

Spirituality at Work: A Measurement Model for Brazilian Public Organizations

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Spirituality at Work: A Measurement Model for Brazilian Public Organizations

Espiritualidade no Trabalho: Um Modelo de Mensuração para Organizações Públicas Brasileiras

Espiritualidad en el Trabajo: Un Modelo de Medición para las Organizaciones Públicas Brasileñas

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ABSTRACT:

Research objective: To propose a model for measuring spirituality at work for Brazilian public organizations.

Theoretical framework: The concept and model structured by Ashmos and Duchan (2000) were used, as these authors bring the definition most used in academic publications on the subject.

Methodology: A validation of a model for measuring spirituality at work was carried out, applied in a Brazilian public organization, through exploratory and confirmatory factor analysis. Data were obtained through a survey.

Results: A model for measuring spirituality at work for Brazilian public organizations, containing 16 variables, for which, in addition to the validation result, theoretical, statistical and practical arguments were considered, aiming at adapting to the context of these organizations.

Originality: Considering that no models developed to measure spirituality at work in public organizations were found in the literature, the model proposed in this study seeks to fill this gap.

Theoretical and practical contributions: In addition to seeking to fill a gap in the literature, the proposed model seeks to enable the measurement of spirituality at work in Brazilian public organizations, helping public managers in decision making regarding the implementation or evaluation of policies and related actions to the development of this construct.

KEYWORDS: Spirituality at work, Validation of a measurement model, Brazilian public organizations.

RESUMO:

Objetivo da pesquisa: Propor um modelo de mensuração da espiritualidade no trabalho para organizações públicas brasileira.

Enquadramento teórico: Utilizou-se o conceito e o modelo estruturados por Ashmos e Duchan (2000), visto que esses autores trazem a definição mais utilizada nas publicações acadêmicas sobre o assunto.

Metodologia: Realizou-se a validação de um modelo de mensuração da espiritualidade no trabalho, aplicado em uma organização pública brasileira, por meio da análise fatorial exploratória e confirmatória. Os dados foram obtidos por meio de levantamento (*survey*).

Resultados: Um modelo de mensuração da espiritualidade no trabalho para organizações públicas brasileiras, contendo 16 variáveis, para o qual considerou-se, além do resultado da validação, as argumentações teóricas, estatísticas e práticas, visando a adequação ao contexto dessas organizações.

Originalidade: Considerando que não foram encontrados na literatura modelos desenvolvidos para a mensuração da espiritualidade no trabalho em organizações públicas, o modelo proposto neste estudo busca preencher essa lacuna.

Contribuições teóricas e práticas: Além de buscar preencher uma lacuna da literatura, o modelo proposto busca possibilitar a mensuração da espiritualidade no trabalho em organizações públicas brasileiras, auxiliando os gestores públicos na tomada de decisão quanto à implantação ou à avaliação de políticas e de ações relacionadas ao desenvolvimento desse constructo.

PALAVRAS-CHAVE: Espiritualidade no trabalho, Validação de modelo de mensuração, Organizações públicas brasileiras.

RESUMEN:

Objetivo de la investigación: Proponer un modelo de medición de la espiritualidad en el trabajo para las organizaciones públicas brasileñas.

Marco teórico: Se utilizó el concepto y modelo estructurado por Ashmos y Duchan (2000), ya que estos autores traen la definición más utilizada en las publicaciones académicas sobre el tema.

Metodología: Se realizó una validación de un modelo para medir la espiritualidad en el trabajo, aplicado en una organización pública brasileña, a través de análisis factorial exploratorio y confirmatorio. Los datos se obtuvieron a través de una encuesta.

Resultados: Un modelo de medición de la espiritualidad en el trabajo para las organizaciones públicas brasileñas, que contiene 16 variables, para lo cual, además del resultado de la validación, se consideraron argumentos teóricos, estadísticos y prácticos, con el objetivo de adaptarse al contexto de estas organizaciones.

Originalidad: Considerando que no se encontraron en la literatura modelos desarrollados para la medición de la espiritualidad en el trabajo en las organizaciones públicas, el modelo propuesto en este estudio busca llenar ese vacío.

Contribuciones teóricas y prácticas: Además de buscar llenar un vacío en la literatura, el modelo propuesto busca posibilitar la medición de la espiritualidad en el trabajo en las organizaciones públicas brasileñas, ayudando a los gestores públicos en la toma de decisiones sobre la implementación o evaluación de políticas y acciones relacionadas. al desarrollo de este constructo.

PALABRAS CLAVE: Espiritualidad en el trabajo, Validación de un modelo de medición, Organizaciones públicas brasileñas.

INTRODUCTION

From the 1990s onwards, the mechanistic and bureaucratic methods of the former Human Resources Administration began to be questioned, and the importance of subjectivity in the models of Management with People began to be recognized (Dalvel & Vergara, 2010). In Public Management, the process is no different, considering the new constitutional precepts of the recently enacted Federal Constitution of 1988 and the reform movements that seek to incorporate managerialism based on the principles of new public management (Costa, 2008).

For Ashmos and Duchan (2000), during this period, a transformation began to take place that went beyond the vision of rational systems and gave way to a vision that seeks the meaning and purpose of the work. The authors call this transformation the “spiritual movement”, which gives rise to the construct of spirituality at work in the organizational environment. It is noteworthy that spirituality should not be confused with religiosity, as it is not dogmatic, nor does it follow an institutionalized belief system. Spirituality is not a theological issue, but a multidisciplinary one, which aims to experience a sense of personal purpose grounded in the interiority and self-knowledge of each individual (Dias, Garin, & Timm, 2011).

Several studies point to the positive and beneficial relationship between workplace spirituality and organizational performance (Duchon & Plowman, 2005; Garcia-Zamor, 2003; Jurkiewicz & Giacalone, 2004; Karakas, 2010; Milliman, Czaplewski, & Ferguson, 2003; Rego, Cunha, & Souto, 2007). However, it was found that the vast majority of studies on spirituality at work focus on private companies (Ashmos & Duchan, 2000; Dent, Higgins, & Wharff, 2005; Duchon & Plowman, 2005; Fry & Slocum, 2008; Garcia-Zamor, 2003; Jurkiewicz & Giacalone, 2004; Milliman *et al.*, 2003; Rego *et al.*, 2007; Tecchio, 2015), being that Bruce (2000) warns of the need for the appropriation of spirituality at work by the public sector. Thus, this research intends to contribute to people management in public organizations since these institutions also need to keep up with the inevitable changes in the world of work, providing the well-being of their employees and, therefore, optimization of its organizational performance.

In this sense, considering that models developed for measuring this construct in public organizations were not found in the literature, this study aims to present a proposal for a model for measuring spirituality at work

for the Brazilian Public Administration. Therefore, a survey was carried out with a quantitative approach, through a survey materialized by the application and validation of the spirituality model in the work of Ashmos and Duchon (2000), with its dimensions: sense of community, meaning at work and inner life, to the Administrative Technicians in Education (ATEs) of the *Universidade Federal de Santa Maria* (UFSM). We chose to use the model Ashmos and Duchon (2000) because, even though it is a seminal model, the advances and adaptations of this model were based on its application in private organizations (Milliman et al., 2003; Rego et al., 2007; Tecchio, 2015). Therefore, it is prudent to use the original model in the public context, aiming at the incremental advancement of the construct within this new context.

With the result of this study, we intend to enable the survey of spirituality in the work of civil servants in Brazilian public organizations. Being this survey the first step towards decision making regarding the implementation or evaluation of policies and actions aimed at developing this construct in these institutions, considering its positive impact on organizational performance.

THEORETICAL FOUNDATIONS

To consider subjectivity in the processes that relate work and the individual means that we must understand that people are endowed with an inner life as a result of their personal and social history. And, in addition, that they live in constant interaction (sense of community) and mutation. The recognition of the interiority of human beings within people management is fundamental for the success and survival of institutions, considering the individual differentiated value, as it is the only capital capable of combining emotion and reason, subjectivity and objectivity (Davel & Vergara, 2010).

As the individual is a being endowed with an inner life or a spiritual being, the need for the recognition of spirituality in the workplace emerges as a theory to be disseminated within the management with people, since it is no longer possible to ignore the human spirit at work, as this, in a way, would be to despise the real meaning of what it is “to be human” (Ashmos & Duchon, 2000). Rego, Souto and Cunha (2007) confirm this information, warning that people do not want to be seen as teeth in a dehumanized gear; on the contrary: they want to be treated in a dignified and respectful way. The authors also point out that, probably, when carrying out meaningful work, workers transform it into a “vocation”, making it more than a simple “job”. The consequence of this is a holistic commitment to work (physical, mental, emotional and spiritual).

For Tecchio (2015, p. 47), based on the analysis of theoretical studies (Ashmos & Duchon, 2000; Duchon & Plowman, 2005; Garcia-Zamor, 2003; Karakas, 2010), four were the main drivers responsible for the development and by the incorporation of spirituality in the organizational environment, namely: “the search for meaning while performing the work, improving organizational performance, reacting to corporate greed and the need to connect with other people”.

Spirituality at work generates benefits for both workers and the organization. This situation is confirmed by authors who present in their studies the positive and beneficial relationship between spirituality and factors that impact organizational performance, such as: organizational commitment (Duchon & Plowman, 2005; Garcia-Zamor, 2003; Jurkiewicz & Giacalone, 2004; Karakas, 2010; Milliman *et al.*, 2003; Rego *et al.*, 2007), job satisfaction ((Duchon & Plowman, 2005; Garcia-Zamor, 2003; Milliman *et al.*, 2003; Rego *et al.*, 2007), organizational belonging (Garcia-Zamor, 2003; Karakas, 2010), productivity (Duchon & Plowman, 2005; Garcia-Zamor, 2003; Karakas, 2010; Rego *et al.*, 2007), reduction turnover (Duchon & Plowman, 2005; Milliman *et al.*, 2003; Rego *et al.*, 2007) and the reduction of absenteeism (Duchon & Plowman, 2005).

In addition, individuals with accentuated spirituality are more aware of the meaning they give to life, are given over to the activities they propose, encourage the connection between the community and share feelings of fullness and joy. In light of theoretical and empirical evidence, it is possible to see that spiritualized environments can lead to higher individual and organizational performance, promoting self-

efficacy, optimism, hope, motivation, conflict and stress reduction, recognition, satisfaction in achieving the results, among others (Garcia-Zamor, 2003; Karakas, 2010; Rego *et al.*, 2007). Finally, it is understood that spirituality at work is one of the ways to face adverse situations in social life, in addition to optimizing organizational performance (Ashmos & Duchon, 2000; Garcia-Zamor, 2003; Karakas, 2010; Rego *et al.*, 2007).

In this study, we chose to use the concept structured by Ashmos and Duchon (2000), since they bring the most used definition in academic publications on the subject, explaining the spirituality at work through three components: “the inner life, meaningful work, and community”. The authors define the theme as “the recognition that employees have an inner life that nourishes and is nourished by meaningful work that takes place in the context of community” (Ashmos & Duchon, 2000, p. 137).

Ashmos and Duchon's Model of Spirituality at Work (2000)

In order to provide empirical support for the observation and measurement of the construct of workplace spirituality, Ashmos and Duchon (2000) proposed a model based on a review of the existing literature. In this review, they arrived at several possibilities of dimensions for measuring spirituality at work, however, when interpreted, they were reduced to three: sense of community, meaning at work and inner life.

In Ashmos and Duchon's (2000) initial proposal, a list of items (variables) was developed and reviewed by academics, organization development experts, a former executive director of a large hospital, and various community members. local business, who agreed to the proposal.

The initial questionnaire template was divided into three parts. Part 1 dealt with the individual level, addressing informants' attitudes about themselves. In part 2, informants were asked about their work unit (sector) within the organization and, in part 3, questions about the organization as a whole were addressed. After applying the model, the data were subjected to factor analysis, using maximum likelihood factorization as the extraction technique with the rotation of Varimax-type factors (Ashmos & Duchon, 2000).

Thus, it was concluded that parts 2 (work unit level) and 3 (organizational level), proposed in the model, did not present a satisfactory and attractive factor structure when compared to part 1 (individual level). According to the authors, this was due to the fact that it is conceptually easier to answer questions about oneself than to project the characteristics questioned about the work unit or about the organization, since the spiritual relationship of individuals with these places is even more subtle and abstract (Ashmos & Duchon, 2000).

Therefore, only the variables that made up part 1 of the questionnaire were kept. However, in addition to the three factors already expected by the authors (sense of community, meaning at work and inner life), four other factors were found: blocks to spirituality, personal responsibility, positive connections with other individuals and contemplation. However, even though all these factors support and complement the conceptualization of the construct, the items that make up factor 4 (blocks to spirituality) were excluded because they were a mere inversion of the items of the three expected factors. In addition, factors 5 (personal responsibility) and 6 (positive connections with other individuals) were grouped with factor 1 (sense of community), and factor 7 (contemplation) was grouped with factor 3 (inner life), due to proximity. and to conceptual enrichment (Ashmos & Duchon, 2000).

Thus, the model proposed by Ashmos and Duchon (2000) for measuring spirituality at work was composed of three factors or dimensions: sense of community, meaning at work and inner life. The authors propose the use of a 7 (seven) point Likert scale, in which level 1 (one) refers to “strongly disagree”, and level 7 (seven) refers to “strongly agree”.

In order to adapt the terms of the Ashmos and Duchon (2000) model to both Brazilian administrative sciences and linguistics (from English to Portuguese), Tecchio (2015) presented it for analysis by two professors in the area of management and two from the linguistics area. After implementing the suggested

adjustments, the researcher performed the pre-test, applying the questionnaire to a group of workers from a technology-based company. Tecchio (2015) identified that there were no difficulties regarding the respondents' understanding of the sentences. Thus, after the adjustments suggested by the teachers, the questionnaire was considered adequate. On that occasion, the author also verified the internal reliability of the model by calculating the Cronbach's alpha coefficient, finding values that evidenced the existence of internal consistency of the translated and pre-tested model (Tecchio, 2015).

RESEARCH DESIGN

This research has a quantitative methodological approach and, in relation to the technical procedure used, it is considered a survey (Gil, 2002), aiming to meet the objective of proposing a model for measuring spirituality at work for the Public Administration Brazilian, through the validation of an instrument in a public organization. This survey was carried out by applying the model for measuring spirituality in the work of Ashmos and Duchon (2000), translated and pre-tested by Tecchio (2015), as shown in the previous subchapter and presented in Table 1. The instrument was applied with use of a 7-point Likert scale, where 1 means "totally disagree", and 7 means "totally agree".

Table 1: Workplace Spirituality measurement model developed by Ashmos and Duchon (2000) and translated, pre-tested and adapted by Tecchio (2015)

TABLE 1
Workplace Spirituality measurement model developed by Ashmos and
Duchon 2000 and translated pretested and adapted by Tecchio 2015

DIMENSIONS	ITEMS
Sense of community (SC)	1. I feel part of a community in my immediate workplace (department, unit, etc.).
	2. My supervisor encourages my personal growth.
	3. I have had numerous experiences in my job which have resulted in personal growth.
	4. When I have fears, I am encouraged to discuss them.
	5. When I have a concern, I represent it to the appropriate person.
	6. At work, we work together to resolve conflict in a positive way.
	7. I am evaluated fairly here.
	8. I am encouraged to take risks at work.
	9. I am valued at work for who I am.
	10. I feel responsible for my own growth.
	11. I feel personally responsible for my behavior.
	12. I believe others experience joy as a result of my work.
	13. My work creates meaningful work experiences for others.
	14. I make a difference to the people with whom I work.
Meaning at Work (MW)	15. I experience joy in my work.
	16. I believe others experience joy as a result of my work.
	17. My spirit is energized by my work.
	18. The work I do is connected to what I think is important in life.
	19. I look forward to coming to work most days.
	20. I see a connection between my work and the larger social good of my community.
Inner life (IL)	21. I understand what gives my work personal meaning.
	22. I feel hopeful about life.
	23. My spiritual values influence the choices I make.
	24. I consider myself a spiritual person.
	25. Prayer is an important part of my life.
	26. I care about the spiritual health of my coworkers.
	27. Meditation is an important part of my life.
	28. Personal reflection is an important part of my life.

Source: adapted from Tecchio (2015).

The population of this study comprises ATEs servants with active contract situations, transitory active and in temporary exercise at UFSM, a public institution of higher education, constituted as a special autarchy, belonging to the indirect administration of the Brazilian federal sphere and linked to the Ministry of Education. As this research is an initial step in the advancement of the construct of spirituality at work in public organizations, the institution was chosen due to the proximity of the researcher, since this study is the result of a professional master's dissertation and, as such, was applied to the reality of which the researcher experiences.

The population comprises 2,634 ATEs servers. To calculate the minimum representative sample, the finite population sampling formula was used, with an error level of 5% and a confidence level of 95%. Thus, it was obtained that the minimum sample size should be 336 ATEs servers. The survey was sent to the entire population and obtained 366 respondents.

Data collection was performed through the institutional Questionnaire System of UFSM, which is accessed by the server with login and password. Servers who met the inclusion criteria were invited, via e-mail sent by the Data Processing Center (DPC) of UFSM, as requested by the researchers, to voluntarily participate in the research.

After collection, the data were organized with the aid of a spreadsheet in the Office Excel software, and then analyzed using the Statistical Package for Social Sciences Statistics 20.0 (SPSS) and SPSS Analysis of Moment Structures Graphics 26.0 programs (AMOS).

Data were submitted to Exploratory Factor Analysis (EFA), in order to verify the dimensionality and reliability of the scale in the context of the Brazilian Public Administration. EFA is the first step in validating the model (Lopes, 2016), verifying whether the structure of variables in each dimension remains the same as in the original model (Hair, Black, Babin, Anderson, & Tathan, 2009). The EFA identifies optimal weights between the variables, so that they can be reduced to a smaller set, so that the construct has maximum variability and reliability (Lopes, 2016).

The adequacy of the data for EFA was verified using the determinant of the correlation matrix (R-matrix), the Bartlett sphericity test and the Kaiser-Meyer-Olkin (KMO) test. To examine the dimensionality, the method of factor extraction used was the Principal Component Analysis (PCA), with a priori criteria and percentage of variance, and the re-specification of the model was performed based on the values of the factor loadings and communalities. The reliability of each of the dimensions was verified using Cronbach's Alpha coefficient.

Then, after purification of the model by EFA, it was submitted to Confirmatory Factor Analysis (CFA), so that the measurement theory could be tested, aiming at validating the model. In the CFA, the technique of structural equation modeling (Structural Equation Models – SEM) with the maximum likelihood estimator (MLE) was used. To optimize the goodness of fit, the re-specification of the model in the CFA was analyzed based on three diagnostic measures: path estimates, standardized residuals and modification indexes, with conceptual consistency being observed before any modification was implemented.

Ethical aspects

Data collection was preceded by the registration of the project with Plataforma Brasil (Certificate of Presentation for Ethical Appraisal - CAAE: 34055720.7.0000.5346), for consideration by the Research Ethics Committee (REC) of UFSM, having been approved on the 14th of July 2020, under the consolidated opinion 4.154.805.

Respondents, before completing the data collection instrument, were given the Informed Consent Form (ICF) on the institution's Questionnaire Portal, in which they expressed agreement. In addition, the

study participants were assured all necessary clarifications about the research, as well as the possibility of withdrawing their consent to participate in the study at any time, without any penalty.

ANALYSES OF RESULTS

In order to perform the EFA, the adequacy of the data was verified through the determinant of the correlation matrix (R-matrix), which should be greater than 0.00001, indicating the absence of extreme multicollinearity between the variables; Bartlett's test of sphericity, which must be significant (Sig.<0.05), indicating the presence of correlations between variables; and the KMO test, which must present results between 0.5 and 1.0, indicating the suitability of the data or sample for factor analysis. In Table 2, the results of the three preliminary tests mentioned are presented, which show the adequacy of the data for EFA.

TABLE 2
Results of data suitability tests for EFA

Dimension	Det R-matrix	Bartlett Test (Sig.)	KMO Test
SC	0,001	0,000	0,920
MW	0,030	0,000	0,891
IL	0,059	0,000	0,858

As each of the dimensions was analyzed separately, the tests were performed considering this one-dimensionality. The extraction method used in this research was the principal components with a priori criterion, with the fixed number of factors to extract equal to 1 (Lopes, 2016; Hair *et al.*, 2009). In addition to the a priori criterion due to unidimensionality, the percentage of variance criterion was verified, which, in social sciences, requires that the solution (dimension with its variables) explain at least 60% of the total variance (Hair *et al.*, 2009).

To meet the percentage of variance criterion, after verifying the suitability of the factor analysis through the preliminary resources presented in Table 2, the factor loadings of the unrotated factor matrix for each dimension variable were analyzed, as well as the commonalities of each of them. It was not necessary to use factor rotation, since there is no rotation when the number of factors to extract is equal to 1, due to the aforementioned unidimensionality (Hair *et al.*, 2009).

In the re-specification of the factorial model, aiming to obtain the dimensional structure inherent to the context of a Brazilian public organization, a corrective action was taken to eliminate the variables that presented a factorial load below 0.7 and commonality below 0.5. Considering the minimum acceptable explanation value of 0.5 (commonality), it is intended that at least half of the variance of each variable is shared or explained by the dimension, with the other half corresponding to the error variance (Hair *et al.*, 2009).

Thus, in the sense of community dimension, the following variables were eliminated, according to the order of exclusion: 8 (I am encouraged to take risks at work) with a factor loading of 0.417 and commonality of 0.174; 11 (I feel responsible for my behavior) with a factor loading of 0.499 and commonality of 0.249; 10 (I feel personally responsible for my growth) with a factor loading of 0.571 and commonality of 0.326; 14 (I make a difference to the people with whom I work) with a factor loading of 0.644 and commonality of 0.414; 13 (My work creates meaningful work experiences for others) with a factor loading of 0.658 and commonality of 0.433; 1 (I feel part of a community in my immediate workplace - department, unit, etc.) with factor loading of 0.678 and commonality of 0.459; 12 (I believe that colleagues experience joy as a result of my work) with a factor loading of 0.61 and commonality of 0.450; and 3 (I have had numerous experiences in my job which have resulted in personal growth) with a factor loading of 0.676 and commonality of 0.456.

In the dimension of meaning at work, no variable was eliminated and, in the inner life dimension, the following variables were eliminated, according to the order of exclusion: 22 (I feel hopeful about life) with a factor loading of 0.51 and commonality of 0.282; 28 (Personal reflection is an important part of my life) with a factor loading of 0.585 and commonality of 0.342; and 27 (Meditation is an important part of my life) with a factor loading of 0.6 and commonality of 0.468.

Considering the remaining variables, the reliability analysis of each dimension was performed, using the Cronbach's Alpha coefficient, which ranges from 0 to 1, with values above 0.7 considered acceptable. It is also possible to exclude variables from the model when this exclusion increases the reliability of the dimension, but the results of this study did not indicate any exclusion.

Table 3 shows the variables remaining after corrective action (elimination of variables that did not meet the criteria), followed by the commonality and factor loading values, as well as the percentage of accumulated variance of each of the dimensions and the value of the coefficient of Alpha of Cronbach.

TABLE 3
Structure resulting from EFA

Dimension	Variable	Comunal.	Factor loading	Accumulate Variance	Alpha of Cronbach
SC	2. My supervisor encourages my personal growth.	0,712	0,844	63,51%	0,884
	4. When I have fears, I am encouraged to discuss them.	0,609	0,780		
	5. When I have a concern, I represent it to the appropriate person.	0,506	0,711		
	6. At work, we work together to resolve conflict in a positive way.	0,652	0,808		
	7. I am evaluated fairly here.	0,610	0,781		
	9. I am valued at work for who I am.	0,722	0,850		
MW	15. I experience joy in my work.	0,619	0,787	60,75%	0,888
	16. I believe others experience joy as a result of my work.	0,596	0,772		
	17. My spirit is energized by my work.	0,614	0,784		
	18. The work I do is connected to what I think is important in life.	0,669	0,818		
	19. I look forward to coming to work most days.	0,532	0,729		
	20. I see a connection between my work and the larger social good of my community.	0,599	0,774		
	21. I understand what gives my work personal meaning.	0,622	0,788		
IL	23. My spiritual values influence the choices I make.	0,742	0,862	70,81%	0,854
	24. I consider myself a spiritual person.	0,810	0,900		
	25. Prayer is an important part of my life.	0,694	0,833		
	26. I care about the spiritual health of my coworkers.	0,586	0,765		

It is noted, in Table 3, that the percentage criterion was met in all dimensions. In addition, the reliability of the three dimensions was evidenced by Cronbach's Alpha coefficient values above 0.7.

After verifying the dimensionality and reliability of the scale in the context of a Brazilian public organization, through the EFA, this being the first step for the validation of the model, we then proceed to the CFA. The CFA aims to test the measurement theory, evaluating the fit and validity of the constructs of its measurement model, and "when an CFA model fits and demonstrates construct validity, the measurement theory is supported" (Hair *et al.*, 2009, p. 593).

The model purified by EFA was specified in the AMOS software, by including the path diagram, shown in Figure 1. This diagram depicts the 17 measured variables, remaining from the EFA, as well as the three latent constructs (dimensions) of the model (not measured or unobservable). These constructs are exogenous, as they are not dependent, but correlated with each other (bidirectional arrows, which represent covariance between latent constructs) (Hair *et al.*, 2009).

The model is considered to be congeneric, consisting of three one-dimensional constructs, with each variable having a load on only one of these constructs. Each measured variable has an error term associated with it, representing the error variance and/or the specific or unique variance of each one of them. In addition, the model is classified as a reflexive measurement theory, as dimensions are the causes of the measured variables (Hair *et al.*, 2009).

After specification, the model was estimated using the MLE estimator. Thus, the standardized estimated parameters were obtained, as shown in Figure 1: 3 factorial covariances, 17 factorial loads and 17 error variances

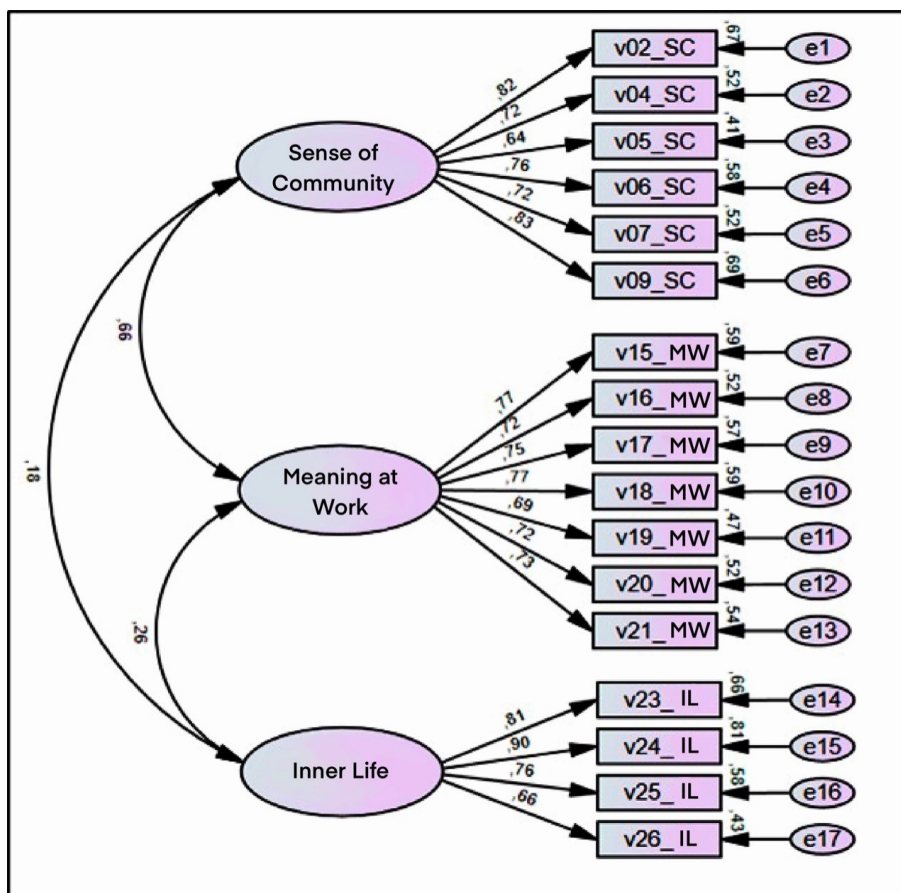


Figure 1: Path diagram of estimated initial model

Source: elaborated by the authors in AMOS software.

The model's fit was verified through the goodness of fit indices (GOF). These indices are shown in Table 4, followed by the cutoff values considered for the model to demonstrate good fit, as indicated by Hair, Black, Babin, Anderson and Tathan (2009).

TABLE 4
Cutoff values of adjustment indexes

	Index	Cutoff values
Absolute Indices	χ^2/df	Smaller than 3,0 ($\chi^2/df < 3,00$)
	GFI	Higher than 0,90 (GFI > 0,90)
	SRMR	Smaller than 0,08 (SRMR < 0,08)
	RMSEA	Smaller than 0,07 (RMSEA < 0,07)
Comparative or incremental indices	NFI	Higher than 0,90 (NFI > 0,90)
	RFI	Higher than 0,90 (RFI > 0,90)
	IFI	Higher than 0,90 (IFI > 0,90)
	TLI	Higher than 0,92 (TLI > 0,92)
	CFI	Higher than 0,92 (CFI > 0,92)

Source: elaborated by the authors based on Hair et al. (2009).

In general terms, after estimation, the model presented a good fit. However, it was verified the possibility of optimizing six indexes, which did not reach the indicated cutoff values, they are: $\chi^2/df=3,105$; GFI=0,893; RMSEA=0,076; NFI=0,897; RFI=0,879 and TLI=0,914. Any re-specification in the model can only be implemented if there is conceptual consistency for the proposed intervention. In other words, any modification to the model must find justification in the theory behind the items and constructs (Hair *et al.*, 2009).

To verify the possibility of re-specification of the model, three diagnostic measures of the CFA were verified in the outputs of the AMOS software: path estimates, standardized residuals and modification indexes (MI). The first two did not indicate potential re-specifications, as all load estimates are greater than $|0.5|$ (Figure 1) and no standardized residue is greater than $|4.0|$, as recommended by Hair *et al.* (2009).

MI indicated two potential changes to the model specification. The first was clearing the path between the error terms e12 and e13 that correspond to variables 20 (I see a connection between my work and the larger social good of my community) and 21 (I understand what gives my work personal meaning), respectively, belonging to the meaning at work dimension. In addition to the high value of MI and the fact that these variables belong to the same construct, it can be inferred that, while the public servant identifies the meaning of their work in relation to a greater social good, they also understand this social good as that that gives personal meaning to your work. These considerations are in line with what is understood as the role of a public servant: serving society.

The second change was the exclusion of variable 15 (I experience joy in my work), as this had the highest MI value in the model when related to the sense of community dimension, and this variable belongs to the meaning at work dimension. In addition to having the highest MI value of the model in relation to a dimension different from which it belongs, variable 15 is related to variables 17, 18 and 20, belonging to its dimension (meaning at work) and to variables 2, 6, 7 and 9, belonging to the sense of community dimension. Thus, it was decided to exclude variable 15 from the model, as it appears to generate doubts in respondents regarding the latent variable it represents (SC or MW), as well as it appears to be already portrayed by other variables of the dimension to which it belongs.

With these modifications, all indices reached the cutoff values, and the model can be considered adjusted, as shown in Table 5.

TABLE 5
Initial and final model fit rates

ABSOLUTE INDICES					
Index	χ^2	χ^2/df	GFI	SRMR	RMSEA
Reference	-	<3,00	>0,90	<0,08	<0,07
Initial	360,212	3,105	0,893	0,062	0,076
Final	243,327	2,433	0,924	0,057	0,063
INCREMENTAL INDICES					
Index	NFI	RFI	IFI	TLI	CFI
Reference	>0,90	>0,90	>0,90	>0,92	>0,92
Initial	0,897	0,879	0,927	0,914	0,927
Final	0,922	0,906	0,953	0,943	0,952

Finally, to assess construct validity, the following validity was examined: convergent, discriminant and nomological.

Convergent validity is verified when the observed variables of the model share a high proportion of variance. To estimate the relative amount of convergent validity, standardized factor loadings, extracted variance per dimension, and construct reliability were used in this study (Hair *et al.*, 2009).

High and significant factor loadings indicate high convergent validity. As mentioned, the standardized factor loadings should be |0,5| or, in addition, must be significant based on the 0.05 significance level (p -value<0.05) and on the critical ratio value (Critical Ratio – C.R.) greater than |1.96| (Hair *et al.*, 2009; Silva, 2006). The value of the extracted variance (EV) equal to or greater than 0.5 (50%) also suggests adequate convergence, with smaller values indicating that, on average, there is more error variance in the items than the variance explained by the latent factor (dimension) (Hair *et al.*, 2009).

Reliability is also an indicator of convergent validity, and this indicator has already been obtained for each of the constructs using Cronbach's Alpha. In CFA, a Construct Reliability Value (CR) that is often used in conjunction with SEM is displayed. As with other reliability measures, values equal to or greater than 0.7 suggest the existence of internal consistency (Hair *et al.*, 2009).

In Table 6, there are the values referring to the conceptualized measures in the previous paragraphs, demonstrating the convergent validity of the model after the re-specification.

TABLE 6
Convergent validity indicators

Relationships		Estimated load	Standard Error	C.R.	p -value	Standardized estimated load	EV e CR
Dimension	Variables						
SC	02	1,000	-	-	-	0,820	EV 0,565
	04	0,931	0,063	14,874	***	0,722	
	05	0,709	0,056	12,681	***	0,637	
	06	0,886	0,056	15,841	***	0,758	CR 0,856
	07	0,839	0,056	15,060	***	0,726	
	09	0,970	0,054	17,830	***	0,830	
MW	16	1,000	-	-	-	0,713	EV 0,533
	17	1,337	0,103	12,923	***	0,755	
	18	1,295	0,093	13,982	***	0,800	
	19	1,230	0,104	11,842	***	0,689	CR 0,857
	20	0,982	0,077	12,704	***	0,713	
	21	0,950	0,076	12,553	***	0,705	
IL	23	1,000	-	-	-	0,814	EV 0,619
	24	1,214	0,066	18,523	***	0,899	
	25	1,269	0,082	15,540	***	0,759	CR 0,798
	26	0,910	0,070	13,082	***	0,656	

According to Table 6, it is possible to verify that all estimated factor loadings are highly significant (C.R.>1.96 and p-value<0.05) and greater than 0.5. The variance estimates extracted from the constructs exceed 50%, as suggested by the rule, and the reliability values of the dimensions are greater than 0.7. Thus, the information in Table 6 shows the convergent validity of the measurement model.

Discriminant validity refers to the “degree to which a construct is truly different from the others”, also informing that the measured variables represent only that dimension. One way to test the discriminant validity of a model is by comparing the EV values of each construct and the values of the correlation estimates between two constructs squared (squared correlation estimate) (Hair *et al.*, 2009, p. 592). Discriminant validity is evidenced when the EV value is greater than the quadratic estimate of correlation between dimensions, since one dimension must explain its variable measures better than another dimension (Hair *et al.*, 2009).

Table 7 shows the estimated correlations between the constructs (standardized covariances), the quadratic estimate of the correlation between these constructs and the EV value of each replicated construct in Table 6.

TABLE 7
Discriminant validity indicators

Relationships		Estimated correlation	Estimated squared correlation	Extracted variance		
				SC	WM	IL
SC	IL	0,176	0,031	0,565	-	0,619
SC	MW	0,613	0,376	0,565	0,533	-
MW	IL	0,271	0,073	-	0,533	0,619

It is observed that the EV estimates of the dimensions are all higher than the quadratic correlation estimates. Therefore, the test evidences the discriminant validity of the model (Hair *et al.*, 2009).

Nomological validity “examines whether the correlations between constructs in measurement theory make sense” (Hair *et al.*, 2009, p. 589), and its logic is based on EFA. In terms of CFA, the correlation matrix was analyzed, which is considered only an initial effort to assess the nomological validity. To this end, it is expected that the dimensions are positively related to each other and that their correlations are significant (C.R.>1.96 and p-value<0.05).

Table 8 shows the estimates of covariance between the constructs, their standard error and the C.R. and p-value values.

TABLE 8
Nomological validity indicators

Relationships		Estimated variance	Standard error	C.R.	p-value
SC	IL	0,266	0,091	2,932	,003
SC	MW	0,696	0,088	7,866	***
MW	IL	0,268	0,063	4,231	***

It is noted, in Table 8, that the dimensions are positively related to each other, in addition, all correlations are significant. With the positively related constructs, it is expected that favorable evaluations of these three constructs indicate that the server has spirituality at work. Thus, the analysis of the estimated correlations suggests the support of the nomological validity of the model.

Given the fit and construct validity (convergent, discriminant and nomological) of the Model of Spirituality at Work by Ashmos and Duchon (2000), it could be considered, as stated by Hair *et al.* (2009),

that the measurement theory was supported. In Figure 2, there is the path diagram of the final model, after re-specification (modification), with the respective standardized estimated parameters.

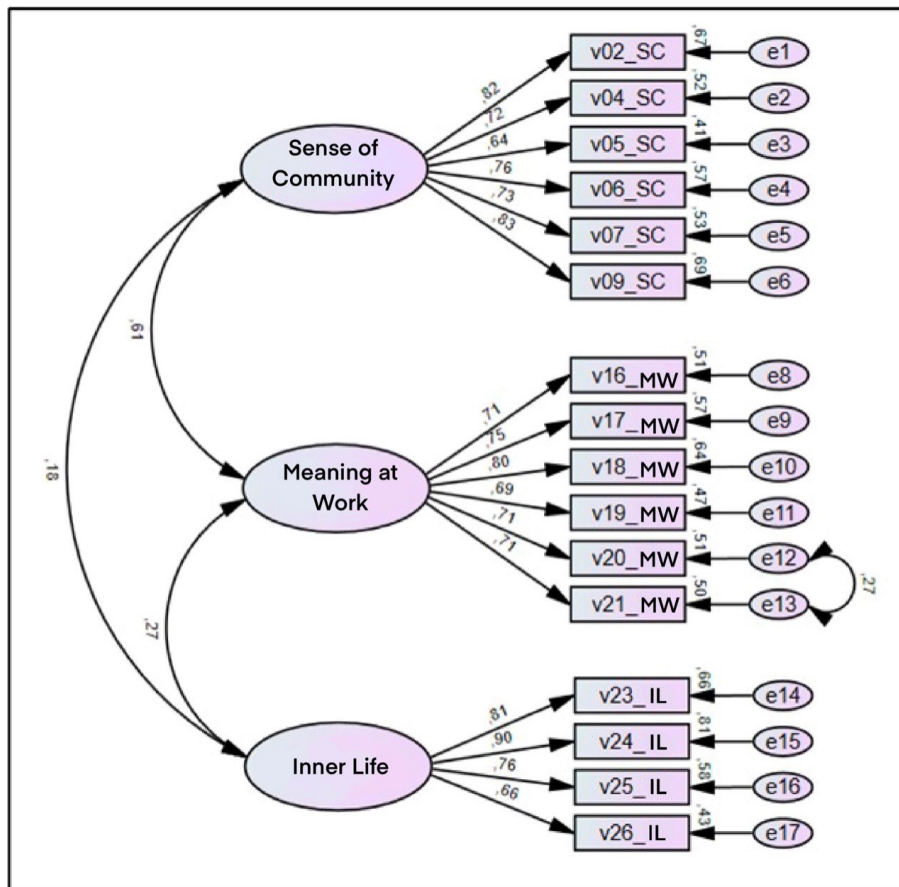


Figure 2: Path diagram of the final estimated model

Source: AMOS software.

It is concluded that the results of the CFA/SEM supported the measurement theory. Thus, the Model of Spirituality at Work by Ashmos and Duchon (2000) can be considered validated in the context of Brazilian Public Administration with application in a higher education institution.

A model for Brazilian public organizations

Aiming at proposing a model for measuring spirituality at work for application in Brazilian Public Administration, in this study, some interventions are suggested so that this model can be better applied and tested in different contexts of Brazilian public organizations, as, according to Silva (2006, p. 43), "the evaluation of the adequacy of a model must be based on multiple criteria, which involve theoretical, statistical and practical considerations". The author adds that it is up to the researcher to make a decision as to what is considered a better model (Silva, 2006).

Thus, firstly, it is suggested that the Sense of Community dimension be called "Conditions for community", taking into account the remaining EFA content variables, as well as the literal translation of the name attributed by the authors, Ashmos e Duchon (2000), to this factor. In addition, it is suggested that question 25 (Prayer is an important part of my life), maintained in the final validated model, absorbs the practices suggested in variables 27 (meditation) and 28 (personal reflection), excluded from the model in EFA, establishing an addition or alternation relationship by linking the terms with the conjunctions

“and/or”. The justification for this intervention lies in the theoretical foundation of this study, which aims to distinguish and not limit spirituality to eminently religious acts, prayer being one of them. In addition, variable 25 presents statistically significant differences between the means in all sociodemographic groupings in the sample.

Given the above, with the use of the additive and alternative conjunctions "and/or" between the terms, it is suggested that the content of that variable, for application in the Brazilian Public Administration, becomes: Prayer, meditation and/or personal reflection are an important part of my life.

In Table 9, the model for measuring spirituality in the work proposed for application in the Brazilian Public Administration is presented, containing the adaptations based on theory, practice and statistical analysis of this research, as well as a new (sequential) numbering for the variables.

TABLE 9
Model for measuring spirituality at work for the Brazilian Public Administration

DIMENSIONS	VARIABLES
Conditions for Community (CC)	1 (CC1). My supervisor encourages my personal growth.
	2 (CC2). When I have fears, I am encouraged to discuss them.
	3 (CC3). When I have a concern, I represent it to the appropriate person.
	4 (CC4). At work, we work together to resolve conflict in a positive way.
	5 (CC5). I am evaluated fairly here.
	6 (CC6). I am valued at work for who I am.
Meaning at Work (MW)	7 (WM1). I believe others experience joy as a result of my work.
	8 (WM2). My spirit is energized by my work.
	9 (WM3). The work I do is connected to what I think is important in life.
	10 (WM4). I look forward to coming to work most days.
	11 (WM5). I see a connection between my work and the larger social good of my community.
	12 (WM6). I understand what gives my work personal meaning.
Inner Life (IL)	13 (IL1). My spiritual values influence the choices I make.
	14 (IL2). I consider myself a spiritual person.
	15 (IL3). Prayer, meditation and/or personal reflection are an important part of my life.
	16 (IL4). I care about the spiritual health of my coworkers.

The final model has 16 items, six belonging to the Conditions for Community dimension, another six belonging to the Meaning at Work dimension and four belonging to the Inner Life dimension.

CONCLUSIONS

In this research, we sought to contribute to the Management of Public Organizations through the insertion of a relatively recent concept in organizational environments, spirituality at work, by proposing a model for measuring spirituality at work for the Brazilian Public Administration.

It is also noteworthy that innovative concepts in people management must also be brought to public organizational environments, making public organizations follow the deep and constant changes in the world of work, so that they can even become precursors in innovative management models.

Given the incipience of the topic, it was found that there is a need to propose an adequate way to collect information about spirituality at work in public organizations, with the survey being the first step for implementing or evaluating management policies or actions. To achieve this goal, the Model of Spirituality at Work by Ashmos and Duchon (2000) was applied to the Administrative Technicians in Education workers at UFSM, with its three dimensions: sense of community, meaning at work and inner life.

As a first step towards the validation of the Model of Spirituality at Work by Ashmos and Duchon (2000) for the Brazilian Public Administration, the data of each dimension, separately, were submitted to

exploratory factor analysis. EFA aimed to purify the model, defining the inherent structure between the variables of each dimension, with maximum reliability.

The structure of the dimensions sense of community and interior life, previously with 14 and 7 variables, now contain 6 and 4 variables, respectively. The dimension meaning at work maintained its structure with 7 variables, as proposed by Ashmos and Duchon (2000).

An interesting perception at this point of the study is that most of the excluded variables, in the EFA of the creators of the model, also belonged to other factors, but were grouped by Ashmos and Duchan (2000) due to the conceptual bases proposed by them and by understand that these variables capture aspects of the community or inner life of individuals.

This grouping of factors around the central components of spirituality at work, in the conception of Ashmos and Duchan (2000) (community, meaning at work and inner life), did not occur in the meaning at work dimension, which, since the EFA of the precursors, it was composed of a factor, and it was the only one that maintained the same inherent structure between the variables.

These perceptions convey confidence to the EFA carried out in this research, and, in addition to the reduction in the number of variables, in this part of the study, another suggestion arises regarding the proposal of the desired model. The sense of community dimension is now called: "Conditions for community". This new nomenclature takes into account the content of the remaining variables and the literal translation of the name given to the factor by Ashmos and Duchan (2000), before being grouped with two other factors, to form the sense of community dimension.

Finalizing the validation of the Ashmos and Duchan Model (2000), the data were submitted to confirmatory factor analysis. This analysis aimed to confirm the remaining structure of EFA variables by evaluating the fit and construct validity of the model.

Two modifications were implemented in the model in order to optimize its fit. The first was the release of the path (correlation recognition) between the variables "I see a connection between my work and the larger social good of my community" and "I understand what gives my work personal meaning", belonging to the meaning at work dimension. As the role of public servants is "serving society", it is understandable that there is a relationship between "a greater social good" and "that which gives meaning to work" for the servers. The second refers to the exclusion of the variable "I experience joy in my work", belonging to the meaning at work dimension, as the EFA indicated that this could be causing confusion to respondents, as it presents a strong relationship with the sense of community dimension, as well as with four other variables of this dimension. The high relationship of this variable with another dimension violates the similar property of the model and generates uncertainty as to the construct being measured by it.

Observing the entire study, the proposal of the model considered the theoretical, statistical and practical arguments, culminating in two changes in the product of this research: changing the content of the variable "prayer is an important part of my life" to "prayer, meditation and/or personal reflection are an important part of my life"; and the change of the nomenclature of the sense of community dimension to "Conditions for community", as already mentioned.

The study concludes with the proposition of a model for measuring spirituality at work for Brazilian public organizations, containing 16 variables, six belonging to the Conditions for the Community (CC) dimension, six to the Meaning at Work (MW) dimension and four to the Inner Life (IL) dimension.

The model has the potential to be applied both in the initial survey, before the implementation of a policy or action related to the development of spirituality at work, and in the evaluation of results after the implementation of a development policy or action.

This research had limitations, due to the scarcity of studies on spirituality at work in public organizations and due to the fact that the application of the research took place during the COVID-19 pandemic, which changed the way and the work relationships in the institution and in the world.

Therefore, it is suggested that the Model of Ashmos and Duchon (2000) be applied in its entirety in other public spaces, so that the ideal variable structure for public organizations is found. In addition, qualitative studies can provide a deeper interpretation of this phenomenon in the social world, as well as enable the investigation of how different agents understand the possibility of pragmatizing spirituality at work, given its proven benefit for organizational performance.

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