (in management). The basic idea is that certain demands ("challenge demands") increase the quantity of work but afford the worker an opportunity for professional fulfillment, personal accomplishment, professional growth, or learning. In contrast, other types of demands ("hindrance demands") pose obstacles for the worker's fulfillment or growth (Cavanaugh, 2000; Crawford, LePine, & Rich, 2010). This distinction has mainly been tested in relation to worker engagement and motivation, and challenge demands have been found to predict work engagement (Crawford, LePine, & Rich, 2010; van Oortmerssen, Caniëls, & van Assen, 2019). Like hindrance demands, challenge demands have also been found to predict burnout (Crawford, LePine, & Rich, 2010). However, this body of research usually considers quantitative demands to be challenge demands without distinguishing between the levels of cognitive effort they require (Cavanaugh, 2000; Crawford, LePine, & Rich, 2010; Crane & Searle, 2016; van Oortmerssen, Caniëls, & van Assen, 2019; Prem et al., 2017). Some authors have suggested that, among challenge demands, the ones most clearly able to promote fulfillment and growth are those that are cognitively activating (cognitive demands) (Crane & Searle, 2016; Schneider et al., 2017). In fact, when cognitive demands are tested as a predictor of burnout independently from quantitative demands, some differences between the two predictors emerge. Schneider et al. (2017) conducted a longitudinal study with physicians in three waves, in which challenge demands included only cognitive demands and learning demands. In the first wave, they did not find correlation between challenge (cognitive) demands and burnout (emotional exhaustion and depersonalization). In the second wave, they found that challenge (cognitive) demands had no correlation with emotional exhaustion, but did have a negative correlation (protective) with depersonalization. Only in the third wave did they find that challenge (cognitive) demands had a positive correlation with emotional exhaustion (and no correlation with depersonalization). In a study with diverse

workers with chronic headache, Van der Doef and Shelvis (2019) found that, while quantitative demands and emotional demands predicted emotional exhaustion, cognitive demands did not; additionally, cognitive demands predicted work engagement, while quantitative and emotional demands did not. Similarly, in a study with school teachers, Breevaart and Bakker (2017) found that cognitive demands predicted work engagement but workload did not. These results suggest that quantitative demands may have been regarded, in general, as a challenge demand, whereas in fact they are a hindrance demand. This confusion may be misleading the research on the challenge-hindrance demand distinction and, thus, also the results obtained from it. This paper aims to test this issue in relation to teacher burnout. To this end, our hypothesis is that quantitative demands and cognitive demands will predict teachers' emotional exhaustion differently.

Another problem with the research on teachers' work conditions is that the vast majority of studies use national samples. This can be a problem because the relationships between the variables are sought in individuals who work in the same education system with certain common social and cultural conditions. The samples may thus lack variability with regard to certain conditions, which can mask or bias the results. For example, Parrello et al. (2019) compared the findings they obtained in two different samples: one Italian and the other Swiss (in Ticino, the Swiss Italian-speaking canton). While the study found that workload predicted burnout and low well-being in both samples, the negative relationship between colleague support and burnout was found only in the Swiss sample. Additionally, in the Swiss sample (but not the Italian one), a negative relationship was found between optimism and burnout, whereas in the Italian sample (but not the Swiss one), a negative relationship was found between institutional identification and burnout. The authors suggest that the samples may differ in terms of professional culture, and that some aspects of these cultures may be working as intervening variables that mask the relationships between the research variables. Likewise, in a review of the literature, Chang (2009) argues that cultural beliefs and economic conditions inherent to different countries or cultures should be taken into account in research on teacher burnout, as these aspects can intervene and bias the researched relationships. Wolf et al. (2015) offer another illustration of this issue. These authors conducted a study with teachers in the Democratic Republic of Congo, based on data gathered in 2011, when the country was immersed in violent conflict and experiencing serious economic difficulties. Although the study found a relationship between subjective work conditions (which include items similar to emotional demands and the lack of social and organizational support) and burnout, it did not

find any significant relationships between objective work conditions (similar to the construct of quantitative demands) and burnout. The authors suggest that this finding may be limited by a lack of variability in risk conditions inherent to the specific sample under study (which was, structurally, at high risk). All of this suggests that, when samples are limited to only one national or cultural context, the results may be biased by unknown intervening variables inherent (and relatively constant) in those specific contexts or education systems. This observation suggests that studies seeking relationships between possible predictors and teacher burnout may benefit from using international samples (including different countries and education systems).

Objectives and Hypotheses

This study has two main objectives. First, it aims to test whether cognitive demands and quantitative demands predict teacher burnout and, especially, emotional exhaustion, differently. The hypothesis is that while quantitative demands will predict emotional exhaustion, cognitive demands will not.

The second objective is to explore the relative relationships between the well-known predictors of burnout (including, of course, the distinction between cognitive and quantitative demands) in an international sample in order to neutralize the bias introduced by, at least, some of the unknown intervening variables inherent in national samples.

Method

Participants and procedure

The participants in this study were 209 kindergarten, primary (ISCED 1) and lower secondary (ISCED 2) teachers working in 110 schools in four different countries: Spain (mainly Catalonia), Chile (mainly the Viña del Mar and Santiago regions), Ecuador (mainly the Guayaquil region), and Brazil (mainly the Goiás and Minas Geráis regions). The sample structure in terms of gender, work location, age, and work experience (Table 1) is similar to the international mean distribution of teachers reported in the TALIS 2013 and 2018 surveys (OECD, 2013, 2019), with the various sub-samples likewise approximating that structure. The data-collection was conducted through non-probability quota sampling, which began with the selection, in each national context, of schools meeting certain characteristics: educational level (kindergarten, primary and lower secondary), and work location (very small, small, medium, large and very large cities). We then approached each school's administrators to ask for

teacher volunteers. After obtaining the participants' informed consent, and under strict conditions of confidentiality, we met with the volunteer teachers and administered the questionnaires.

Table 1. *Sample structure (N = 209)*

		n	**%**
Country	Spain	75	35.9
	Chile	45	21.5
	Ecuador	45	21.5
	Brazil	44	21.1
Gender	Female	156	74.6
	Male	53	25.4
Education	Kindergarten	16	7.7
level	Primary	64	30.6
	Lower secondary	81	38.8
	Kindergarten and primary	13	6.2
	Primary and lower secondary	29	13.9
	Kindergarten, primary and lower secondary	4	1.9
Location	Less than 1,000 inhab.	20	9.6
	Between 1,000 and 15,000 inhab.	57	27.3
	Between 15,000 and 100,000 inhab.	49	23.4
	Between 100,000 and 1,000,000 inhab.	55	26.3
	More than 1,000,000 inhab.	28	13.4

	Mean (SD)	***Rank***
Age (years)	39.83 (11.18)	20 - 70
Work experience (years)	14.29 (10.25)	0 - 43

Instruments

To measure teacher burnout we used the Maslach Burnout Inventory – Educators Survey (MBI-ES) (Maslach & Jackson, 1981; Maslach, Jackson, & Leiter, 1997). This instrument includes three components of burnout: emotional exhaustion, consisting of 9 items (e.g., I feel emotionally drained from my work); depersonalization, consisting of 5 items (e.g., I don't really care what happens to some students); and personal accomplishment, consisting of

8 items (e.g., I deal very effectively with the problems of my students). All items are evaluated by the participant on a scale of 0 (never) to 6 (every day).

To measure working conditions we used 7 scales from the second version of the Copenhagen Psychosocial Questionnaire (COPSOQII) (Pejtersen et al., 2010): Quantitative Demands (4 items, e.g., How often do you not have time to complete all your work tasks?); Cognitive Demands (4 items, e.g., Do you have to keep your eyes on lots of things while you work?); Emotional Demands (4 items, e.g., Does your work put you in emotionally disturbing situations?); Role Conflict (4 items, e.g., Are contradictory demands placed on you at work?); Influence at Work (4 items, e.g., Do you have a large degree of influence concerning your work?); Social Support from Colleagues (3 items, e.g., How often do you get help and support from your colleagues?); and Social Community at Work (3 items, e.g., Do you feel part of a community at your place of work?). The items were evaluated on a five-point Likert scale ranging from Always or To a very large extent to Never/hardly ever or To a very small extent.

Datal Analysis

We first conducted CFA to check the factorial structure of the questionnaires and obtain estimates and standardized factorial scores. We then calculated the internal consistency of the scales through ordinal Omega (total), following Peters (2014) (see also Viladrich, Angulo-Brunet, & Doval, 2017). For RMSEA, CFI, TLI and ω, we assumed the cut-off values established in TALIS 2018 (OECD, 2019b, p.204). After checking the assumptions, we used the factorial scores to conduct three separate multiple regressions in which the work conditions were set (forced entry) as predictors of emotional exhaustion, depersonalization, and personal accomplishment, respectively.

Results

Preliminary Analyses

The CFA of the MBI questionnaire showed an acceptable fit with the factorial model (X^2 (206, N=209) = 370.130, $p < .001$, *RMSEA*= 0.062, *CFI*= 0.924, *TLI*= 0.915). In the CFA of the COPSOQII questionnaire, we found that one of the items from the Cognitive Demands scale (Does your work require that you remember a lot of things?) had a very low factorial weight (*StdYX estimate*= 0.146, p= .052), so we removed it from the model. Additionally, we

found high collinearity between, first, Cognitive Demands and Influence at Work (r= .774, VIF = 13.962 and 9.997, respectively, loading 95% and 90% of variance on the same dimension (8)), and, second, Social Support from Colleagues and Social Community at Work (r = .814, VIF= 8.237 and 70.538, respectively, loading 91% and 81% of variance on the same dimension (7)). We thus decided to merge the two pairs of factors into two new factors. The factorial structure of the resulting model showed an acceptable RMSEA but poor CFI and TLI (X^2 (265, N=209) = 600.214, p < .001, *RMSEA*= 0.078, *CFI*= 0.802, *TLI*= 0.776). This discrepancy between absolute and relative fit indices will be addressed in the discussion section. The internal consistency of all scales is shown in Table 2.

Table 2. *Internal consistency (McDonald's ω) of the scales*

Scale	***ω***	***CI***
Emotional Exhaustion	.86	[.83, .89]
Depersonalization	.80	[.75, .84]
Personal Accomplishment	.89	[.87, .92]
Quantitative Demands	.65	[.42, .88]
Cognitive Demands (including Influence at Work)	.68	[.62, .75]
Emotional Demands	.70	[.63, .76]
Support from Colleagues and Community	.86	[.84, .89]
Role Conflict	.78	[.73, .83]

Regression Analysis

The results of the multiple linear regressions show that quantitative demands positively predict emotional exhaustion (b= .218, p = .002) and depersonalization (b = .200, p = .012). Cognitive demands (including influence at work) negatively predict emotional exhaustion (b = -.320, p < .001) and depersonalization (b = -.277, p < .001), and positively predict personal accomplishment (b = .302, p < .001). Emotional demands positively predict emotional exhaustion (b = .595, p < .001) and depersonalization (b = .458, p < .001), and negatively predict personal accomplishment (b = -.479, p < .001). Support from colleagues and community positively predicts personal accomplishment (b = .202, p = .014). Finally, and surprisingly, role conflict negatively predicts emotional exhaustion (b = -.183, p = .045) and positively predicts personal accomplishment (b = .211, p = .044).

The model explains 49.2% of the variability in emotional exhaustion scores (F(5, 203) = 39.351 , p < .001), 33.5% of the variability in depersonalization scores (F(5, 203) = 20.447,

p < .001), and 33% of the variability in the personal accomplishment scores (F(5, 203) = 19.974, p < .001).

Table 3. *Regression results for work conditions as predictors of emotional exhaustion, depersonalization, and personal accomplishment*

	R^2	β	t	p
Emotional Exhaustion	.492			
(Constant)			0.13	.899
Quantitative Demands		.22**	3.14	.002
Cognitive Demands (including Influence at Work)		-.32***	-4.70	.000
Emotional Demands		.59***	6.57	.000
Support from Colleagues and Community		-.12	-1.71	.088
Role Conflict		-.18*	-2.02	.045
Depersonalization	.335			
(Constant)			0.40	.688
Quantitative Demands		.20*	2.52	.012
Cognitive Demands (including Influence at Work)		-.28***	-3.55	.000
Emotional Demands		.46***	4.42	.000
Support from Colleagues and Community		-.14	-1.68	.096
Role Conflict		-.18	-1.70	.092
Personal Accomplishment	.330			
(Constant)			-0.36	.720
Quantitative Demands		-.12	-1.54	.126
Cognitive Demands (including Influence at Work)		.30***	3.86	.000
Emotional Demands		-.48***	-4.60	.000
Support from Colleagues and Community		.20*	2.45	.014
Role Conflict		.21*	2.02	.044

Note: * *p* <. *05, ** p < .01, *** p < .001*

Discussion and conclusion

The first objective of this study was to test whether cognitive demands and quantitative demands predict teacher burnout, especially emotional exhaustion, differently. Our results offer several interesting findings in this regard. A first important finding is the high collinearity between cognitive demands and influence at work. This high collinearity suggests the possibility of considering influence at work as only one particular case of cognitive demand. The literature on teacher burnout has consistently reported the protective role of influence at work; our findings suggest that this protective role may extend to any work assign-

ment that implies increased cognitive effort. This would mean that, in fact, the underlying protective factor is cognitive effort, and that influence at work is found to be protective only because it increases cognitive effort. This could have important implications for task assignments, as it would greatly increase and diversify the array of tasks and work conditions that could play the protective role traditionally attributed only to influence at work. A second important finding in relation to our first hypothesis is that, as hypothesized, cognitive demands and quantitative demands predict emotional exhaustion in teachers differently. In fact, our hypothesis was that, while quantitative demands would predict emotional exhaustion, cognitive demands would not. However, what we found is that not only do cognitive demands not contribute to emotional exhaustion, they have a protective role. Thus, we found that emotional exhaustion is positively predicted by quantitative demands but negatively predicted by cognitive demands. This finding offers support for two ideas: first, that the distinction between the quantity of demands and the cognitive effort they require is meaningful and important in the teaching profession; and, second, that the quantity of demands should be conceptualized as hindering and cognitive effort as challenging. This has important implications for the more general research on hindrance-challenge demands and, particularly, for educational administration: it means that, first, the quantity of work assigned to teachers should be kept relatively low and, second, the work assigned should be cognitively activating and demanding.

These results should be taken with caution. On the one hand, the distinction between quantitative demands as hindrance and cognitive demands as challenge needs additional conceptual development. In this regard, in our view, it is important to regard quantity and cognitive effort as two dimensions of work demands, and not as two separate and mutually exclusive types of demands. Thus, one aspect of work demands is their quantity and another is the cognitive effort they require. Accordingly, adding a cognitively activating demand also increases the quantity of demands. The crucial point is, therefore, the relationship between the quantity of work demands and the cognitive requirements of *those* demands.

The fact that cognitive and quantitative demands have usually been taken as mutually excluding demands rather than two aspects of the same demand may explain some of the ambivalent findings regarding the role of cognitive demands in well-being. An illustrative example is the study by Meyer & Hünefeld (2018) with workers in different occupational fields in Germany. The authors considered three types of cognitive demands – facing new tasks, improving work, and doing unlearned things – and found that facing new tasks and improving

work positively predicted satisfaction, but doing unlearned things negatively predicted it. Arguably, doing unlearned things is cognitively activating; however, since it requires doing and learning how-to-do at the same time, it also greatly increases the quantity of work. This item, therefore, does not measure cognitive demands alone; it confounds cognitive and quantitative demands, which may explain the study's ambivalent findings. Thus, when the demand, as worded in the item, increases cognitive requirements without excessively increasing the quantity of work, it predicts well-being; when the demand described in the item is cognitively activating but entails too great an increase in the quantity of work, the relationship with well-being is negative.

The above discussion points to an additional caution that must be taken when interpreting our results: a better operationalization of the construct of cognitive demands is needed. For example, in our study, we found that the item "Does your work require that you remember a lot of things?" does not seem to work well within the Cognitive Demands scale when it is administered to teachers – it seems meaningless for this profession. We also found that the internal consistency of the Cognitive Demands scale, considered both alone and merged with the Influence at Work scale, is acceptable but not good. Therefore, when considering the findings of our study, it is important to keep in mind that more research is needed to develop the distinction between cognitive and quantitative demands, both theoretically and operationally.

The second objective of this study was to explore the relative contribution of the different well-known predictors of burnout in an international sample including multiple cultures and education systems. First, we found that quantitative demands positively predict emotional exhaustion and, to a lesser extent, depersonalization, but show no significant relationship to personal accomplishment. This finding is consistent with previous research, which has reported similar findings (Alarcon, 2011; Carlotto, 2019; Näring, Briët, & Brouwers, 2006). Second, we found that emotional demands positively predict emotional exhaustion and depersonalization, and negatively predict personal accomplishment. This finding, too, is consistent with other research in the field (Aloe, 2016; Skaalvik & Skaalvik, 2010; Stoeber & Rennert, 2016). Third, we found that cognitive demands (including influence at work) negatively predict emotional exhaustion and depersonalization, but positively predict personal accomplishment. This is, perhaps, the most important finding of this study; it shows the strong protective role of cognitive effort, not only regarding emotional exhaustion, as discussed in relation to

our first hypothesis, but also depersonalization and personal accomplishment. However, if influence at work is viewed as a particular case of cognitive effort, these results are not really surprising and are, in fact, consistent with other research in the field, since influence at work has largely been found to be a protective factor for all three components of burnout (Carlotto, 2019; Näring, Briët, & Brouwers, 2006; Kosir et al., 2015; Alarcon, 2011; Arvidsson et al., 2019). Fourth, we found that support from colleagues and community positively predicts personal accomplishment, but shows no significant relationship with either emotional exhaustion or depersonalization. This result contrasts with other research in the field that found support from colleagues and community to be protective of emotional exhaustion and depersonalization as well (Carlotto, 2019; Lawrence, 2019; Näring, Briët, & Brouwers, 2006). A possible explanation for these discrepant findings could be that the impact of social support on emotional exhaustion and depersonalization is mediated by professional cultures. This would be consistent with the study by Parrello et al. (2019), who, as seen above, compared two different national samples (Swiss and Italian) and found differences in the relationship between social support and burnout: the protective role of social support was only found in the Swiss sample, not the Italian one. Similarly, Maslach (2017) has suggested that in professional cultures (and education systems) with certain characteristics (e.g., high job insecurity, strong evaluation of teachers, high competition, etc.), support from colleagues and the organization may be seen as emotionally disturbing. Therefore, our findings suggest, first, that support from colleagues and community predicts personal accomplishment, and this relationship does not seem to be mediated by cultural aspects. Second, the fact that social support was not found to play a protective role in emotional exhaustion and depersonalization may be due to the variability in professional cultures introduced by our use of an international sample, which, in turn, may suggest that this protective role, found in other studies, may be mediated by cultural and structural aspects of national contexts and education systems. Finally, we surprisingly found that role conflict negatively predicts emotional exhaustion and positively predicts personal accomplishment; this would mean that high role conflict would be protective for emotional exhaustion and would promote personal accomplishment. Obviously, this makes no sense and is inconsistent with previous research. We suggest that this result is spurious and is caused by a ceiling effect in the burnout measures. This becomes clear, first, when the correlations between these variables are checked: there is a positive correlation between role conflict and emotional exhaustion (r (207) = .516, p < .001) and a negative correlation between role conflict and personal accomplishment (r (207) = -.381, p < .001). It like-

wise becomes clear when exploring the interactions between role conflict and emotional demands as predictors of emotional exhaustion and personal accomplishment (Figure 1).

a) b)

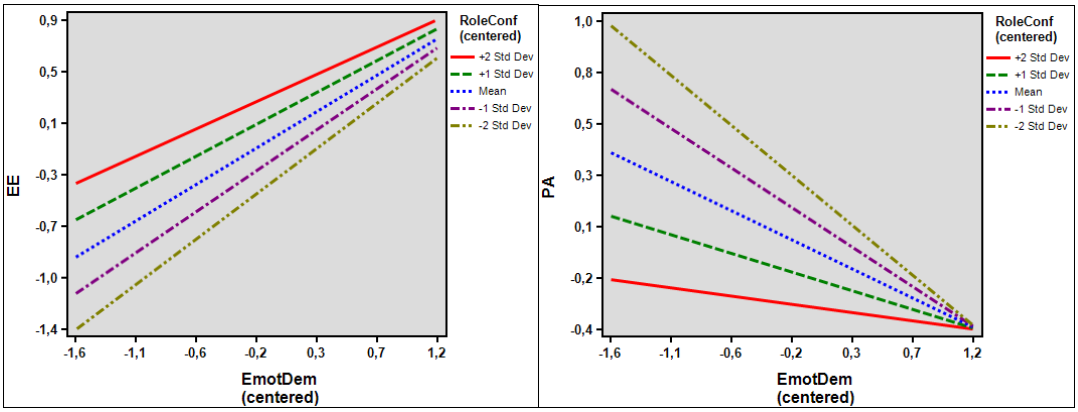

Figure 1. *a) Interactions between Role Conflict (RoleConf) and Emotional Demands (EmoDem) as predictors of Emotional Exhaustion (EE); b) Interactions between Role Conflict (RoleConf) and Emotional Demands (EmoDem) as predictors of Personal Accomplishment (PA).*

Figure 1 shows the strong impact of emotional demands on emotional exhaustion and personal accomplishment. It also shows that the impact of role conflict is important as well: when emotional demands remain low, there is a significant difference in the levels of emotional exhaustion and personal accomplishment depending on how high or low the role conflict is. However, when emotional demands are very high, the burnout scores near their peak, regardless of the level of role conflict. Therefore, when emotional demands remain very high, there is minimal difference in how the level of role conflict impacts emotional exhaustion and personal accomplishment. This seems to be because the impact of emotional demands on burnout scores is so important that emotional demands alone cause burnout scores to climb almost to the scales' maximums ("every day" for emotional exhaustion, "never" for personal accomplishment), meaning the scales cannot reflect the additional emotional exhaustion and lack of personal accomplishment caused by high role conflict. Consequently, the slope of the line relating emotional demands and burnout is not as steep when role conflict is high, since, when role conflict is high, burnout scores increase less as a function of emotional demands simply because the ceiling is closer. That is why, in the model, high role conflict seems to protect emotional exhaustion and promote personal accomplishment: there is a ceiling effect

in the burnout scores. This suggests the need to develop a more sensitive scale for measuring burnout components to avoid this ceiling effect.

Another relevant limitation of this study is that the CFA for the COPSOQII scales – following the removal of one item (due to low factorial loading) and the merging of two pairs of scales (due to high collinearity) – shows discrepancy in the fit indices: the RMSEA is acceptable, but the CFI and TLI are poor. Although it is not always the case, one possible explanation for this discrepancy is that, while the factorial structure is acceptable, the internal consistency of the scales is poor (Heene et al., 2011; Lai & Green, 2016). In fact, McDonald's Omega shows that the Quantitative Demands and Cognitive Demands (merged with Influence at work) scales present acceptable (but not good) internal consistency (ω = .65 and ω = .68, respectively). It is worth noting that the internal consistency of the latter scale, i.e., the scale resulting from the merging of the Cognitive Demands and Influence at Work scales, (ω = .68) is better than that of both the Cognitive Demands (ω =.51) and Influence at Work (ω =.65) scales when taken separately. The possibility that the discrepancy between absolute and relative fit indices is caused by the acceptable (but not good) internal consistency of the Quantitative Demands and Cognitive Demands (including Influence at Work) scales is supported by the fact that, when these two scales are removed from the CFA (and only when both are removed), the CFI and TLI show acceptable fit (X^2 (74, N=209) = 146.051, $p < .001$, RMSEA = 0.068, CFI = 0.940, TLI = 0.926). Still, the internal consistency of these two scales is acceptable; it is above .60. Why then are the CFI and TLI low? Lai & Green (2016) argue that the sample required to obtain adequate statistical power is much larger in relation to relative indices such as the CFI than to absolute indices such as the RMSEA and that this may cause discrepancies between the two fit indices. Our study sample (N = 209) was relatively small (N < 250). This fact, which implies lower statistical power in relation to relative fit indices, combined with the not good internal consistency of the aforementioned scales, may explain the low values for the CFI and TLI, even though the internal consistency of the scales was acceptable. All of this suggests that, according to our findings, additional work is needed to improve the COPSOQII scales; first, by considering the possibility of merging the Social Support from Colleagues and Community at Work scales on the one hand, and the scales of Cognitive Demands and Influence at Work on the other; and, second, by further developing the Quantitative Demands and Cognitive Demands scales and improving their internal consistency. Still, according to the above interpretation of the fit indices, the factorial structure we used

in the present study for the COPSOQII seems to be acceptable, and the internal consistency of the scales, as shown by McDonald's Omega, are either acceptable or good.

In summary, notwithstanding its limitations, this study suggests that: a) influence at work is only one expression of the more fundamental factor of cognitive effort; b) cognitive effort and quantity of demands predict emotional exhaustion, depersonalization, and personal accomplishment in teachers differently, so this differentiation seems meaningful and important for future research and practice; c) cognitive effort play a protective role in emotional exhaustion, depersonalization, and personal accomplishment in teachers; and d) social support predicts personal accomplishment, but the protective role of this factor in emotional exhaustion and depersonalization seems to depend on certain aspects of professional cultures.

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