



Mental Health, Work-related Stress and Work-Life Balance in Public Universities: A Comparison between Brazilian and Canadian Professors

Ana Alice Vilas Boas^{1*} and Estelle Morin²

¹*Departamento de Administração e Economia, Universidade Federal de Lavras – UFLA, Caixa Postal 3037 - Campus Universitário, Lavras, MG, CEP 37200-000, Brasil.*

²*HEC Montréal, Service de l'Enseignement du Management, 3000, Ch. Côte Ste-Catherine, Montréal, QC, H3T 2A7, Canada.*

Authors' contributions

This work was carried out in collaboration between the authors. Author EM designed the study, performed the statistical analysis and wrote the protocol, author AAVB wrote the analyses and first draft of the manuscript. Authors AAVB and EM managed the literature searches. The authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JESBS/2018/41820

Editor(s):

(1) Redhwan Ahmed Mohammed Al-Naggar, Professor, Population Health and Preventive Medicine, Universiti Teknologi MARA, Sungai Buloh, Selangor, Malaysia.

Reviewers:

(1) Hakan Usakli, Sinop University, Turkey.

(2) Ibrahim El-Zraigat, The University of Jordan, Jordan.

Complete Peer review History: <http://www.sciencedomain.org/review-history/24785>

Original Research Article

Received 4th March 2018

Accepted 12th May 2018

Published 25th May 2018

ABSTRACT

Aims: This paper aims reporting the perception professors working in Brazilian and Canadian public universities have of the level of stress they experience at work and the perception of their work-life balance, taking into account their workload and the number of hours they usually work per week. The following objective is to test the relations work-related stress, and work-life balance might have with the professors' mental health. The final objective is to compare the perceptions of Brazilian professors with those of Canadian, to look for differences.

Study Design: To answer these questions, this paper assesses Mental Health, Work-related Stress and Work-Life Balance for professors working in these two countries and test for their differences. The sample consists of 274 Brazilian professors and 252 Canadian professors. Data were collected through an online questionnaire assessing the following indicators: Psychological Distress,

*Corresponding author: E-mail: ana.alice@dae.ufla.br;

Psychological Well-Being, Workload, Number of Working Hours per Week, Work-related Stress and Work-Life Balance.

Methodology: Reliability analyses demonstrated that all tested components are consistent to evaluate Mental Health, Work-related Stress, Workload and Work-Life Balance. Correlation analyses showed that Psychological Distress is negatively related to Work-Life Balance, whereas Psychological Well-Being is negatively related to Work-related Stress and positively related to Work-Life Balance.

Results: There are significant mean differences between Brazilian and Canadian professors in Physical Load, Mental Load, Work-related Stress and Work-Life Balance. However, mean differences for Psychological Distress, Psychological Well-Being, Emotional Load and Number of Working Hours per Week are not statistically different. Linear regression analysis, step by step, controlled for Life Events, showed that Work-related Stress predict 46, 2% of the scores of Psychological Distress. Another linear regression also showed that Work-related Stress and Work-Life Balance predict 41% of the scores of Psychological Well-Being.

Conclusion: In summary, we may say that Brazilian professors find more balance between personal and professional life, but they face more Mental Load to perform their work, and Canadian professors find more Physical Load on their work than Brazilian professors.

Keywords: Psychological well-being; psychological distress; workload; working hours; and life events.

1. INTRODUCTION

The work of faculty has changed a lot during the last two decades. Professors are required not only to teach classes at different levels of academic programs but also to contribute to knowledge advancement through their research and publications.

An academic career that was once viewed as safe, secure and high social standing environment to work, with opportunities for satisfying and autonomous work, is changed drastically nowadays. The growth of student numbers and the increased emphasis on research and higher quality learning that is tied up with constraints of economic pressure affect the level of job demand for professors and other faculty members. All these changes affect negatively the level of mental health in the academic domain.

Gillespie et al. [1] affirm that university staff plays a vital role in the creation and development of knowledge and innovation, as well as education and training for the whole society. Thus, it is important that government and university managers find ways to protect their professors and other staff members from increasing levels of stress due to the increasing demands. As an example of this increasing demand in academic domain, we can point out the huge demand for publishing in high-quality journals to support their careers and sustain the post-graduation programmes. To do so, the professors need

many times assume technical activities to submit research projects, conduct the researches and elaborate the reports to obtain suitable material to publish.

On this matter, many studies focus on the dilemma "Publish or Perish". To publish the professors need to work longer hours and dedicate themselves to their own researches and the researches of their master, doctorate and post-doctorate students. Thus, we may say the rule «publish or perish» has increased their stress. All these pressures lead to work-related stress, work-life imbalance, mental, physical and emotional strain, and different health problems.

An academic career was once viewed as offering a low level of stress, safe employment, secure position and high social standing with opportunities to do satisfying and autonomous work [2]. However, Catano et al. [3] affirm that over the last 20 years, the academic environment and perspectives about academic career have changed drastically. As postulated by Kinman and Jones [4], universities are no longer a low-stress environment. In this context, Gillespie et al. [1] identified five major sources of stress in universities, including insufficient funding and resources, work overload, poor management practice, job-insecurity, and insufficient recognition and reward. They also observed that the majority of the groups reported that job-related stress has a deleterious impact on professional work and personal welfare.

Working long hours to meet the requirements of both, teaching and publishing, has also increased the risk of losing the balance between their work life and their private life. Therefore, their mental health could be at stake, because of the stress they experience in their work and the lack of work-life balance. According to Schneewind and Kupsch [5], the research about work-life balance was marked, since the beginning of 1980, by the determination of the sources of imbalance essentially associated with the job organization or staff management. Grzywacz and Carlson [6] noted that the direction of the researches in this area changed the early 1990s. It is increasingly considered that work-life balance results from both the exchange and the negotiation of expectations between the individual and the employer. For Chrétien and Letourneau [7], the impacts of work-family conflict on employees' mental health are significant.

Mental health is also considered a broad topic for studies because it is related to a set of activities aiming at making people capable of taking charge of their health and improving their pattern of life. Mental health is rooted in the concept of «quality of working life» that represents the general state of well-being in the workplace that can be measured in terms of quality indicators, which can be assessed by various indicators such as high psychological well-being, low psychological distress, high organizational commitment and high work-life balance [8]. Thus, mental health is an important asset in the field of Social Psychology.

In this context, we would like to point out that the country characteristics may play a special role for this comparative study of public universities in Brazil and Canada. However, as these professionals have a permanent and relatively more secure job, other issues may be more determinant for keeping their employability such as playing well the role "publish or perish" to face the new pattern of academic productivity, as discussed previously [1,3] and [9]. It is mainly true because nowadays professors are seen primarily as researchers than as traditional professors [10].

As a result, we search to understand: How do compare mental health, work-related stress and work-life balance of professors working in public universities in an emerging country like Brazil with one of professors working in a developed country like Canada?, and What are the main

differences in the indicators in these two countries? Thus, this paper is first aimed at reporting the perception professors working in Brazilian and Canadian public universities have of the level of stress they experience at work and the perception of work-life balance, taking into account their workload and the number of hours they usually work per week. The second objective of this article is to test the relations work-related stress, and work-life balance might have with the professors' mental health. The third objective of this article is to compare the perceptions of Brazilian professors with those of Canadian, to look for differences.

This paper is based on post-doctoral research. The study was carried on by a Brazilian professor supervised by a Canadian professor at HEC Montreal. This is the why we decided to compare these two realities. As a result, we directed our research to Canadian and Brazilian professors aiming to assist public managers to better understand the implications of mental health, work-related stress and work-life balance on academic work.

2. METHODOLOGY

This study is based on a quantitative research. In order to determine whether there were differences between mental health, work-related stress and work-life balance as perceived by Brazilian and Canadian professors, we invited professors from three federal universities in Minas Gerais – Brazil, and three provincial universities in Quebec – Canada, to answer an electronic questionnaire. The questionnaire was sent to:

- 625 professors of the Federal University of Lavras (UFLA);
- 378 professors of the Federal University of Alfenas (UNIFAL);
- 995 professors of the Federal University of Viçosa (UFV);
- 1058 professors of the University du Quebec à Montréal (UQAM);
- 414 professors of the University du Quebec à Trois-Rivières (UQTR); and
- 207 professors of the University du Quebec à Rimouski (UQAR).

The questionnaires were sent through Survey Monkey in the first semester of 2013. In all, 526 professors completed the questionnaire, 106 UFLA (20.4% response rate), 63 UNIFAL (19.8% response rate), 105 UFV (14.9% response rate),

156 of UQAM (18.4% response rate), 59 UQTR (17.4% response rate) and 37 UQAR (23.2% response rate). The returning rate of the questionnaires were low in each university, for this reason, it is hard to perform separate analysis by the university, or even by department. Despite that, regarding the total of questionnaires in each country, we have enough data to make the comparative analyses.

Among them, 248 were women, and 278 were men. There is a significant difference between the distributions of gender in Brazil compared with Canada. In Brazil, there were 106 women and 178 men while in Canada, there were 142 women and 110 men. Thus, the sample in Brazil has a gender bias in favour of men.

The professors who volunteered to answer the survey were in average 45.07 years old (SD 10.481). There is a significant difference in the age of the respondents between Brazilians and Canadians ($t = -6.512$, $df = 669$, $p < .000$). In fact, Brazilians ($N = 274$) average age is 42.63 years (SD 9.967), and Canadians ($N = 252$) average age is 47.72 years (SD 10.286). In other words, Brazilian professors who answered the survey were younger than the Canadians. This does not necessarily mean though that the Brazilian professors are in general younger than the Canadians since we do not have the demographic data for the whole population of professors in both countries.

In this sample, 17.9% of professors have a master degree, 71.9%, doctorate and 10.3%, post-doctoral degree. As for their civil status, 15.4% were single, 77.2% were married or live with a partner, 6.7% were either separated or divorced, and 0.6% was widowed. Among the respondents of both countries, 65.3% have children, and the majority of them has one child (20%), two children (30.8%) and three children (11.6%).

The questionnaire was designed to assess the mental health and work-life balance for university professors. More specifically, it includes scales that measure the following indicators: mental health [11], work-related stress [12], workload based on the studies of Vidulich & Tsang [13] and Morin [14], and work-life balance [15]. The scales were translated into French and validated in previous studies conducted by one of the researchers in French language countries such as France and Canada. On the other hand, the scales were translated into Portuguese and pre-

tested by six Brazilian professors to see if the subject of the research would understand well the language and the content. Based on their comments we made small adjustments to validate the instrument.

Because this survey aims at assessing sensitive indicators such as the professors' mental health, events that have marked their history were controlled. They were asked to answer by "yes" or "no" or "not applicable" if events such as the loss of a loved one, illness and job loss had occurred in their lives. The scale of Dohrenwend [16] was used to measure the significant life events.

Demographic data were also asked to describe the sample and to better understand the results, including: gender, civil status, age, and university degree.

For each scale of the questionnaire, the principal component analysis with the orthogonal rotation of factors was performed to reduce the observed variables to a minimum number of dimensions (or components) describing the maximum proportion of variance for each variable. The factorial structure of the scales was then tested using a principal axis analysis with orthogonal rotation. Once a clear factorial structure was found, we analyzed the internal consistency for each factor to assess their reliability, using Cronbach's alpha. This statistics can effectively determine the percentage of variance of error in the measurement of a factor; the acceptable level is at least 0.70. From these analyzes, the variables were finally constructed and ready to be used for further analyses.

Mean differences between the two groups were examined using the T-test procedure, and size effects were calculated when significant mean differences were identified. We also examined the consistency of the indicators of mental health, work stress, workload and work-life balance. For this purpose, correlation analyses were performed using the Pearson coefficient.

When signification bilateral or p is smaller than 5%, we reject the hypothesis null (H_0) that the two samples are equals, and we accept the Hypothesis alternative (H_a) that the sample of Brazilian and Canadian professors are different for some variables.

We also performed linear regression analyses to explore the relations between the mental health's

indicators (Psychological Well-Being and Psychological Distress) and the Work-related Stress and Work-Life Balance.

This study took into consideration only the point of view of the professors who decided to take part in the research, and we do not have a wide representation of the professors of the six universities. A part from that, in Quebec - Canada and in Minas Gerais – Brazil we have many other public universities. Thus the results cannot be overspread to other realities apart from those studied. In addition to this, we may state that the lack of secondary data regarding the universities and more in deep information about professors’ professional and personal life turned into a limitation of this study.

3. RESULTS AND DISCUSSION

In this section, we present the main results of this comparative research. First, we present the descriptive statistics of psychological well-being and psychological distress (mental health components), work- stress, workload, working hours and work-life balance indicators for professors working in a Federal University of Brazil and professors working in a Quebec University, in Canada. Afterwords, we discuss t-test for all these indicators. Then, we present the correlations among these indicators and compare the two samples to identify the main differences between Brazilian and Canadian professors’ perceptions these subject.

Do Brazilian professors assess Mental Health, work stress, workload and work-life balance differently from Canadian professors? To find out, the average scores on these indicators were compared using a t-test for independent

samples. The results of 274 Brazilian professors have been compared with those of 252 Canadian professors. These results are shown in different tables in the sequence.

3.1 The Relationship among Mental Health, Work-related Stress and Work-Life Balance

If the components of mental health are consistent, the indicators we assessed will be strongly correlated and in a consistent direction. Furthermore, the balance between work and private life, are related to the balance between the time and the activities regarding the individual, his job and his family. Thus, this indicator should also be directly related to Mental Health.

3.1.1 Mental health

As discussed previously, mental health is composed of two different and opposing components or indicators, psychological distress and psychological well-being that describe respectively the positive and negative sides of mental health. In this study, we got Cronbach's alpha of 0.943 for psychological well-being and 0.952 for psychological distress.

According to Table 1, the mean for psychological distress in these sample of university professors is 19,2939, with a standard deviation of 7,9763. The mean for psychological well-being in these sample of university professors is 42,8348, with a standard deviation of 8,85836.

In this sample, we had 274 Brazilian professors and 252 Canadian professors. T-tests allowed us

Table 1. Descriptive statistics for psychological distress

	N	Minimum	Maximum	Mean	Std. deviation
Psychological Distress	526	10,00	56,67	19,2939	7,97630
Psychological Well-Being	526	15,00	60,00	42,8348	8,85836
Valid N (listwise)	526				

Table 2. Mean differences between 274 Brazilian professors and 252 Canadian professors

Indicator	Nation	N	Mean	Std. deviation	t	Ddl degree of liberty	Sig. (bi)
Psychological Distress	Brazil	274	18,8397	7,32391	-1,363	524	,173
	Canada	252	19,7878	8,61751			
Psychological Well-Being	Brazil	274	42,5770	8,34690	-,696	524	,487
	Canada	252	43,1151	9,39164			

to observe that psychological distress is statistically equal between Brazilian and Canadian university professors, as shown in Table 2, as well as the psychological well-being.

3.1.2 Workload

In this study, we got Cronbach's alpha of 0.876 for physic load, 0,809 for mental load and 0.774 for the emotional load. According to Table 3, the mean for physic load in these sample of university professors is 35,4462, with a standard deviation of 9,43985. The mean for the mental load is 50,0048 with a standard deviation of 8,13763. Whereas the mean for the emotional load is 32,0462 with a standard deviation of 8,28106. In general, we may observe, at this table, that workload is 39,1657 with a standard deviation of 6,12936.

T-tests allowed us to observe that physical load and mental load are statistically different

between Brazilian and Canadian university professors, as shown in Table 4. Canadian professors fell more physical load on their work than Brazilian professors. On the other hand, Brazilian professors fell more mental load them, Canadian professors. However, the emotional load is not statistically different between these two samples.

3.1.3 Working hours

According to Table 5, the mean for the number of working hours in these sample of university professors is 49,34, with a standard deviation of 11,571.

T-tests allowed us to observe that working hours per week is statistically equal between Brazilian and Canadian university professors, as shown in Table 6.

Table 3. Descriptive statistics for workload and its components

	N	Minimum	Maximum	Mean	Std. deviation
Physic load	520	12,00	60,00	35,4462	9,43985
Mental load	520	20,00	60,00	50,0048	8,13763
Emotional load	520	12,00	58,00	32,0462	8,28106
Workload	520	21,00	56,00	39,1657	6,12936
Valid N (listwise)	520				

Table 4. Mean differences between 268 Brazilian professors and 252 Canadian professors

Indicators	Nation	N	Mean	Std. deviation	t	Ddl degree of liberty	Sig. (bi)
Physic load	Brazil	268	33,8731	9,12003	-3,969	512,578	,000
	Canada	252	37,1190	9,50413			
Mental load	Brazil	268	51,2127	7,60221	3,517	503,062	,000
	Canada	252	48,7202	8,49913			
Emotional load	Brazil	268	32,5373	8,34163	1,396	518	,163
	Canada	252	31,5238	8,20039			
Workload	Brazil	268	39,2077	5,84553	,161	518	,872
	Canada	252	39,1210	6,42888			

Table 5. Descriptive statistics for working hours per week

	N	Minimum	Maximum	Mean	Std. deviation
Number of working hours per week	495	4	112	49,34	11,571
Valid N (listwise)	495				

Table 6. Mean differences between 251 Brazilian professors and 244 Canadian professors

Indicator	Nation	N	Mean	Std. deviation	t	Ddl degree of liberty	Sig. (bi)
Working hours per week	Brazil	251	49,83	11,658	,966	493	,335
	Canada	244	48,83	11,483			

3.1.4 Work-related stress

In this study, we got Cronbach's alpha of 0.925 for work-related stress. According to Table 7, the mean for work-related stress in these sample of university professors is 61,4856, with a standard deviation of 23,05605.

T-tests allowed us to observe that work-related stress is statistically different between Brazilian and Canadian university professors, as shown in Table 8. Canadian professors feel more work-related stress than Brazilian professors.

3.1.5 Work-life balance

In this study, we got Cronbach's alpha of 0.910 for work-life balance. According to Table 9, the mean for work-life balance in these sample of university professors is 28,1483, with a standard deviation of 8,53926.

T-tests allowed us to observe that work-life balance is statistically different between Brazilian and Canadian university professors, as shown in Table 10. Brazilian professors perceive more work-life balance than Canadian professors.

3.2 Correlations among Work-related Stress, Workload and Work-Life Balance

Table 11 presents the means, standard deviations, Pearson's correlation coefficients, number of items for each indicator and the index of internal consistency determined by Cronbach's alpha. As shown by the results presented in this

table, the correlation coefficients are all significant and in the expected direction, showing the consistency of information that these measures present. The chosen components and indicators provided reliable information (because the internal consistency indices are greater than 0.70) and consistent information (because Pearson coefficients are significant and in the expected direction). The results for each of these indicators are briefly described below.

There is a weak correlation - positive - between the Working hours per week and Workload (0.214, $p < 0.000$), indicating when working hours per week increases workload also increases, as shown on Table 11. Similarly, there is a moderate correlation - positive - between the Work-related stress and Workload (0.532, $p < 0.000$) which means that work-related stress and workload move up or down in the same direction. However, there is a moderate correlation - negative - between Work-life balance and Workload (-0.413, $p < 0.000$), indicating that work-life balance decreases when workload increases.

There is a weak correlation - positive - between Work-related stress and Working hours per week (0.191, $p < 0.000$). There is a weak correlation - negative - between Work-related stress and Working hours per week (-0.189, $p < 0.000$). On the other hand, there is a strong correlation - negative - between Work-life balance and Work-related stress (-0.644, $p < 0.000$) indicating that work-life balance decrease when work-related stress increases.

Table 7. Descriptive statistics for work-related stress

	N	Minimum	Maximum	Mean	Std. deviation
Work-related stress	526	20,00	120,00	61,4856	23,05605
Valid N (listwise)	526				

Table 8. Mean differences between 274 Brazilian professors and 252 Canadian professors

Indicator	Nation	N	Mean	Std. deviation	t	Ddl degree of liberty	Sig. (bi)
Work stress	Brazil	274	58,9353	21,89428	-2,650	508,472	,008
	Canada	252	64,2585	23,99332			

Table 9. Descriptive statistics for work-life balance

	N	Minimum	Maximum	Mean	Std. deviation
Work-life balance	526	6,00	42,00	28,1483	8,53926
Valid N (listwise)	526				

Table 10. Mean differences between 274 Brazilian professors and 252 Canadian professors

Indicator	Nation	N	Mean	Std. deviation	t	Ddl degree of liberty	Sig. (bi)
Work-life balance	Brazil	274	29,0328	7,76125	2,472	492,180	,014
	Canada	252	27,1865	9,23147			

Table 11. Pearson correlations among indicators and factors, level of significance, scores of internal consistence (Alpha) and a number of items

		Workload	Working hours per week	Work-related stress	Work-life balance
Workload	Alpha	,809			
	Number of items	(14)			
	N	520			
Working hours per week	Pearson Correlation	,214**			
	Sig. (bi)	,000	(.)		
	N	495	495		
Work-related stress	Pearson Correlation	,532**	,191**	,925	
	Sig. (bi)	,000	,000	(12)	
	N	520	495	526	
Work-life balance	Pearson Correlation	-,413**	-,189**	-,644**	,910
	Sig. (bi)	,000	,000	,000	(6)
	N	520	495	526	526

** . Correlation is significant at the 0.01 level (2-tailed)

3.3 Correlations among Work-related Stress, Work-Life Balance and Mental Health

Table 12 presents the means, standard deviations, Pearson's correlation coefficients, number of items for each indicator and the index of internal consistency determined by Cronbach's alpha. As shown by the results presented in this table, the correlation coefficients are all significant and in the expected direction, showing the consistency of information that these measures present.

There is a strong correlation - negative - between the Work-life balance and Work-related stress (-0.644, $p < 0.000$), clearly indicating that work-life balance decrease when work-related stress increases, as already discussed above. There is a strong correlation - positive - between the Psychological distress and Work-related stress (0.676, $p < 0.000$) which means psychological distress increases work-related stress also increases. Moreover, there is a strong correlation - negative - between the Psychological well-beings and Work-related stress (-0.626, $p < 0.000$). The size of the Pearson correlation coefficient means that the two components assess different aspects of Mental Health, and they give consistent or coherent information about the latent variable they are

supposed to represent, that is to say, the Mental Health.

There is a moderate correlation - negative - between the Psychological distress and Work-life balance (-0.435, $p < 0.000$). Similarly, there is a moderate correlation - positive - between Psychological well-being and Work-life balance (0.522, $p < 0.000$), indicating that psychological well-being is consistent and in the desired direction to explain the scores of Work-life balance. In addition to this, there is a strong correlation - negative - between the Psychological well-being and Psychological distress (-0.734, $p < 0.000$). The size of the Pearson correlation coefficient means that the two components assess different aspects of the Mental Health.

3.4 Work-relation Stress, Work-Life Balance and Mental Health: A comparison

Brazilians and Canadians seem to experience a different level of Work-Life Balance, although both samples presented similar levels of Psychological Well-Being and Psychological Distress in their universities. According to the results, Brazilian professors reported more Work-Life Balance (29,0328) than do Canadian professors (27,1865). On the other hand,

Table 12. Pearson correlations among indicators and factors, level of significance, scores of internal consistence (Alpha) and a number of items

		Work-related stress	Work-life balance	Psychological distress	Psychological well-being
Work-related stress	Alpha	.925			
	Number of items	(12)			
	N	526			
Work-life balance	Pearson Correlation	-,644**	.910		
	Sig. (bi)	,000	(6)		
	N	526	526		
Psychological distress	Pearson Correlation	,676**	-,435**	.952	
	Sig. (bi)	,000	,000	(17)	
	N	526	526	526	
Psychological well-being	Pearson Correlation	-,626**	,502**	-,734**	.943
	Sig. (bi)	,000	,000	,000	(12)
	N	526	526	526	526

** Correlation is significant at the 0.01 level (2-tailed)

Brazilian professors reported less Work-related Stress (58,9353) than Canadian professors (64,2585). These differences are significant, even though the size of the effect is small. It is quite possible that the balance between the time and the activities regarding the individual, his job and his family is better in Brazil due to cultural aspects. However, more Work-related Stress among Canadian professors may be due to more Physical Load reported by these professors (37,1190).

In other to explore this result, a linear regression analysis was performed, controlling for the number of Life Events that has affected the participants. The chosen variables for the analysis were the following: Work-related Stress and Work-Life Balance. The linear regression analysis, step by step, reveals that the variable that best explains Psychological Distress scores is Work-related Stress. The regression model obtained is presented in Table 13. This model explains 46,2% of the variance of the score of Psychological Distress. The other variable was excluded from the regression equation.

Another linear regression analysis, controlled for the number of Life Events, was performed to better understand the scores of Psychological Well-Being, as shown in Table 14. The results mean the scores of Psychological Well-Being is best predicted by Work-related Stress and Work-Life Balance. This model explains 41% of the variance of the score of Psychological Well-Being. Thus, we confirm that Psychological Well-Being is positively relate to Work-Life Balance and negatively related to Work-related Stress.

3.5 Discussion

The survey asked to Brazilian and Canadian professors to assess their Mental Health, Work-related Stress, Workload, Working Hours per Week and Work-Life Balance and compare their perceptions about these variables. In general, the two groups seem to appreciate their psychological well-being state, and they did not face many significant life events. They also have a good balance between work and personal life activities. They presented some differences regarding Work-related Stress and Workload.

Table 13. Linear regression analysis, step by step, to predict the score of psychological distress with the variables: Work-related stress and work-life balance, controlled for life events (N=526)

Model with the retained factors	BCoefficients non-standardized	SEBError standard	BBêta	R ²	sr ² Error standard of the estimation
(Constant)	3,672	,853		.462	5,84808
Life Events	,425	,151	,090		
Work Stress	,234	,011	,677		

p < .05

Table 14. Linear regression analysis, step by step, to predict the score of psychological well-being with the variables: Work-related stress and work-life balance, controlled for life events (N=526)

Model with the retained factors	BCoefficients non-standardized	SEBError standard	BBêta	R ²	sr ² Error standard of the estimation
(Constant)	51,312	2,193		.410	6,80276
Life Events	-,388	,176	-,074		
Work-related Stress	-,199	,017	-,519		
Work-life Balance	,174	,045	,168		

p < .05

There are not significant mean differences between Psychological Well-Being, Psychological Distress, Emotional Load and Working Hours per Week between the two samples. Moreover, there are small significant differences between the evaluation that was made by Brazilians and Canadians regarding Physical Load, Mental Load, Work-related Stress and Work-Life Balance. In fact, it seems that Workload, Work-related Stress and Work-life Balance can affect Mental Health. How can we explain these results and their relationship? The new roles played by university professors may affect be related to these results?

On this matter, many studies focus the role “Publish or Perish” and this role has increased academic stress for professors and researchers [1,3] and [9]. This new demand has also caused problems related to well-being and conflicts between private and professional life [4]. It is because, to publish professors need to work longer hours and dedicate themselves to their researches and the researches of their master, doctorate and post-doctorates students. All these pressures lead to work-related stress, work-life imbalance, mental, physical and emotional strain, and may cause different health problems. In other words, we may say that Quality of Working Life for academics is since the last two decades drastically affected by job demands, or more precisely publishing demands [17]. Thus, the Brazilian and Canadian government may use these information to direct actions regarding the health of its professors because the quality of the work they offer to the society depends on their physical conditions and their quality of life.

As postulated by Veit and Ware [11], we must distinguish the components of Psychological Well-Being and the components of Psychological distress to better describe Mental Health. The results of this survey clearly showed that university professors make a difference between the two constructs and their components are

significantly consistent as shown by Pearson Correlation analyses. The components of psychological well-being (positive) and psychological distress (negative) are in the desired directions to explain the scores of Mental Health.

These results are consistent with the statements of Chrétien and Letourneau [7] that the impacts of work-family conflict on employees’ mental health are significant and should be considered in Social Psychology and organizational behavioural studies. Kinman and Jones [4] also presented similar conclusions. According to Vilas Boas & Morin [18] and [19], professors who perceived high quality of working life in their university obtained high scores for psychological well-being and high score for work-life balance. They should also get low scores for psychological distress. The intercorrelations of these indicators should also be significant and in a consistent direction as we observed in this survey.

We observed that Workload is positively correlated with Working hours per week and Work-related Stress shown that they up or down in the same direction. However, Workload is negatively correlated to Work-Life Balance, indicating that Work-Life Balance decreases when Workload increases. Some authors, such as Vidulich & Tsang [13], Kantowitz [20], Hancock & Verwey [21], Grech et al. [22] also observed that work stress affects private life in different degrees. Hockey [23], for instance, saw that work stress and workload affect human performance. Additionally, we found that Working hours per week is positively correlated to Work-related Stress and negatively correlated to Work-Life Balance. These findings are coherent with the results of Cooper [24] and Carlson et al. [15]. Regarding this sample of university professors, we can see clearly that more working hours affect personal life of university professors in Brazil and Canada.

The scores of Work-Life Balance are positively correlated to the scores of Psychological Well-Being. On the other hand, the scores of Work-Life Balance negatively related to the scores of Psychological Distress indicating, clearly, that there are two possible ways to understand the relationship between the indicators of mental health in public universities. In particular, we observed that Brazilians and Canadians seem to experience a different level of Work-Life Balance, although both samples presented similar levels of Psychological Well-Being and Psychological Distress in their universities. Brazilian professors reported more Work-Life Balance (28.6158) than do Canadian professors (27.2555). This difference is significant, even though the size of the effect is small.

Linear regression, step by step, controlled by the number of life events showed that the score of Psychological Distress is best predicted by Work-related Stress. On the other hand, Psychological Well-Being is best predicted by Work-related Stress (negatively) and Work-Life Balance (positively). Thus, they are different indicators of mental health as postulated by Massé et al. [25] who demonstrated that psychological well-being and psychological distress are different but complementary states of mental health.

4. CONCLUSION

This survey was designed to assess mental health, work stress and work-life balance for university professors working in public universities in an emerging country like Brazil, with those of professors working in a developed country like Canada. In this exploratory study, the results show that in general, professors feel they feel psychologically well, but they perceive high scores of work stress. Additionally, they perceive good balance between professional and private life.

T-tests allowed us to observe the two components of Mental Health are statistically equal between Brazilian and Canadian university professors. However, T-tests allowed us to find meaningful differences in physical load, mental load, work-related stress and work-life balance. Although, their effect sizes are small. Linear regression showed that the score for Psychological Well-Being is positively related to Work Stress, its best predictor. On the other hand, Psychological Distress is positively related to Work Stress and negatively related to Work-life Balance.

Promoting mental health, decreasing work stress and providing more balance between private and professional life is a challenge in the academic environment nowadays, mainly because university professors have to cope with different roles, such as researchers and supervisors, which demand much more working hours per week. All these demands cause more physical and mental load for them to succeed in their careers. Thus, public managers and governmental organizations can benefit from the studies of Social Psychology to improve work performance and try to find a way to improve the quality of the services offered to the society without overloading their professionals with other activities than teaching.

In summary, we may recommend that new similar studies should be conducted in more public universities in these two countries to have a more representative sample. Further studies may also consider secondary data from the universities as well as in deep interviews or focus groups to gather different perceptions regarding these constructs analysed in the actual research.

CONSENT

As per international standard or university standard, professors' consent has been collected and preserved by the author on electronic basis.

ACKNOWLEDGEMENT

Authors would like to acknowledge CAPES - Brazil for the financial support to conduct this research.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Gillespie NA, Walsh M, Winefields AH, Dua J, Stough C. Occupational stress in universities: Staff perceptions of the causes, consequences and moderators of stress. *Work & Stress*. 2001;15(1):53-72.
2. Willie R, Stecklein JE. A three-decade comparison of college faculty characteristics, satisfactions, activities and attitudes. *Research in Higher Education*. 1982;50:20-29.

3. Catano V, Francis L, Haines T, Kirpalani H, Shannon H, Stringer B, Lozanski L. Occupational Stress in Canadian Universities: A national survey. *International Journal of Stress Management*. 2010;17(3):232-258.
4. Kinman G, Jones F. A life beyond work? Job demands, work-life balance and wellbeing in UK academics. *Journal of Human Behavior in the Social Environment*. 2008;17(1-2):41-60. DOI: 10.1080/10911350802165478
5. Schneewind KA, Kupsch M. Perspectives psychologiques de la recherche sur les liens entre vie familiale et vie professionnelle. *La Revue Internationale de L'éducation Familiale*. 2006;1(19):9-30.
6. Grzywacz JG, Carlson DS. Conceptualizing work-family balance: Implications for practice and research. *Advances in Developing Human Resources*. 2007;4(9) : 455-471.
7. Chrétien L, Létourneau I. La conciliation travail-famille : Au-delà des mesures à offrir, une culture à mettre en place. *Gestion*. 2010;35(3):53-61.
8. Ketchum LD, Trist E. All teams are not created equal: How employee empowerment really works. Newbury Park: Sage; 1992.
9. Miller AN, Taylor SG, Bedeian AG. Publish or Perish: Academic life as management faculty live it. *The Career Development International*. 2011;16(5):422-425. DOI: 10.1108/13620431111167751
10. Vannini P. Dead poets' society: Teaching, publish-or-perish and professors' experience of authenticity. *Symbolic Interaction*. 2006;29(2):235-257. DOI: 10.1525/si.2006.29.2.235
11. Veit CT, Ware JE. The structure of psychological distress and well-being in general populations. *Journal of Consulting and Clinical Psychology*. 1983;51(5):730-742.
12. Parker DF, DeCotiis TA. Organizational determinants of job stress. *Organizational Behavior and Human Performance*. 1983; 32(1):160-177.
13. Vidulich MA, Tsang PS. Techniques of subjective workload assessment: A comparison of SWAT and the NASA-Bipolar methods. *Ergonomics*. 1986;29: 1385-1398.
14. Morin EM. Sens du travail, santé mentale au travail et engagement organisationnel. *Études et recherches*, (Rapport R-543 - avec la collaboration de F. Aranha, FGV-EASP). Montreal QC. Canada, IRSST; 2008.
15. Carlson DS, Grzywacz JG, Zivnuska S. Is work-family balance more than conflict and enrichment? *Human Relations*. 2009; 62(10):1459-1486.
16. Dohrenwend BP. Some issues in the definition and measurement of psychiatric disorders in general populations. In *Proceedings of the 14th National Meeting of the Public Health Conference on Records and Statistics* DHEW Publication no. (HRA) 74-1214, National Center for Health Statistics. Washington, D.C.: Government Printing Office. 1973;480-89.
17. Vilas Boas AA, Morin EM. Fatores de qualidade de vida no trabalho em universidades públicas: Uma comparação entre Brasil e Canadá. *Anais do 14^o Congresso de Stress da ISMA (Internacional Stress Management Association) e do 16^o Fórum de Qualidade de Vida no Trabalho*. Porto Alegre, RG, Brasil; 2014.
18. Vilas Boas AA, Morin EM. El sentido del trabajo y la calidad de vida en el trabajo dentro de los establecimientos públicos de enseñanza superior: Una comparación entre Brasil y Canadá. *Boletín Informativo, Ciudad de Guatemala: Ministerio de Relaciones Exteriores - El Heraldo Diplomático - Biblioteca Mario Monteforte Toledo*. 2013;56.
19. Vilas Boas AA, Morin EM. Quality of working life in public higher education institutions: The perception of Brazilian and Canadian professors. *International Journal of Business and Social Science*. 2013;4(12),(Special Issue):67-77.
20. Kantowitz BH. Mental workload. In: Hancock PA (Ed.) *Human factors psychology*. North-Holland, Amsterdam. 1987;81-121.
21. Hancock PA, Verwey WB. Fatigue, workload and adaptive driver systems. *Accident Analysis and Prevention*. 1997;29: 495-506.
22. Grech MR, Neal A, Yeo G, Humphreys M, Smith S. An examination of the relationship between workload and fatigue within and across consecutive days of work: Is the relationship static or dynamic? *Journal of Occupational Health Psychology*. 2009; 14(3):231-242.
23. Hockey GRJ. Compensatory control in the regulation of human performance under

- stress and high workload: A cognitive-energetical framework. *Biological Psychology*. 1997;4:73–93.
24. Cooper CL. The stress of work. *Aviation, Space and Environmental Médecine*. 1985; 56:627-632.
25. Massé R, Poulin C, Dassa C, Lambert J, Bélair S, Battaglini A. The structure of mental health: Higher order confirmatory factor analyses of psychological distress and well-being measures. *Social Indicators Research*. 1998;45:475-504.

© 2018 Vilas Boas and Morin; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sciencedomain.org/review-history/24785>