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Self-efficacy beliefs as a predictor of quality of life and burnout among university lecturers

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In this article, we explore Brazilian lecturers' self-efficacy beliefs as a predictor of quality of life and burnout drawing on the concept and theoretical framework of self-efficacy presented by Albert Bandura, the originator of Social Cognitive Theory. The questionnaires adopted for the research included the Brazilian Lecturer Self-Efficacy Scale (BLSES), the Maslach Burnout Inventory (MBI-ES) and the World Health Organization Quality of Life Assessment (WHOQOL-Bref). The participants were 1,709 lecturers from 78 universities in Brazil, most of whom had a doctoral degree. We analyzed the data using descriptive and inferential statistics, performing structural equation modeling (SEM) and cluster analysis using IBM SPSS and Amos. We hypothesized that lecturer self-efficacy would be a positive predictor of quality of life and this, in turn, would be a negative predictor of burnout itself. SEM model fit indices fell within acceptable levels, with the overall model lending support to the stated hypothesis. In addition, lecturer self-efficacy was also a predictor of personal accomplishment in the MBI-ES. Regarding the cluster analysis, participants fell into five groups based on self-efficacy, quality of life and burnout questionnaire scores, each with associated personal, professional and academic characteristics. By way of discussion, we address reflections arising from findings to university life and working conditions, training needs and the need to establish career planning supported by studies that investigate the phenomenon of teaching in higher education in an integrated manner.

KEYWORDS

lecturer self-efficacy, burnout, quality of life, structural equation modeling, cluster analysis

Introduction

Lecturers are high qualified, highly trained professionals with varying roles and responsibilities within different universities. In recent years, university teaching has undergone many structural changes in many different countries around the world. In Brazil, university lecturers undertake a diverse range of activities including teaching,

research, extension tasks and management. These happen in combination with a decrease in academic, administrative and financial support due to changing economic policies over time. Research has also demonstrated the existence of a gender gap in senior and administrative positions, with men appearing to have greater opportunities for career advancement over women (Astegiano et al., 2019). In addition, a substantial body of research now indicates that the overload generated by excessive workload demands and poor workplace environments can generate stress and negatively affect relationships within the profession, leading to mental difficulties including burnout (Borsoi and Pereira, 2013; Santos et al., 2016; Faria et al., 2021; Oliveira et al., 2021).

Burnout, in particular, is understood as a response to "...chronic interpersonal stressors on the job (exhibiting) overwhelming exhaustion, feelings of cynicism and detachment from the job, and a sense of ineffectiveness and lack of accomplishment" (Maslach and Leiter, 2016, p. 103). More recently, burnout has been recognized as a broader spectrum of at least five inter-related conditions (Leiter and Maslach, 2016): burnout itself (high on exhaustion and depersonalization, low in personal accomplishment), engagement (low on exhaustion and depersonalization, and high in personal accomplishment), overextension (high on exhaustion only), disengagement (high on depersonalization only), and ineffectiveness (low on personal accomplishment only).

Burnout has become an important subject in recent years, largely because of its association with decreasing productivity, attrition, absenteeism, emotional detachment, and loss of interest in work (Tikkanen et al., 2021). The consequences of burnout have implications for higher education with the potential to impact on student learning and achievement as well as the health and wellbeing of lecturers. Due to the challenging higher education context, lecturers are particularly vulnerable to burnout, being affected by bureaucracy, publishing pressures, securing funding, changes in teaching practice, personal interactions with others, and the instability of contracts (Lima Filha and Morais, 2018). Alves et al. (2019), for example, found that more than one third of a sample of lecturer participants in their research in Brazil exhibited symptoms of burnout, and in the United States, this figure was as high as 40% (Enders et al., 2015). Burnout is also related to a reduction in perceived quality of work and has a significant negative impact on lecturers' quality of life and satisfaction with health (Enders et al., 2015; Alves et al., 2019).

Quality of life is defined as an "individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (The WHOQOL Group, 1995, p. 1405). Quality of life perceptions are also influenced by context and working conditions. Although lecturer quality of life is not a particularly well researched topic in Brazil, available results are unanimous in pointing out the negative impacts that

teaching in higher education can have (Oliveira et al., 2021), with one study in particular reporting staff spending up to 90% of their time at work with work-related anxiety, stress and exhaustion (Cecilio and Reis, 2016).

Self-efficacy beliefs and social cognitive theory

Self-efficacy beliefs are central to Social Cognitive Theory (Bandura, 1997) due to their effects on human functioning, and cognitive, affective, motivational and selective processes. People create and develop judgments of ability that assist them in setting goals and the partial control they can exert over their environment, as research across a range of cultural contexts demonstrated (Bandura, 1977, 1997). In the educational field, self-efficacy has gained prominence in teaching and learning from primary education to graduate studies, including the work and career development of teachers and lecturers.

Lecturer self-efficacy is defined as "the judgments that lecturers make about their ability to teach, research, complete extension tasks and carry out management activities at a level of quality appropriate to their institution's needs" (Matos et al., 2020, p. 3). Because people decide to act according to perceptions of their own abilities, self-efficacy beliefs influence goal setting, the selection of favorable environments, the efforts made to achieve goals, and even the levels of physiological activation encountered in stressful situations (Bandura, 2012). Consequently, self-efficacy can directly affect a lecturer's performance and well-being at work. Research conducted over past decades has demonstrated that lecturer self-efficacy impacts upon different psychological processes, including motivation (Bailey, 1999), positive and negative affect (Burton et al., 2005), job satisfaction (Mottet et al., 2004; Ismayilova and Klassen, 2019), self-esteem (Evans and Tress, 2009), and emotional intelligence (Ali et al., 2017), among others.

In higher education, self-efficacy has been associated with lecturer burnout by many researchers, with a role as protective of health (Evers et al., 2002; Skaalvik and Skaalvik, 2010; Savas et al., 2014; García Padilla et al., 2017; Smetackova, 2017; Cao et al., 2018; Llorca-Pellicer et al., 2021). The negative relationship between self-efficacy and burnout is to be theoretically expected since burnout can be understood as a consequence of an inability to deal with contextual demands and workload stress. As strong self-efficacy beliefs empower individuals to deal with their work-related conditions, lecturers with a stronger sense of self-efficacy than others may feel more fulfilled and more satisfied with their work, and present with lower levels of exhaustion and depersonalization (Morris et al., 2017).

Self-efficacy may also have a high predictive value in positive factors associated with lecturer well-being, since self-efficacy can help lecturers to stay motivated and satisfied

(Zee and Koomen, 2016). Faced with a lack of research evidence, however, the relationship between lecturer self-efficacy and quality of life is not entirely clear, presenting a knowledge gap which we begin to address here. In schools, however, teacher self-efficacy has been shown to have a positive and significant association with quality of life in Iran (Shirazi et al., 2008). It has also been shown that teacher's coping self-efficacy in school mediates the relationship between violence-related stress and quality of life (Won and Chang, 2020).

Bandura (1997) states that if lecturers can control the way they react to stressful situations, then they are probably more capable of dealing with them more effectively. Thus, lectures who believe they can manage difficult or challenging work-related events are less likely to be distressed by them. On the other hand, those who believe otherwise might experience higher levels of concern. Teachers with higher self-efficacy scores tend to develop proactive behaviors for facing professional challenges and emotional stress (Yin et al., 2020). Self-efficacy is also positively associated with higher well-being (Song, 2021). Considering work-related studies across a range of fields, self-efficacy has been associated with other adverse aspects of well-being and performance in addition to burnout (Judge and Bono, 2001).

As Bandura (1997) points out, work assumes a central role in the lives of lecturers, acting as a source of personal identity, self-worth and social relationships. We predict that lecturers with higher levels of self-efficacy beliefs should therefore have a better perception of their quality of life, since their self-efficacy beliefs should influence their ability to cope with the contextual demands of work, decreasing the impact of negativity on their health and well-being (see also Skaalvik and Skaalvik, 2010; Sariçam and Sakiz, 2014; Zee and Koomen, 2016; Kim and Burić, 2019). If lecturer self-efficacy acts as a predictor of quality of life and protective against burnout, supporting lecturers more effectively should be a priority for universities as self-efficacy enhancement would also be investing in staff development and well-being. Perceptions of quality of life also involve an appraisal of personal and contextual variables which different individuals deal with every day, including gender, personal relationships, and leisure time activities, which also affect appraisals of self-efficacy and burnout (Cao et al., 2018; Matos et al., 2021). These assumptions and the variables outlined sit at the core of our work and which we explore through structural equation modeling (SEM) and cluster analysis. Two research questions focus attention and guide progress:

- (1) Does lecturer self-efficacy predict quality of life and burnout?
- (2) Are lecturer self-efficacy, quality of life and burnout related to the personal and professional background variables of lecturers in ways that can be meaningfully identified and clustered?

Materials and methods

Research design

We addressed the research questions employing a correlational, cross-sectional design involving the use of an online questionnaire survey method.

Sampling and participants

We adopted a non-probabilistic and convenience sampling approach in which the participants were self-selecting and voluntary. The only inclusion criterion for participants was to be actively working as a higher education lecturer in the Brazilian public and/or private sector. After obtaining ethical approval from the lead institution, we carried out the data collection online. Doing so, we disseminated a survey link by e-mail to the human resources departments of all 199 universities listed in the 2017 census of Brazilian higher education, asking them to forward the invitation to participate on to lecturers themselves. We also adopted the strategy of sending the link directly to lecturer email addresses where these were available on university websites.

By accessing the survey link, participants were directed to a consent form on Google Forms. Upon completion, they were then directed to the data collection instruments that were made available on the OnlinePesquisa platform. Data collection took place anonymously between October 2019 and January 2020.

The participants recruited to the study were 1,709 lecturers in 78 public (96.1%) and private (3.9%) universities in 26 states across all regions and the Federal District (Table 1). Data obtained from the 2017 census of higher education indicated that the sample was drawn from 124,291 Brazilian lecturing positions overall. In terms of background characteristics, men and women were almost equally represented (51.9% female). Most participants were also white (78.3%), married (72.9%), qualified to doctoral level (89.4%) and between 30 and 49 years of age (63.9%).

Instruments

The data collection instruments included the Brazilian Lecturer Self-Efficacy Scale (BLSES), the Maslach Burnout Inventory (MBI-ES), and the World Health Organization Quality of Life Assessment (WHOQOL-Bref). We also collected additional demographic information using a questionnaire separately as indicated (Table 1).

The Brazilian Lecturer Self-Efficacy Scale (BLSES) specifically developed for use in this research (Matos et al., 2020) is a 30-item questionnaire adopting a 5-point Likert scale. The 30 items are arranged into four factors: self-efficacy for

TABLE 1 Frequencies and percentages of participant characteristics (N = 1,709).

	Frequency	Percentage
Gender		
Male	817	47.8
Female	887	51.9
Not identified	5	0.3
Age in years		
20–29	42	2.5
30–39	531	31.1
40–49	560	32.8
50–59	418	24.5
60–70	143	8.4
More than 70	15	0.9
Marital status		
Married	1,263	73.9
Single	257	15.0
Other	189	11.1
Ethnicity		
White	1,138	66.6
Black	275	16.1
Other	296	17.3
Years in higher education		
Less than 1	28	1.6
1–5	239	14.0
6–10	426	24.9
11–15	323	18.9
16–20	272	15.9
More than 20	421	24.6
Highest qualification		
Doctorate	1527	89.4
Master's	176	10.3
MBA	4	0.2
Bachelor's	2	0.1
Field of highest qualification		
Health science	361	21.1
Social science	299	17.5
Physical science	296	17.3
Engineering	212	12.4
Humanities	205	12.0
Life science	169	9.9
Arts and linguistic	98	5.7
Agri-food science	68	4.0

teaching activities ($\alpha = 0.86$), self-efficacy for research activities ($\alpha = 0.87$), self-efficacy for extension activities ($\alpha = 0.86$), and self-efficacy for university management activities ($\alpha = 0.85$), each reflecting the main duties of lecturers in Brazil. Participants were required to rate their degree of concordance with each of the 30-item statements including, for example, “Manage the classroom during group activities with adequate feedback

for all” (teaching), “Acting as a peer reviewer and complying with the deadlines established by the editorial team” (research), “Involve the external community in university extension activities” (extension), and “Perform administrative activities in parallel with teaching, research and extension activities” (management). A confirmatory factor analysis of the BLSES adopted here is presented as follows: $\chi^2(394) = 1291.72$, TLI = 0.91, CFI = 0.92, RMSEA = 0.052.

To evaluate burnout among participants we used the Maslach Burnout Inventory – Educators’ Survey¹ (MBI-ES) (Maslach and Jackson, 1986). This questionnaire is composed of 22 items arranged in three dimensions: emotional exhaustion ($\alpha = 0.92$), depersonalization ($\alpha = 0.72$) and personal accomplishment ($\alpha = 0.82$). Items are rated using a 7-point Likert scale and include “I feel emotionally drained from my work” (emotional exhaustion), “I do not really care what happens to some students” (depersonalization), and “I have accomplished many worthwhile things in this job” (personal accomplishment). A confirmatory factor analysis of the MBI adopted here is presented as follows: $\chi^2(195) = 1515.91$, TLI = 0.91, CFI = 0.93, RMSEA = 0.063.

We also used the Brazilian version of World Health Organization Quality of Life Survey-Bref (WHOQOL-Bref) (Power and Kuyken, 1998; Fleck et al., 2000). This consists of 26 items rated using a 5-point Likert scale evaluating quality of life in four domains: physical ($\alpha = 0.84$), psychological ($\alpha = 0.82$), social relationships ($\alpha = 0.74$), and environment ($\alpha = 0.77$). Examples include “To what extent do you feel that physical pain prevents you from doing what you need to do?” (physical), “How much do you enjoy life?” (psychological), “How satisfied are you with your personal relationships?” (social), and “How satisfied are you with your transport?” (environment). A confirmatory factor analysis of the WHOQOL-Bref adopted here is presented as follows: $\chi^2(236) = 1678.54$, TLI = 0.90, CFI = 0.92, RMSEA = 0.060.

Data analysis

The validity and reliability of the questionnaires were evaluated conventionally using factor analysis after which the data collected was analyzed using both descriptive and inferential statistics (Field, 2013). We used SEM to explore the relationships between lecturer self-efficacy beliefs, quality of life and burnout and address the first research question (IBM AMOS 26.0; Neves, 2018). We conducted a series of exploratory analyses using Maximum Likelihood Estimation to test competing models and analyze different settings to determine the best fit adopting the following fit indices and

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preferred threshold values: $\chi^2/df < 0.500$, the comparative fit index (CFI) > 0.900 , the Tucker–Lewis index (TLI) > 0.900 , and the root mean square error of approximation (RMSEA) < 0.800 (Byrne, 2013).

To address the second research question and after the standardization of variables to *z*-scores (Everitt et al., 2011), we explored the data using cluster analysis (Ward's method), a statistical technique that allows participants to be grouped based on their responses to the range of variables considered (IBM SPSS 25.0; Cohen, 1988; Field, 2013; Akoglu, 2018; Sharp et al., 2021). We also used chi-square to investigate associations between personal and professional variables and cluster membership (Akoglu, 2018).

Results

Structural equation modeling results

We adopted SEM to investigate the relationships between lecturer self-efficacy, quality of life and burnout. We tested a working hypothesis that lecturer self-efficacy would predict quality of life and that quality of life would, in turn, predict burnout. Based on previous literature, we also hypothesized a direct relationship between lecturer self-efficacy and the different dimensions of burnout itself.

We chose to represent the constructs of lecturer self-efficacy and quality of life by single latent factors of a second order because they offer the advantage of constructing more parsimonious models to test (Parker et al., 2012). With regard to the burnout questionnaire (MBI-ES), however, it was decided to maintain its first-order factors since there are indications in the literature that these dimensions should not be combined (Skaalvik and Skaalvik, 2010). We also assumed that all MBI-ES factors would be correlated. We then conducted a series of exploratory analyses using Maximum Likelihood Estimation to test competing models to analyze different configurations to determine best fit. As Table 2 shows, and for the first model tested, we obtained fit indices of $\chi^2(1519) = 4.697$, TLI = 0.86, CFI = 0.87 and RMSEA = 0.047.

Following Byrne (2013), we then reviewed the model aimed at identifying high residual covariances between items and the theoretical relevance of specifying these covariances in the model. After modifying by specifying eight modification indices, we obtained the following values: $\chi^2(1511) = 3.848$, TLI = 0.894, CFI = 0.900 and RMSEA = 0.041. Next, we investigated regression values establishing as a criterion the removal of regression coefficients that were not significant for the model. After removing these, including a direct links between self-efficacy and the emotional exhaustion ($r = 0.02$) the depersonalization dimension of burnout ($r = -0.09$) dimension of burnout, the model presented the following final values:

TABLE 2 Model fit statistics.

	Models	
	Initial model	Final model
χ^2	7132.62	5825.93
df	1519	1513
χ^2/df	4.70 ($p < 0.001$)	3.85 ($p < 0.001$)
TLI	0.86	0.89
AGFI	0.84	0.87
CFI	0.87	0.90
SMRM	0.49	0.46
RMSEA	0.047	0.041
RMSEA 90% CI (PCLOSE)	0.045–0.048 ($p < 0.001$)	0.040–0.042 ($p = 1.00$)

$\chi^2(1513) = 3.851$, TLI = 0.89, CFI = 0.90, RMSEA = 0.041. Full details of the final model are presented in Figure 1.

A chi-square test used to determine the differences between the first and the final models was significant ($\chi^2 = 16932.81$; $df = 6$; $p < 0.001$).

Following Hayes (2009) we also bootstrapped the outcome to determine the significance of the direct and indirect mediation effects of quality of life models between self-efficacy and personal accomplishment, depersonalization and emotional exhaustion of the MBI-ES. The results indicate that all indirect effects were significant (Table 3).

Considering the complexity of involving three different questionnaires in arriving at a final model, we accept the model as a first exploration of the relationship between the constructs under analysis. The model demonstrates that, for this sample, lecturer self-efficacy is a positive predictor of quality of life ($r = 0.46$) which, in turn, negatively predicts burnout. Moreover, lecturer self-efficacy is also a predictor of the personal accomplishment factor of the MBI-ES scale ($r = 0.26$). Lecturer self-efficacy explains 22% of the variance in the participants' perception of quality of life. The model also explains 53% of the variance in emotional exhaustion, 17% of the variance in depersonalization, and 23% of the variance in personal accomplishment.

Cluster analysis results

We performed a cluster analysis using Ward's method resulting in the identification of five main groups of participants. Further analysis was then performed at the level of individual factors which showed significant differences in all and with moderate to large effects: teaching $F(4,1704) = 406.53$, $p < 0.001$, $\eta^2 = 0.49$; research $F(4,1704) = 193.62$, $p < 0.001$, $\eta^2 = 0.31$; extension $F(4,1704) = 195.17$, $p < 0.001$, $\eta^2 = 0.31$; management $F(4,1704) = 377.78$, $p < 0.001$, $\eta^2 = 0.47$; emotional exhaustion $F(4,1704) = 467.41$, $p < 0.001$, $\eta^2 = 0.52$; depersonalization $F(4,1704) = 100.91$, $p < 0.001$, $\eta^2 = 0.02$;

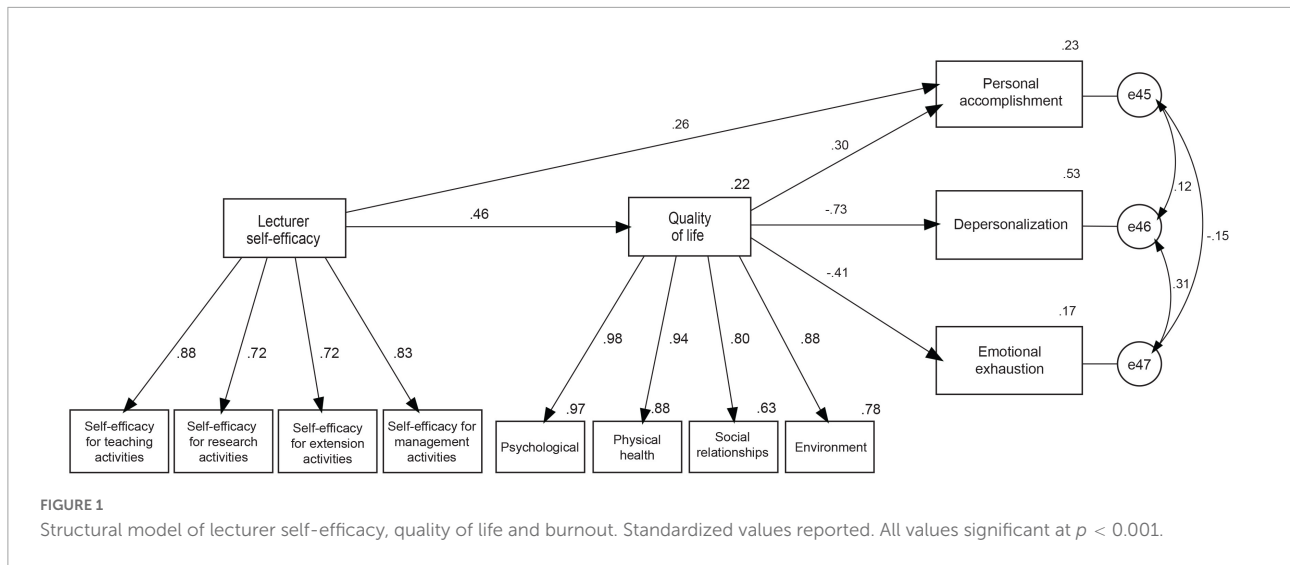


TABLE 3 Standardized effect from mediation analysis – final model (bootstrapping with 5.000 samples; Bias-corrected 95% CIs).

Hypothesis	Direct effect	Indirect effect	BC 95% CI (LL-UL)*
Self-efficacy > Quality of life > Personal accomplishment	0.26***	0.14***	(0.11 to 0.17)
Self-efficacy > Quality of life > Depersonalization	0.00	-0.19***	(-0.22 to -0.16)
Self-efficacy > Quality of life > Emotional exhaustion	0.00	-0.34***	(-0.37 to -0.30)

*** $p < 0.001$. *Means LL, lower limit; UL, upper limit.

personal accomplishment $F(4,1704) = 114.21, p < 0.001, \eta^2 = 0.21$; the physical domain $F(4,1704) = 358.32, p < 0.001, \eta^2 = 0.46$; the psychological domain $F(4,1704) = 376.57, p < 0.001, \eta^2 = 0.47$; the social relationship domain $F(4,1704) = 441.69, p < 0.001, \eta^2 = 0.51$; and the environmental domain $F(4,1704) = 226.47, p < 0.001, \eta^2 = 0.35$. Although all groups differed slightly with regard to self-efficacy for teaching, research, extension and management activities, and in the social relationship domain of the WHOQOL-Bref, this difference was not significant, especially between Clusters 2 and 4 in the other dimensions. The cluster analysis is summarized as shown (Figure 2).

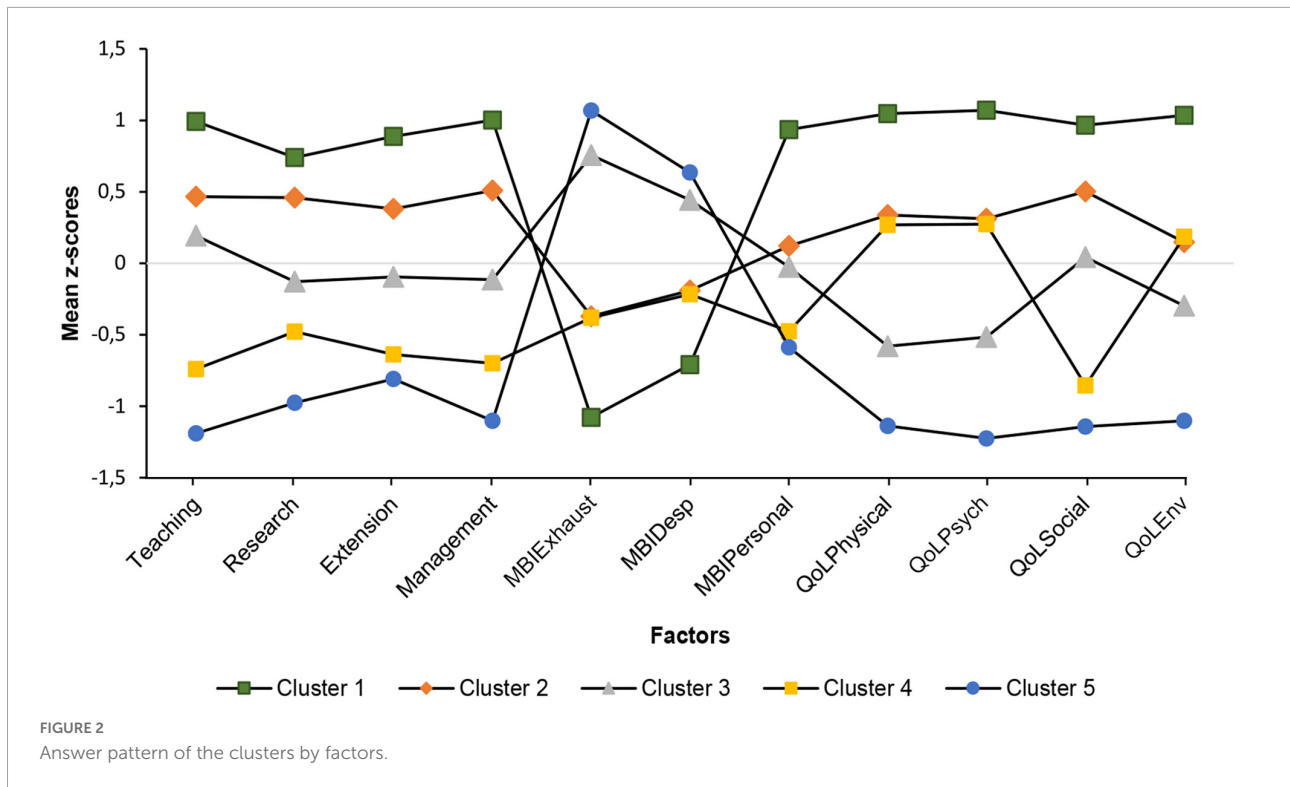
As observed in Figure 2, and as also hypothesized, Clusters 1, 2, and 5 associate higher scores of self-efficacy with lower scores of emotional exhaustion and depersonalization, and higher scores of personal accomplishment and all four factors of quality of life. In Clusters 3 and 4 some of the values are divergent, mainly in emotional exhaustion and depersonalization (MBI-ES) and social relationships (WHOQOL- Bref). Table 4 shows the means and standard deviations of each group in all factors of the three questionnaires.

Analyzing further (Table 5), Cluster 1, which we name here the Highly Efficacious/High Quality of Life and Accomplishment cluster, participants have high levels of self-efficacy and quality of life, with a high perception of

personal accomplishment and low levels of exhaustion and depersonalization. With slightly more male than female participants (55.1%), these are participants who believe they cope well with the demands of the profession (76.5%) and feel more job satisfaction (96.6%). They are more active (76.1%), sleep well (75.2%), have few of the health symptoms listed when compared alongside the other clusters, and have a better perception of their own state of health (91.6% good or better).

Cluster 2, named here the Highly Efficacious/Moderate Quality of Life and Accomplishment cluster, is characterized by participants having high levels of self-efficacy with lower quality of life and personal accomplishment, and higher levels of exhaustion and depersonalization compared to Cluster 1. These were mostly male participants (71.2%) who reported a worsening sleep quality (only 56.2% claim sleeping well) and a greater number of adverse health-related symptoms (54.8% report anxiety), but still have a positive perception of their overall state of health (good or better 69.5%). Fewer participants believe they cope with the demands of the profession well (55.2%).

In Cluster 3, named the Moderately Efficacious/Exhausted cluster, participants presented average self-efficacy levels. Compared to Cluster 2, they show a large increase in emotional exhaustion and depersonalization in addition to loss of quality of life. Participants here, with well over half female (59.5%), perceived themselves as capable of performing the activities



of teaching, research and extension effectively, but feel limited by physical fatigue and the demands arising from work. Only a small number reported actually coping well (25.6%). These participants present a reduction in the perception in the quality of their health (40.8% good or better), in satisfaction with work (66.6%), and present an increase in the number of adverse health-related symptoms in comparison with Clusters 1 and 2 (75.6% report anxiety).

Cluster 4, named the Low Efficacy/Low Social Relationships cluster, presents values close to those of Cluster 2 in several areas but differs in having lower self-efficacy across all four dimensions. Unlike Cluster 3, Cluster 4 is characterized by an improved perception of quality of life, with lower emotional exhaustion and depersonalization and poorer social relationships. Female and male participants are represented in almost equal numbers (50.2% male). Most perceive themselves to be healthy (68.9% good or better) and are satisfied with their profession (82.3%).

Cluster 5, named the Low Efficacy/Low Quality of Life cluster, presents participants with lower levels of self-efficacy in all four dimensions, as well as reduced personal accomplishment and perception of quality of life, combined with higher levels of exhaustion and depersonalization. This group is largely female in composition (60.4%), claiming not to have developed strategies to cope well with professional demands (only 13.1% think that they have). Most participants consider their general state of health as only satisfactory (66.4%), report performing fewer physical activities (56.8%) and exhibit poor

quality of sleep (82.5%). They also have a greater number of adverse health-related symptoms compared to the other clusters (82.5% report anxiety). Very few also feel satisfied with the profession (13.1%).

Discussion

In this work we explored Brazilian lecturers' self-efficacy beliefs as a predictor of quality of life and burnout using SEM, and grouped participants based on self-efficacy, quality of life and burnout scores, associating these variables with personal and academic characteristics using cluster analysis.

Relationships between self-efficacy, quality of life and burnout

Drawn from within Bandura's Social Cognitive Theory, and the assumption that lecturer motivation and beliefs influence their well-being and contextual evaluation of the workplace, lecturer self-efficacy was indeed a positive predictor of quality of life, supporting the initial working hypothesis. Thus, lecturers who reported higher levels of self-efficacy perceived themselves with better quality of life. Our findings also indicate that lecturer self-efficacy is a direct positive predictor of personal accomplishment in burnout, a dimension that aggregates motivational factors, satisfaction and positive evaluation of

TABLE 4 Cluster mean scores by factors.

Cluster	Participants	Teaching	Research	Extension	Mgment ^a	Exhaustion	Depers ^b	PersAcc ^c	Physical	Psych ^d	Social	Env ^e
		Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Cluster 1	238	4.36 (0.38)	4.36 (0.56)	4.16 (0.55)	4.22 (0.80)	1.96 (0.62)	1.32 (0.49)	6.18 (0.59)	84.06 (10.95)	82.34 (9.20)	78.08 (12.96)	79.53 (9.60)
Cluster 2	527	4.02 (0.46)	4.14 (0.59)	3.69 (0.80)	3.84 (0.60)	2.99 (1.10)	1.89 (0.83)	5.29 (1.06)	71.16 (13.62)	70.33 (11.63)	69.49 (13.09)	66.75 (11.47)
Cluster 3	422	3.73 (0.44)	3.67 (0.67)	3.25 (0.78)	3.35 (0.54)	4.63 (1.08)	2.58 (1.26)	5.12 (0.80)	54.50 (14.36)	56.62 (12.72)	60.98 (11.48)	60.33 (12.19)
Cluster 4	293	3.24 (0.50)	3.40 (0.73)	2.74 (0.78)	2.90 (0.53)	2.97 (0.86)	1.86 (0.04)	4.63 (1.24)	69.94 (13.20)	69.72 (12.72)	44.34 (12.75)	67.29 (11.72)
Cluster 5	229	2.95 (0.53)	3.00 (0.75)	2.58 (0.83)	2.59 (0.63)	5.08 (1.00)	2.79 (0.09)	4.51 (1.04)	44.37 (13.65)	44.85 (13.76)	39.01 (15.51)	48.76 (12.77)
Eta Squared		0.49	0.31	0.31	0.47	0.52	0.19	0.21	0.46	0.47	0.51	0.35

^aManagement (BLSES); ^bdepersonalization (MBI); ^cpersonal accomplishment (MBI); ^dpsychological (WHOQL-Bref); ^eenvironmental (WHOQL-Bref).

work, corroborating the results of others (Briones et al., 2010; Bentea, 2017; Molero Jurado et al., 2018). Since higher levels of self-efficacy contribute to a positive mental state of engagement at work, self-efficacious individuals are therefore more likely to experience a greater number of successful work-related outcomes (Spontón et al., 2018). These findings are in accordance with those involving teachers in schools which have also found positive relationships between professional context, engagement and job satisfaction (Skaalvik and Skaalvik, 2010; Costa, 2012; Ventura et al., 2015; Chan et al., 2020; Matos et al., 2021). This raises the possibility of developing interventions that promote lecturer self-efficacy and, consequently, a more positive perception of quality of life thereby reducing the likelihood of suffering burnout (Fong et al., 2019).

Self-efficacy in the work environment can affect the way people perceive stress, anxiety and physical health. People with higher levels of self-efficacy, when exposed to unpleasant or exhausting situations, may experience less stress as they perceive themselves as more capable of dealing with the challenges imposed by the context (Bandura, 1997). As burnout is related to workplace demand, we anticipated a negative association between self-efficacy and burnout. However, we did not find the direct relationship witnessed elsewhere (Skaalvik and Skaalvik, 2010; Cao et al., 2018). Instead, we found a significant negative relationship between lecturer self-efficacy and emotional exhaustion and depersonalization mediated by quality of life. Thus, quality of life impacts negatively on burnout syndrome while positively affected by self-efficacy. Bandura (1997, p. 464) argues, however, that “occupational stress is not just an employee problem. Certain organizational conditions can undermine employees’ beliefs in their occupational capabilities.” Higher education working conditions are also important, pointing to the university environment as highly exhausting and demanding. This needs to be discussed and addressed and will be further explored in the next sections (Bandura, 1997; Alves, 2017; Cardoso Júnior et al., 2018; Alves et al., 2019; Hall et al., 2019).

Recent studies have related teacher self-efficacy with their mental health, with implications on their behavior and attitudes toward work (Von Muenchhausen et al., 2021). Therefore, lecturer self-efficacy could be understood as a valuable personal resource that influences on the adoption of positive coping skills, proactive behavior and positive emotions as whole. In this sense, researchers have demonstrated that it is possible to develop training processes for lecturers with the purpose of increasing their self-efficacy beliefs through the use of the sources of information (Postareff et al., 2007; Fong et al., 2019). Thus, the main importance of these results may lie in developing intervention processes that promote lecturer self-efficacy, with a positive perception of quality of life, which could reduce the possibility of suffering with burnout. In addition to findings of studies that point the importance of lecturer self-efficacy beliefs on student learning, the results

TABLE 5 Pattern of group responses according to the frequency of personal variables.

Variable	Cluster 1 (%)	Cluster 2 (%)	Cluster 3 (%)	Cluster 4 (%)	Cluster 5 (%)	χ^2 (df)	Cramer's V
Gender	44.9	47.0	59.5	49.8	60.4		0.12 ($p < 0.001$)
Female							
Male	55.1	53.0	40.5	50.2	39.6	33.81(8)	
Do you wake up rested?	75.2	56.5	22.5	51.5	17.5	277.90(4)	0.40 ($p < 0.001$)
Yes							
Do you believe that your professional life interferes with your relationship with your partner?	41.6	60.2	82.0	66.4	86.5	157.48(4)	0.31 ($p < 0.001$)
Yes							
Do you believe that your professional life interferes with your leisure activities?	52.5	71.5	91.2	78.5	95.6	188.51(4)	0.33 ($p < 0.001$)
Yes							
Inability to relax	14.7	41.0	71.3	43.7	78.6	292.04(4)	0.41 ($p < 0.001$)
Yes							
Loss of interest in work	7.1	27.3	54.0	29.0	69.9	278.53(4)	0.40 ($p < 0.001$)
Yes							
Anxiety	31.9	54.8	77.5	55.6	82.5	189.48(4)	0.33 ($p < 0.001$)
Yes							
Low self-esteem	3.8	20.1	47.4	22.5	64.2	292.97(4)	0.41 ($p < 0.001$)
Yes							
Discouragement	23.1	45.7	75.8	52.2	87.8	290.66(4)	0.41 ($p < 0.001$)
Yes							
Depression	2.1	11.6	27.7	10.6	42.4	183.90(4)	0.33 ($p < 0.001$)
Yes							
Lack of concentration	17.6	30.7	55.9	33.8	73.4	220.20(4)	0.36 ($p < 0.001$)
Yes							
Lack of energy	22.3	47.8	77.3	49.5	86.9	296.23(4)	0.42 ($p < 0.001$)
Yes							
How would you assess your health at the moment?							
Bad	0.0	1.9	5.2	0.7	16.2	497.62(12)	0.31 ($p < 0.001$)
Regular	8.4	28.7	54.0	30.4	66.4		
Good	59.2	60.2	38.4	54.9	17.0		
Great	32.4	9.3	2.4	14.0	0.4		
Do you feel professionally satisfied as a lecturer?	96.6	88.6	66.6	82.3	43.7	267.47(4)	0.40 ($p < 0.001$)
Yes							
Do you believe you cope well with all the competing demands present in the life of lecturer?	76.5	55.2	25.6	29.4	13.1	299.82(4)	0.42 ($p < 0.001$)
Yes							

show that these beliefs are pivotal for lecturers themselves (Matos et al., 2021).

In addition to developing strategies for increasing self-efficacy, it is essential that universities also develop strategies to help improve the work environment, dealing with excessive demands that act as the precursors of emotional exhaustion (Hall et al., 2019). Considering the international situation facing universities post-pandemic, and the changes required to build “new normals,” it might be suggested that addressing self-efficacy and collective efficacy provides at least one new pathway over the coming years.

Cluster analysis results

Cluster analysis contributed to understanding variations in self-efficacy beliefs among participants, with participants brought together into five groups characterized by decreasing values of self-efficacy across each of its four dimensions. These differences were not straightforward when also considering burnout and quality of life together.

Lecturer self-efficacy

There is no linear and causal relationship between experiencing events and understanding them as a means of strengthening or weakening personal beliefs. They depend on the selection and cognitive interpretation individuals make of them. Therefore, it is natural that in the university environment individuals who experience the same working conditions react to them in different ways, thereby choosing to act or react differently. The cluster analysis shows that according to their levels of self-efficacy beliefs there were differences in how work was perceived, with, for example, participants with higher levels of self-efficacy feeling more satisfied with the profession overall.

It is also essential that working conditions are aligned with individual and professional needs. This becomes clear when analyzing the variations observed in Cluster 3. Although participants in this cluster present moderate scores of self-efficacy, the high values of emotional exhaustion and low perception of quality of life point to a group more likely to lose interest in work, suffer lack of energy and perceive the professional environment as less satisfactory. Bandura (1997) states that positive perceptions about one's own abilities favor persistence in challenging contexts. However, overconfidence can also be characterized as excessive and maladaptive in an academic environment, thereby creating its own problems (Pajares, 1996), and potentially harmful to health and quality of life. As Bandura (2003) warns, the challenge is to preserve the functional value of resilient self-efficacy while identifying practices that are beyond the point of utility, including the self-efficacy beliefs associated with workaholism (Del Libano et al., 2012). It is therefore necessary that lecturers are also able to assess their personal capabilities and set optimistic but not

unrealistic goals and purposes for their careers (Burke et al., 2006; Ng et al., 2007; Del Libano et al., 2012).

Health impairment is a possible explanation for what occurs with participants in Cluster 5 (Del Libano et al., 2012). Participants with lower self-efficacy may perceive their environment as more threatening, and, consequently, perceive themselves as less able to intervene within it. Over time, this lack of agency could lead to exhaustion and illness. Pressured by demands, exhausted and discouraged, adopting the strategy of adhering to the rules set may become the norm. Cluster 5 participants with high levels of emotional exhaustion and below average depersonalization could, with low levels of self-efficacy, suffer eventually from burnout because the exhaustion is negatively related to self-efficacy in future academic success (Salanova et al., 2005).

The current university context facing many lecturers today favors an excess of working hours, activities and diversification of roles (Calvert et al., 2011, p. 33). This is not something natural, but historically and socially built through the adoption of public and economic policies. As rightly pointed out by (Cherniss, 1993, p. 139):

Bandura recognizes that there are environments that are so unresponsive, unjust, and punitive that strong self-efficacy by itself is not sufficient for positive adaptation (...). Those who perceive themselves to be more efficacious will engage in social activism; and, if their efforts to change the environment meet with repeated failure, they will eventually look for better environments in which to work. But those who are low in self-efficacy will tend to react to unresponsive environments with apathy, resignation, and cynicism. Thus, strong self-efficacy ultimately promotes environmental change as well as individual adaptation. (Cherniss, 1993, p. 139).

According to the results of the cluster analysis, there is a reciprocal relationship established between beliefs, environment and the way people choose to act. Lecturer self-efficacy is not a ‘one-size-fits’ all concept. Higher education today is challenging and could be perceived as threatening. Understanding lecturer self-efficacy is therefore pivotal to affecting change.

Burnout

As mentioned in the introduction, Leiter and Maslach (2016) propose a five-profile classification of burnout. Adopting this here, those participants assigned to Cluster 1 appear most closely associated with the engaged profile since it presents high levels of personal accomplishment and low levels of emotional exhaustion and depersonalization. Participants in Cluster 3 exhibited high levels of emotional exhaustion, without major reductions in the score of personal accomplishment and, therefore, we associated this with the over-extended profile. Cluster 5 most closely resembles Leiter and Maslach's true burnout profile, since participants here present with high levels of exhaustion and reduced personal accomplishment. Clusters 2 and 4 do not readily match any of Leiter and Maslach's profile

categories, but the authors themselves do point to the possible existence of other as yet unidentified groups.

Despite suffering restrictions because of the work context, we assume that the participants in Clusters 1 and 2 manage to achieve the professional goals most important to them, including publishing in quality journals, securing funding, and successfully helping tutor their undergraduate and graduate students appropriately. These successful experiences could be sources of lecturer self-efficacy and help protect these lecturers from the adverse effects of workload demand (Bandura, 1997). Even when participants do not present high scores in burnout factors, an excess in even one can have negative effects on quality of life and professional performance. Participants in Cluster 3, for example, present with high levels of emotional exhaustion. Even though they do not present a full burnout profile *per se*, they still feel less satisfied with their profession and present a greater loss of interest in their work which could impact their work performance. The fact that almost a quarter of the lecturers in this cluster may be exhausted is worrying since studies point out that emotional exhaustion is a precursor of burnout (Lima and Lima-Filho, 2009). Identifying lecturers with high scores in this dimension could inform decision making to help promote change. As mentioned before, different lecturers may have different perceptions of professional context depending on their levels of self-efficacy. This is evident in Cluster 5. Participants here may suffer more from environmental restrictions, possibly putting them at risk of ill health (Cao et al., 2018).

Social relationships and quality of life

The results of the cluster analysis show that participant perceptions of quality of life, as well as their self-efficacy beliefs, are not uniform, with distinct groups presenting variations in questionnaire scores. In most clusters there is a certain congruence between outcomes, with participants who have high scores in one domain having similar responses in others (e.g., Cluster 1). By contrast, the extremely low scores of the social relationships domain observed in Cluster 4 stand out when compared to other domains in the same cluster. This might be related to environments of high competitiveness established in universities, since, for example, the lack of funding encourages competition for financial resources, the publication of articles, and other such demands. This competition could generate a perception of isolation in lecturers, who may find it difficult to integrate and find collaboration with others in their departments. In addition, intense working hours can also interfere with the social relationships of lecturers outside academia (Andrade and Cardoso, 2012; Ferreira et al., 2015). Social relationships are a central feature of all institutions that intend to improve the quality of life of their lecturers since building social relationships in universities is associated with lower rates of illness and higher levels of self-efficacy (Hemmings, 2015).

Strategies for coping with professional demands

As pointed out earlier, lecturers evaluate their self-efficacy beliefs against the demands presented in context alongside the personal resources and strategies they believe they have to cope with these demands (Bandura, 2012). Exploring the perspective that individuals with higher self-efficacy adopt better strategies to adapt to their own situations, 76.5% of the participants in Cluster 1 responded positively to the question “Do you believe you cope well with all the competing demands presented in lecturer life?” compared to 13.1% in Cluster 5. Lecturers with higher levels of self-efficacy also understand how to deal better with professional demand. Hall et al. (2019) also showed that lecturers with higher levels of self-efficacy were less prone to procrastination and had lower levels of emotional exhaustion. This indicates the importance of lecturers building personal mechanisms of self-regulation that help them manage environmental demand as well as manage their reaction toward it. It is important that institutions invest in strengthening lecturer self-efficacy beliefs as well as the development of lecturer self-regulatory skills. It is also noteworthy that often the interpersonal skills and self-regulatory skills of lecturers are more important for professional success than the skills directly related to the professional activities performed (Bandura, 1997).

Gender

We highlight here that Clusters 3 and 5, which presented the lowest scores of quality of life and high scores in emotional exhaustion, contained larger numbers of women than men. These findings are consistent with other research that explores the relationship between gender, burnout and quality of life (Borges and Lauxen, 2016; Alves, 2017). One possible explanation for the observed difference in profiles between men and women lies in gender inequality and productivity gaps at work (Astegiano et al., 2019), difficulties in balancing work and personal lives (Crabtree et al., 2020), and the segregation of women in academia (Boechat, 2020). Overall, it is possible that even among highly qualified women with successful academic careers in lecturing to suffer from doubts regarding their personal capabilities. It is also possible that the women responding were more self-critical or honest than men in completing the questionnaires.

Structural changes are important for altering contextual conditions that ensure gender equality in universities, allowing women to have the same opportunities available to them as their male colleagues. As a way of achieving this, institutions could investigate the lecturer self-efficacy beliefs of their female lecturers and implement training processes focusing on enhancement. Mentoring by more experienced colleagues and female role models who might promote successful work-related experiences and strategies provide one example (Hemmings and Kay, 2009). However, even if the strengthening of self-efficacy beliefs is essential, this alone may not be enough. Effective and

long-lasting change requires the commitment of universities with initiatives to also change institutional culture.

Limitations

Here, we used Bandura's theoretical framework of Social Cognitive Theory to derive hypotheses about the direction of relationships on the predictive model between lecturer self-efficacy, quality of life and burnout. As a quantitative study, all of the questionnaires used were self-report instruments and therefore subject to interpretational issues and social desirability bias. Both the SEM and cluster analysis are subject to data handling which involve an element of subjectivity in decision-making and interpretation. No causal inferences should be inferred. Thus, further studies might involve qualitative, mixed-methods and experimental designs, particularly those involving multiple sources of data.

It is also noteworthy that in this study only quality of life was examined as a potentially mediating variable. Here we verified that quality of life partially mediates the relationship between lecturer self-efficacy and burnout, without identifying if other variables could be equally responsible for this relationship. Future research could expand the number of mediators analyzed, including personal and professional variables such as gender, academic background and career stage. As we only had as participant lecturers from Brazil, the results should not be over-generalized out of context and into other occupations and cultures.

Concerning the cluster analysis and the number of clusters retained, this is determined by carefully interpreting the data-generated solutions themselves and arriving at a 'best-fit' considering all of the many factors involved. Introducing an element of subjectivity to a point, the results presented here should not be considered definitive and representative of other higher education situations (Everitt et al., 2011). Despite that, the results can be used to help direct future research in the field with a view to replication or the establishment of other solutions and outcomes. The field could also benefit from longitudinal research examining the cluster stability over time.

Finally, one other possible limitation of the study included the timing of data collection which occurred at the end of an academic semester in Brazil, and a busy time for lecturers. It is possible that questionnaire completion may have been affected as a result. We recommend that future studies use a more longitudinal approach to investigate self-efficacy beliefs in order to understand how lecturers behave over time, and to consider the specific demands of context for each academic period of the year.

Conclusion

Addressing the research questions raised at the outset, findings arising from the SEM and cluster analysis of

questionnaire data from 1,709 lecturers in 78 universities across Brazil indicate that lecturer self-efficacy positively predicts the perception of quality of life and personal accomplishment. In addition, perceptions of quality of life negatively predicts burnout. Lecturer self-efficacy, quality of life and burnout are also closely associated with the personal and professional background variables of lecturers in ways that can be meaningfully identified and clustered. These relationships have hitherto received scant attention (Perera et al., 2019; Matos et al., 2021).

The implications of findings point to the importance of universities working to promote a collaborative and supportive environment for their employees. Thus, we emphasize the importance of institutional initiatives to promote a healthier university, which welcomes and promotes quality of life and wellbeing to create a sustainable environment with the potential to improve teaching, research opportunity, extension activities and management processes, and prevent burnout. In this way, self-efficacy development and quality of life would no longer rely on individual initiative but would become a commitment of universities to their wider academic communities as a whole (Faria et al., 2021). This is especially important if we consider the little-known consequences of the COVID-19 pandemic and a return to "new normal" ways of working. Institutions and their academic communities should reflect seriously upon what they want to be, and how they want to live and learn together in the coming years.

The challenges facing lecturers in Brazil are many, including the disinvestment in public higher education institutions and the collapse of public funding agencies (Amaral, 2019). All of these can influence the job satisfaction and self-efficacy beliefs of lecturing staff. However, public and university policies are not immutable. They can be changed based on social and academic community pressures. To this end, it is essential that those actors involved in the process of change believe in their individual and collective capacities to sustain the efforts necessary for this to take place:

Social reformers strongly believe that they can mobilize the collective effort needed to bring social change. Although their beliefs are rarely fully realized they sustain reform efforts that achieve important gains. Were social reformers to be entirely realistic about the prospects of transforming social systems they would either forego the endeavor or fall easy victim to discouragement. Realists may adapt well to existing realities. But those with a tenacious self-efficacy are likely to change those realities (Bandura, 1994, p. 13).

Ways of achieving Bandura's social reform might include "a commitment to collegiality (over and above competitiveness); challenging the normative discourses of over-work and exhaustion in the quest for productivity; and attending to the 'quieter' intellectual virtues of the profession" (Skea, 2021, p. 9). This will require a collective response and, therefore, needs to

be built together by lecturers and the institutions in which they work to promote a true academic community. In this context, reflections on one's own beliefs and on collective efficacy beliefs can play a decisive role.

Data availability statement

The datasets generated for this study are available on request to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the Ethics Commission of the Institute of Bioscience, São Paulo State University “Júlio de Mesquita Filho”, Rio Claro, Brazil. The patients/participants provided their written informed consent to participate in this study.

Author contributions

MM conceived the idea, designed the study, collected the data, performed the analysis, and drafted the first version of the manuscript. RI was involved in planning and conceptualization and directed the project. JS guided the process of data analysis and contributed to the interpretation of the results. JS and RI reviewed and edited the first written draft. All authors helped to shape the final manuscript.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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