© P. M. Latinoamericana ISSN 1688-4094 ISSN online 1688-4221 Ciencias Psicológicas July - December 2020; 14(2): e-2256
doi: https://doi.org/10.22235/cp.v14i2.2256

Construction and evidence of validity of the scale of reasons for continuing working in retirement

Construção e evidências de validade da escala de motivos para continuar trabalhando na aposentadoria

Construcción y evidencia de validez de la escala de razones para seguir trabajando en la jubilación

Andreia Pereira de Souza [1] *ORCID 0000-0002-0167-968X*
Lucia Helena de Freitas Pinho França [2] *ORCID 0000-0003-0676-3757*

[1 2] *Universidade Salgado de Oliveira. Brasil*

Abstract: This study aimed to present the construction and initial evidence of validity of the Scale of Reasons for Continuing to Work in Retirement (EMCTA). 511 mature workers (aged 45 or over) answered a questionnaire sent over the intranet of a large organization in the energy sector. The final scale comprised 44 items and seven dimensions with good adjustment rates. Confirmatory factor analyzes showed that the most relevant dimensions of EMCTA were the relationship with the organization, relationships at work and intellectual development. It is suggested that future investigations aim to test the invariance of this instrument in different groups of mature workers who are planning to remain in the labor market, even after the age of retirement.

Keywords: reasons; decision; work; retirement; Scale

Resumo: Este estudo objetivou apresentar a construção e as evidências iniciais de validade da Escala de Motivos para Continuar Trabalhando na Aposentadoria (EMCTA). A pesquisa contou com a participação de 511 trabalhadores maduros (com 45 anos ou mais), que responderam a um questionário enviado por intranet de uma grande organização do setor de energia. A escala final compreendeu 44 itens e sete dimensões com bons índices de ajustes. Análises fatoriais confirmatórias demonstraram que as dimensões mais relevantes da EMCTA foram o relacionamento com a organização, os relacionamentos no trabalho e o desenvolvimento intelectual. É sugerido que nvestigações futuras visem testar a invariância desse instrumento em grupos distintos de trabalhadores maduros que estejam planejando se manter no mercado de trabalho, mesmo após a idade da concessão da aposentadoria.

Palavras-chave: motivos; decisão; trabalho; aposentadoria; Escala

Resumen: Este estudio tuvo como objetivo presentar la construcción y la evidencia inicial de validez de la Escala de razones para continuar trabajando en la jubilación (EMCTA). Participaron 511 trabajadores maduros (de 45 años o más), que respondieron un cuestionario enviado a través de la intranet de una gran organización en el sector energético. La escala final comprendía 44 ítems y siete dimensiones con buenas tasas de ajuste. Los análisis factoriales confirmatorios mostraron que las dimensiones más relevantes de EMCTA eran la relación con la organización, las relaciones en el trabajo y el desarrollo intelectual. Se sugiere que las investigaciones futuras tengan como objetivo probar la invariabilidad de este instrumento en diferentes grupos de trabajadores maduros que planean permanecer en el mercado laboral, incluso después de la edad de jubilación.

Palabras clave: motivos; decisión; trabajo; jubilación; Escala

Received: 04/08/2019 Accepted: 07/31/2020

How to cite:
Sousa, A.P., & França, L.H.F.P (2020). Construction and evidence of validity of the scale of reasons for continuing working in retirement. *Ciencias Psicológicas, 14*(2), e-2256. doi: https://doi.org/10.22235/cp.v14i2.2256

Correspondence: Andreia Pereira de Souza. Universidade Salgado de Oliveira -PPGP – Psicologia. Rua Marechal Deodoro 217, 2º andar, Centro, Niterói - Rio de Janeiro – Brazil - CEP 24030 -060. E-mail: andreiasouzafortes@gmail.com. Lucia Helena de Freitas Pinho França. Universidade Salgado de Oliveira. E-mail: lucia.franca@gmail.com

Introduction

Population longevity can directly affect the labor market, considering the increasing number of older retired workers in society. The International Labour Organization (ILO, 2014) has pointed out that this issue is increasingly relevant, as aging affects the economy and various sectors of society. Amorim and França (2019) point out that retirement is determined by many factors, and thus requires the study to be based on the multitude of variables related to the event, thereby contributing to a clearer understanding of this phenomenon.

Retirement can be experienced as a moment of decision in which the older worker must choose among three alternatives: fully retiring, remaining in the same job, or accepting bridge employment or blended work. Individuals' preferences may vary according to their career or lifestyle (França, Menezes, Bendassolli & Macêdo, 2013; Wang, Zhan, Liu, & Shultz, 2008). This transitional phase merits careful consideration because the decision may influence the rest of these indivuals' lives (France, 2012; Templer, Armstrong-Stassen & Cattaneo, 2010). Wang et al. (2008) pointed out that employment decisions typically include bridge employment, bridge employment in a different area or full retirement.

With regard to the measurement of employment decisions, the Inventory of Motives for Returning to Work (IMRT) by Khoury, Ferreira, Souza, Matos and Barbagelata-Góes (2010) finds eight items/motives that can influence retirees' return to work. Participants assessed how much each of the items/motives influenced their decision to return to work (0 = did not influence; 4 = totally influenced). In this inventory, the authors limited themselves to descriptive analysis without analyzing the instrument as a scale and did not evaluate its psychometric properties.

Guerson, França and Amorim (2018) adapted and validated the IMRT, which resulted in seven items arranged on a five-point Likert scale (1 = no influence to 5 = influenced fully). Exploratory factor analysis indicated the internal consistency of the instrument was .80, and two dimensions emerged: *intrinsic motives*, with factor loads ranging from .58 to .82; and *extrinsic motives*, with factor loads ranging from .33 to .96. The scale explained 64.2% of total variance.

Another instrument that measures mature workers' motives for continuing to work is the *Scale of Older Workers' Intentions to Continue Working* (*OWICW)* created by Shacklock and Brunetto (2011). The *OWICW* consists of 31 items on a seven-point Likert scale in which the respondents indicate their degree of agreement from 1 (Fully disagree) to 7 (Fully agree). The scale has seven dimensions, such as: i) connection with work; ii) importance of work to the individual;

iii) interpersonal relationships at work; iv) autonomy at work; v) flexible working conditions; vi) management and organizational factors; and vii) interests outside work. The scale has reliable psychometric properties, with a Cronbach's alpha coefficient of ≥ .70.

Macêdo, Bendassolli, Torres and France (2020) adapted and validated the OWICW with a sample of 284 public servants from northeastern Brazil, presenting six factors and 24 items with reliability of .87. A study by Macêdo et al. (2020) gave similar results with five of the seven factors presented in the original Shacklock and Brunetto scale (2011), and its factorial structure explained 58.55% of total variance.

França, Menezes, Bendassolli & Macêdo (2013) found five large groups of predictors of workers' decisions about their transition to retirement. The authors found that researchers should consider aspects related to (i) the job itself (its meaning, importance, content, etc.); ii) the organization (internal policies, human resources management, work arrangements, autonomy, etc.); iii) sociodemographic factors (age, gender, health status, annual family income and education level; iv) aspects unrelated to work (family and other spheres of life); and v) individual factors - personality, health, financial level, motivation levels, etc.).

At the time they make their retirement decision, many workers would like to continue their career, as they understand they can contribute knowledge and value to their organization (França, Menezes, Bendassolli & Macêdo, 2013). The way people identify themselves and recognize their professional role influences their relationship with work and may impact their transition to retirement. Workers in transition may therefore consider continuing in the labor market, engaging in free-lance or charitable work and other tasks that can alleviate the lack of work in their lives (França, 2012; Zanelli, 2000).

Other studies have found that most professionals intend to continue in the labor market and observed that personal autonomy, flexible working conditions, interpersonal interaction at work and outside-work interests predict the workers' intention to continue in the labor market (Macêdo, Bendassolli & Torres, 2017). Menezes and França (2012) highlighted predictors for each retirement transition option in a group of public servants in the field of technology: i) the option to delay retirement was influenced by age, perception of work, time flexibility and control over work; ii) the option to engage in bridge employment was influenced by perception of work and time flexibility; iii) the option to retire completely was affected principally by perceptions of health. It is important to emphasize that in this sample, the respondent's financial circumstnces were not considered a relevant factor in the retirement decision.

Camarano, Carvalho and Kanso (2019) indicate the importance of a minimum age for retirement because the current population trend will result in a large proportion of the workforce being made up of older professionals. With this in mind, it is essential to minimize the obstacles to these professionals' continued participation in the economy.

Luttigards (2018) has pointed out the scarcity of new studies on aging and managing the aging process, emphasizing that Brazilian research is not keeping pace with the impact of these processes on socio-political and organizational systems. On the other hand, given that many workers prefer to stay in the labor market longer, it is necessary to construct a broader measure that incorporates the indicators presented in previous studies regarding the motives that lead a worker to continue working, even after retirement. The construction of this new scale was therefore based on a review of the literature and on previous scales, as well as on tests of the initial evidence of validity, based on the internal structure and invariance of the items' parameters.

The present study constructed and tested the initial evidence for the validity of the Scale of Motives for Continuing to Work in Retirement (EMCTA, in its Portuguese acronym), which was inspired by the Inventory of Motives for Returning to Work (Khoury et al., 2010), adapted and transformed into the Scale of Motives for Returning to Work (Guerson, et al., 2018), the Scale of Older Workers' Intentions to Continue Working (OWICW) (Shacklock & Brunetto, 2011), adapted for use in Brazil by Macêdo et al. (2020). It also takes into consideration the model presented in a

study by França et al. (2013), supported by a review of the Brazilian and international literature, the context of the organization and the experience of the first author, who has worked for 15 years in the company where the study was conducted. The instrument was constructed with 50 items, of which four are from the Inventory of Motives for Returning to Work, 12 are from the OWICW Scale adapted by Macêdo et al. (2020), and 34 are from França et al.'s model (2013) of organizational, individual and socio-demographic aspects of employment.

Method

Participants

Participants were selected on the criteria of being employed by the particular company in the energy sector and being at least 45 years of age. This age limit is based on the World Health Organization's definition (1994) of aging workers as "age 45 or older," considering that beginning at this age, there may be some loss of functional capacities unless preventive measures are adopted, especially if working conditions are not adequate. Pitt-Catsouphes and Smyer (2006) point out that for workers older than 50, age depends on the context, as it is a complex undertaking to define "mature workers," "senior workers,"or "experienced workers." Given this, there is currently no consensus on the definition of workers who are past their mid-career stage and heading for their final years of paid employment.

This criterion generated a list of approximately 7,000 employees. Data collection obtained a rate of return of 7.4%, comprising 511 participants from the state of Rio de Janeiro, the majority of them men (78.7%). With regard to marital status, most were married or in a stable relationship (80.6%). With regard to education, more than half (59.1%) had graduate degrees. Workers were age 45 or older, with an average age of 53 (*M*= 53.48; *SD*= 5.18).

Instrument

- *The Scale of Motives for Continuing to Work in Retirement (EMCTA)* was constructed with 50 items established on a five-point Likert scale in which participants assessed how much each factor would influence their decision to continue working, with a range of 1 (no influence) to 5 (total influence). These items were grouped into 11 pre-defined dimensions for the test: i) *financial circumstances*; ii) *age*; iii) *health conditions; iv) family relationships*; v) *fruitfulness; vi*) *control and flexibility*; vii) *personal fullfilment at work*; viii) *relationships at work*; ix) *sense of being valued;* x) *intellectual development;* xi) *sense of belonging, usefulness and routine.*

The scale was made up of two groups of attributes: psychosocial and work-related. The constitutive definitions of each of the 11 dimensions to be tested are as follows:

- *Psychosocial attributes*

i) Financial Circumstances: The United Nations Development Program (2014) defines family income as the sum of all household members' income, divided by the number of people in the household, including those without income. Example of the item: "to maintain or improve my standard of living."

ii) Age: The definition proposed by Schneider and Irigaray (2008) was used, which emphasizes that chronological age serves as a reference to the passage of time, as age itself does not determine the aging process, which has multiple determinants. Example of the item: "because I began working when I was older."

iii) Health Conditions: In its 48th edition of Basic Documents, the World Health Organization (2014) states that health is a condition of full physical, mental and social development, and not merely the absence of disease or illness. This study used the definition of perceived health, that is, how the participant perceives his own health condition, regardless of the

objective definition indicated by exams, criteria or reports. Example of the item: "to keep myself physically active."

iv) Family Relationships: The Brazilian Institute of Geography and Statistics (IBGE) (2017) defines the family as people connected by bonds of kinship, household dependence or norms of living together residing in the same house, or a person who lives alone. Example of the item: "because I have problems with family relationships."

v) Fruitfulness: Fruitfulness can be considered a demonstrated desire to contribute or leave a legacy to society (Magalhães, 2008). Along these lines, Article 16 of the Plan for International Action on Aging (2003) states that there is a need to enhance intergenerational solidarity and associations, considering the particular needs of older and younger individuals and encouraging solidarity between generations. Example of the item: "to teach younger people something."

- Attributes of work

vi) Control and Flexibility: The National Confederation of Insurers of Income, Life, Health and Capitalization (CONSEG) (2014) defines the flexible workday as an arrangement between employer and employee in which the employee fulfills his contractual work hours within a time period agreed in advance, with a specific beginning and ending time. The employee can set his own schedule, as long as he fulfills the number of weekly hours called for by his employment contract. Example of the item: "because I have control over my work."

vii) Personal Fulfillment at Work: Moreira (2011) noted that a decision to continue working was prompted not by financial difficulty, but by personal satisfaction, growth and learning, as well as the feeling of freedom, belonging and social contribution provided by work. Kim and Feldman (2000) add that post-retirement work is also attractive to older workers whose sense of self-esteem is tied to their professional achievements. Example of the item: "to continue contributing to society."

viii) Relationships at Work: Experiences at work are part of a context in which various attitudes, emotions and feelings are manifested, revealing the individual's unique way of dealing with circumstances (Carvalho, 2009). These reactions may reflect each individual's life history, representing the way a person deals with the emotions that permeate interpersonal relationships. In a cross-cultural study of Brazilian and New Zealand executives, França and Vaughan (2008) noted that relationships at work, with teams and with clients and colleagues are sorely missed in retirement. Example of the item: "to continue maintaining contact with the company's clients."

(ix) Sense of being Valued: Work is valued in a variety of ways. For some, it is a very important part of life; for others, it is simply an aspect of life necessary to provide for other needs (Cavanagh, 1992). Example of the item: "because I feel valued by the company."

x) Intellectual Development: The opportunity to acquire knowledge is a decisive element of well-being and is essential for individual freedom, autonomy and self-esteem (the United Nations Development Programme, 2014). Education is essential to enhance people's abilities so that they can decide on their future. Example of the item: "to develop my creative potential."

xi) Feeling of Belonging, Usefulness and Routine: The context of work is influenced by various factors (the pleasure of having something to do, the work environment, the power of one's position, the company of work colleagues and others), and these are specific to each worker's life history (França, 2002). Many older workers cannot imagine trading this for something else and lose their sense of "belonging" when they leave their employment. Magalhães (2008) points out that affective involvement with work is based on pride and the desire to be part of the organization, linked to the feeling of belonging, to feeling at ease in the work environment and taking the organization's challenges to heart. Example of the item: "to continue belonging to the organization."

Data collection procedures

A self-applied questionnaire was distributed through a system that the organization uses to manages internal research and evaluations. Collection was performed through a link provided through the intranet inviting workers aged 45 or over to participate in the study. It should be noted that all the items were required to be filled out, and that an individual who agreed to participate in the study could only proceed to the next page once all items on the current page had been answered. There was therefore no missing data or rate of data loss.

Data analysis procedures

The sample was first divided into two parts for exploratory factor analysis (*n*= 256) and confirmatory factor analysis (*n*= 255) to verify the structure of the 50-item instrument. The exploratory factor analysis was run on the R program (R Core Team) in the Psych package (Revelle, 2014). Bartlett's sphericity test and the Kaiser-Meyer-Olkin (KMO) test were used to verify the adequacy of data for the assumptions of the factor analysis. The Parallel Analysis method was used for factor extraction and oblimin rotation.

The scale's structure was analyzed by Confirmatory Factor Analysis through Structural Equations Modeling using the R program (R Core Team, 2017) in the Lavaan package (Rossell, 2012), in which the weighted least square mean and variance adjusted estimator (WLMSV) was used, according to which the items were declared ordinal categorical variables. According to Brown's criteria (2006), the following fit indices were analyzed: chi-square (which tests the difference between the empirical matrix and the theoretical model's matrix, and the higher the χ^2's value, the worse the fit); Root-Mean-Square Error of Approximation (RMSEA), which should be lower than 0.08, but values up to 0.10 are acceptable; the Tucker-Lewis Index (TLI), in which models with values greater than 0.95 are acceptable; the Comparative fit index (CFI), in which values greater than 0.95 are acceptable.

The instrument's internal consistency was calculated using Cronbach's alpha with the total sample (*N*= 511). The invariance of parameters was measured between gender groups, between those with and without dependents, and between those with and without sufficient resources for retirement; these were assessed through modeling of multigroup structural equations (Damásio, 2013) using the R program (R Core Team, 2017) in the semTools package (Jorgensen, 2016). Models were tested in which the numbers were fixed for items and factors (configural invariance), factor loads (metric invariance), and thresholds and scalars (scalar invariance). Differences between the models' fit were assessed by differences in chi-square ($\Delta\chi 2$), in CFI (ΔCFI) and in RMSEA (ΔRMSEA).

Ethical procedures

The study was submitted to and approved by the Committee for Ethics in Research at the authors' university, in Finding nº. 067,637 of June 20, 2017. The respondents agreed to participate in the study by completing the Free and Informed Consent Form.

Results

Judges' analysis

To assess the conceptual and semantic validity of the items and their relevance to the dimensions for the construction of the EMCTA, ten judges who are experts in the field of the construct were invited to determine if the items were referring to the trait in question; only those

items that received the approval of at least 80% of the judges (Pasquali, 1998) were included in the instrument. Pasquali considers six judges sufficient for this task, and Lynn (1986) recommends that between five and ten judges participate in the evaluation of items.

Six judges evaluated the instrument, which originally contained 50 items and 11 dimensions. The experts indicated whether the item was relevant to the dimension and suggested occasional modifications to the wording; most of the items (78%) were judged suitable, and the language of approximately 40% of the items was rewritten to improve the participants' understanding of the question.

Based on this, the experts indicated whether the item was relevant to the dimension and suggested possible modifications to the wording; for example, the item "because I'm my own boss" was removed because it was not relevant to the organization in which the scale was applied. The items "because I think I will live to between 70 and 90 years of age" and "because I think I will live to be more than 90" were re-formulated as *"*Because I think I will live to be more than 85." The item "Because my colleagues/bosses value me" was divided into two items: "Because my bosses value me" and "Because my colleagues value me." Two dimensions were reformulated: the dimension of "control and flexibility" was renamed "working conditions," and the dimension of "belonging, usefulness and routine" was replaced by "sense of belonging."

Some items were shifted from one dimension to another: for example, "to continue traveling for business" was moved from the dimension "relationships at work" to the dimension "financial circumstances;" the item "to start a new career" was moved from the dimension "control and flexibility" to the dimension "personal fulfillment at work"; the item "because the work environment is pleasant" was moved from the dimension "control and flexibility" to "relationships at work"; the items "because work is interesting" and "because work is challenging" were moved from the dimension "control and flexibility" to the dimension "intellectual development"; and the item "to contribute to future generations" was placed in the dimension "fruitfulness."

The questionnaires were then applied to five employees from the company's Human Resources department to synchronize the content of the questionnaire with the terms used in the organization. The version of the instrument used for data collection is described in Table 1.

Table 1.
Scale of Motives for Continuing to Work – Results of judges' analysis

Dimensions	Items
Financial circumstances (6 Items)	1- To maintain my standard of living 2- To maintain the benefits I receive from work 3- Because I am not financially prepared to retire 4- To continue supporting my dependents 5- To save for the future 6- To continue traveling for business
Age (3 Items)	7- Because I think I will live to be older than 85 8- Because I began working at an older age 9- Because I am too young to retire
Health Conditions (3 Items)	10- To keep myself physically active 11- Because I feel mentally healthy 12- Because I feel physically healthy
Working Conditions (6 Items)	13- Because my work is not stressful 14- Because I have control over my work 15- Because I have a balance between personal and professional life 16- Because I can decide how to do my work 17- Because I'm free to set priorities at work 18- Because I have flexible working hours
Personal Fulfillment at Work (4 Items)	19- Because work is the most important thing in my life 20- Because I'm proud to work for this organization 21- To start a new career 22-To continue contributing to society
Relationships at Work (7 Items)	23- To maintain social interaction with my work colleagues 24- Because I have a good relationship with my bosses 25- Because I interact with many people at work 26- To maintain contact with the company's clients 27- Because interacting with people at work takes my mind off other problems 28- Because the work environment is pleasant 29- Because I feel relaxed when I interact with the people at work
Recognition (4 Items)	30- Work gives me status/prestige 31- Because I feel valued by the company 32- Because I feel valued by my bosses 33- Because I feel valued by my colleagues
Intellectual Development (6 Items)	34- To keep my memory working well 35- To continue participating in training and professional development 36- To develop my creative potential 37- Because my work is interesting 38- Because my work is challenging 39- Because I have the ability to use my knowledge
Productivity, Belonging and Routine (4 Items)	40- To feel productive 41- To continue working with my team 42- To continue belonging to the company 43- Because I am more interested in working than in other activities
Family Relationships (3 Items)	44- Because no family members need my care at this time 45- Because I have difficulty with family relationships 46- Because my spouse is still working
Fruitfulness (4 Items)	47- To share my experience with others 48- To learn something from the younger people 49- To teach the younger people something 50- To contribute to future generations

Testing the EMCTA with older workers

The adequacy of the sample was demonstrated by the KMO value of 0.93. The Bartlett test was significant (χ= 11089.81; p< .001), indicating that the matrix of correlations among the items allowed for the performance of factor analysis. To confirm the number of factors to be extracted, Parallel Analysis was used through the Monte-Carlo simulation. Comparison of the values of the real data with random data suggested the retention of seven factors for which the eigenvalues for the real data were higher than for the random data (Table 2). Additionally, Scree Plot analysis also indicated the presence of seven factors (Table 1).

Table 2.
Results of Parallel Analysis using the Monte-Carlo simulation

Number of Factors	Real Eigenvalue	Random Eigenvalue
1	1.04	1.02
2	0.90	0.90
3	0.83	0.82
4	0.76	0.76
5	0.71	0.70
6	0.65	0.65
7	0.61	0.59
8	0.55	0.57*

Note. * Random eigenvalue larger than real eigenvalue

An exploratory analysis with oblimin rotation was performed considering the instruments theoretical structure with 11 factors: (i) *financial circumstances*; ii) *age*; iii) *health conditions*; iv) *family relationships*; v) *fruitfulness; vi*) *control and flexibility*; vii) *personal fulfillment at work*; viii) *relationships at work*; ix) *sense of being valued*; x) *intellectual development;* xi) *sense of being belonging, usefulness and routine.* The data showed that four factors were composed of two items. A new exploratory factor analysis was therefore conducted with seven factors (namely, i) financial circumstances, ii) physical condition, iii) working conditions, iv) importance of work, v) relationships at work, vi) relationship with the organization, and vii) intellectual development). Parallel analysis using the Monte-Carlo simulation was performed to confirm the number of factors to be extracted. The choice of parallel analysis can be justified by the fact that it reduces the chance of mistakenly retaining items, considers sample error and minimizes the influence of the sample size and the factor loads of the items (Damásio, 2012). When the values of real and random data were compared, two factors for which the eigenvalues of the real data were greater than those of the random data were retained, as suggested by Parallel Analysis and the Scree Plot. Two items (seven and eight) that were not loaded with any factor were excluded. The results therefore showed that the instrument consisted of 48 items, divided into seven factors, as shown in Table 3.

Table 3.
Results of exploratory factor analysis - Standard Matrix

Items	**F1**	**F2**	**F3**	**F4**	**F5**	**F6**	**F7**	**h^2**
I1					0.88			0.75
I2					0.74			0.55
I3					0.76			0.57
I4					0.62			0.41
I5					0.70			0.51
I6						0.60		0.44
I9		0.51						0.44
I10		0.84						0.78
I11		0.90						0.87
I12		0.83						0.84
I13			0.39					0.39
I14			0.72					0.69
I15			0.59					0.64
I16			0.93					0.86
I17			0.98					0.92
I18			0.66					0.53
I19						0.50		0.47
I20	0.36							0.53
I21						0.36		0.34
I22	0.38							0.54
I23	0.40							0.68
I24				0.45				0.72
I25				0.43				0.74
I26						0.66		0.56
I27						0.44		0.49
I28				0.60				0.75
I29				0.55				0.68
I30				0.31				0.53
I31				0.50				0.74
I32				0.54				0.72
I33				0.58				0.66
I34		0.54						0.65
I35						0.50		0.65
I36							0.36	0.73
I37							0.54	0.79
I38							0.58	0.81
I39							0.39	0.73
I40		0.50						0.72
I41				0.46				0.64
I42				0.43				0.59
I43						0.44		0.52
I44						0.32		0.29
I45						0.47		0.25
I46						0.34		0.20
I47	0.78							0.80
I48	0.66							0.73
I49	0.90							0.88
I50	0.83							0.85

Confirmatory Factor Analysis was performed on the second sample (*n*= 255), to determine whether the data from this study fit this model. As the fit indexes did not prove adequate, the structure suggested in the exploratory factor analysis was tested (48 items and seven factors). In this model, however, four items (6, 44, 45 and 46) produced factor loads below .40 and were therefore excluded. Confirmatory factor analysis was performed once again with 44 items and seven factors. In this model, the fit indices were adequate, showing that this model is adequate for the tested sample (Table 4).

Table 4.
Fit indices of the different models tested

Model	**χ^2 (gl)**	**CFI**	**TLI**	**RMSEA**
11 factors (50 items)	2298.56 (1120)	0.90	0.89	0.05
7 factors (48 items)	1366.85 (1059)	0.95	0.95	0.03
7 factors (44 items)	1178.20 (881)	0.96	0.95	0.03

Given that some items were regrouped and based on the theoretical explanation of the dimensions, it was decided to formulate three new dimensions: physical conditions, cognitive and professional aspects of work and relationship with the organization. The Brazilian version of the EMCTA was therefore composed of 44 items and seven factors as follows: i) financial circumstances (α=.86); ii) physical conditions (α=.92); iii) working conditions (α=.90); iv) importance of work (α=.81); v) relationships at work (α= .93); vi) relationships with the organization (α=.94) and vii) intellectual development (α=.93). Cronbach's alpha calculated the internal consistency indices of the scale factors, as described in Table 5.

Table 5. *EMCT dimensions, items, factor loads and Cronbach's Alpha*

Dimensions	**Items**	**Loads**	**Alpha**
Financial circumstances	1- To maintain my standard of living	.80	**.86**
	2- To maintain the benefits I receive from work	.97	
	3- Because I'm not financially prepared to retire	.61	
	4- To continue supporting my dependents	.61	
	5- To save for the future	.79	
Physical Condition	9- Because I'm too young to retire	.60	**.92**
	10- To keep myself physically active	.76	
	11- Because I feel mentally healthy	.84	
	12- Because I feel physically healthy	.87	
	34- To keep my memory working well	.87	
Condições de trabalho	40- To feel productive	.89	**.90**
	13- Because my work is not stressful	.67	
	14- Because I have control over my work	.86	
	15- Because I have a balance between personal and professional life	.83	
	16- Because I can decide how to do my work	.78	
	17- Because I'm free to set priorities at work	.82	
	18- Because I have flexible working hours	.62	
	19- Because work is the most important thing in my life	.59	
Importance of work	21- To start a new career	.57	**.81**
	26- To maintain contact with the company's clients	.40	
	27- Because interacting with people at work takes my mind off other problems	.64	
	35- To continue participating in training and professional development	.71	
	43- Because I am more interested in working than in other activities	.72	
Relationships at work	20- Because I'm proud to work for this organization	.78	**.93**
	22- To continue contributing to society	0.73	
	23- To maintain social interaction with my work colleagues	.77	
	47- To share my experience with others	.83	
	48- To learn something from the younger people	.82	
	49- To teach the younger people something	.85	
	50- To contribute to future generations	.86	
Relationship with the organization	24- Because I have a good relationship with my bosses	.83	**0.94**
	25- Because I interact with many people at work	.85	
	28- Because the work environment is pleasant	.86	
	29- Because I feel relaxed when I interact with the people at work	.84	
	30- Work gives me status/prestige	.64	
	31- Because I feel valued by the company	.75	
	32- Because I feel valued by my bosses	.73	
	33- Because I feel valued by my colleagues	.80	
	41- To continue working with my team	.84	
Intelectual development	42- To continue belonging to the company	.81	**.93**
	36- To develop my creative potential	.84	
	37- Because my work is interesting	.88	
	38- Because my work is challenging	.90	
	39- Because I have the ability to use my knowledge	.89	

The dimensions with the greatest Cronbach's alpha were: relationship with the organization (α=.94), relationships at work (α=.93) and intellectual development (α=.93). The items from the dimensions health conditions, sense of belonging, and fruitfulness were grouped into other dimensions, as detailed below.

The physical conditions dimension acquired three items from the health condition dimension, namely "to stay physically active," "because I feel mentally healthy" and "because I feel physically healthy," as well as the item from the intellectual development dimension "to keep my memory working well." It also received the item "to feel productive" from the sense of belonging dimension and the item "because I'm too young to retire" from the age dimension. Working conditions was the only dimension to remain unchanged, retaining all of its items. The family relationships dimension was eliminated entirely, and the item "to continue traveling for work" was removed from the financial circumstances dimension.

The importance of work dimension received the two items "because work is the most important thing in my life" and "to start a new career" from the personal fulfillment at work dimension; the two items "to stay in touch with the company's clients" and "because being around people at work takes my mind off other problems"from the importance of work dimension; the item "to continue participating in training and professional development" from the intellectual development dimension; and the item "because I'm more interested in working than in other activities" from the sense of belonging dimension.

The relationships at work dimension retained only the item "to continue social interaction with work colleagues" and received four items from the fruitfulness dimension: "to share my experience with others," to learn from younger people," "to teach younger people something" and "to contribute to future generations."

The relationships with the organization dimension obtained the most items, with a total of ten. Four of these came from the relationships at work dimension: "because I have a good relationship with my bosses," "because I get along well with many people at my work," "because the work environment is pleasant" and "because I feel relaxed when I interact with the people at work." This dimension received four items from the recognition of value dimension: "work gives me status/prestige," "because I feel valued by the company,""because I feel valued by my boss," "because I feel valued by my colleagues." Finally, it received two items from the sense of belonging dimension: "to continue working with my team" and "to continue belonging to the company."

The intellectual development dimension, which initially had six items, retained four: "to develop my creative potential," "because work is interesting," "because work is challenging,"and "because I have the ability to use my knowledge." It lost two items: "to keep my memory working well" and "to continue participating in training/professional development."

Taking into account the structure's model of seven first-order dimensions, multigroup confirmatory factor analysis (MGCFA) was used to assess the invariance of the items' parameters between the following groups: i) males and females; ii) those who have dependents and those who do not; and iii) those who consider they have sufficient financial resources for retirement and those who do not. The MGCFA results are described in Table 6.

Table 6.
Multigroup confirmatory factor analysis (MGCFA)

Gender (men x women)	**χ^2 (gl)**	**($\Delta\chi^2$)**	**CFI**	**(ΔCFI)**	**RMSEA**	**(ΔRMSEA)**
Configural	5102.4	-	0.834	-	0.086	-
Metric	5138.1	35.696	0.834	0.000	0.085	0.001
Scalar	5197.9	59.812	0.833	0.001	0.085	0.001
Dependents (have x don't have)	**χ^2 (gl)**	**($\Delta\chi^2$)**	**CFI**	**(ΔCFI)**	**RMSEA**	**(ΔRMSEA)**
Configural	5199.6	-	0.830	-	0.087	-
Metric	5269.4	60.769	0.828	0.002	0.087	0.000
Scalar	5388.1	118.709	0.824	0.004	0.087	0.000
Resources for retirement (sufficient x insufficient)	**χ^2 (gl)**	**($\Delta\chi^2$)**	**CFI**	**(ΔCFI)**	**RMSEA**	**(ΔRMSEA)**
Configural	5040.3	-	0.836	-	0.085	-
Metric	5077.6	37.297	0.836	0.000	0.084	0.001
Scalar	5137.7	60.067	0.835	0.001	0.084	0.001

Notes. χ^2 = chi-square; $\Delta\chi^2$ = difference of chi-square; CFI = *Comparative Fit Index*; ΔCFI = difference of the CFI; RMSEA = Root Mean Square Error of Approximation; ΔRMSEA = difference of the RMSEA
Criterion; Configural = fixed factor structure between the groups; Metric = factor structure and fixed factor loads between the groups; Scalar = factor structure, factor loads, thresholds and fixed scalars between the groups.
N men = 402; N women = 109; n have dependents = 415; N don't have dependents = 96; n sufficient resources = 196; n insufficient resources = 315

With regard to the invariance of the parameters between the different groups tested, the constraints had minor and negligible differences in the indicators. As the CFI and RMSEA differences were less than 0.01, the results indicated that, for the model of seven first-order correlated factors, the factor loads, thresholds and scalars were invariant between the groups analyzed (Cheung & Rensvold, 2002).

Discussion

The present study met the objective of presenting a scale of motives for workers who continue working during retirement, the EMCTA, and presenting the respective initial evidence of validity for Brazilian workers aged 45 or older, as well as assessing the invariance of the parameters of the instrument's items between the following groups: males and females, those with and without dependents, and those who consider their resources sufficient for retirement and those who do not. The dimensions that proved most relevant for workers who prefer to remain working in retirement were their relationship with the organization, their relationships at work and their intellectual development. These results corroborated studies by Macêdo et al. (2017) and Templer et al. (2010).

The data obtained from the confirmatory factor analysis showed that the scale, composed of 44 items and seven factors, presented high fit indices, in a demonstration that this model is suitable for the sample tested. The final version of the EMCTA consisted of 44 items and seven factors with good Cronbach's alpha levels, as follows: : i) financial circumstances (α=.86); ii) physical condition (α=.92); iii) working conditions (α=.90); iv) importance of work (α=.81); v) relationships at work (α=.93); vi) relationship with the organization (α=.94) and vii) intellectual development (α=.93).

Multigroup confirmatory factor analysis (MGCFA) of the model of the structure with seven first-order dimensions showed invariance of the items' parameters between the following groups: i) males and females; ii) those with and without dependents and iii) those who consider their resources sufficient for retirement and those who do not. With regard to the invariance of the parameters between the different groups tested, the constraints had minor and negligible differences in the indicators. The results showed that for the model of seven first-order correlated factors, factor loads, thresholds and scalars were invariant between the groups analyzed (Cheung & Rensvold, 2002).

The limitations of this study must nevertheless be noted. First, although the sample was robust, it was drawn from a large organization in the energy sector and is not representative of the overall Brazilian population; therefore, it is not possible to generalize individual's motives for continuing to work in retirement to other professional categories and organizations. We recommend further research to extend the results obtained in this study to diverse organizational contexts and to test the validity of these results in organizational contexts such as small and medium-sized enterprises in the public and private sectors. We also emphasize that this study took a quantitative approach; further research should complement these results with qualitative analysis.

Conclusions

With the sharp increase in the older population worldwide, there is a need for mature workers to continue in the labor market even after reaching the age for retirement. We believe this study met the objectives of constructing and testing the initial evidence for the validity of the EMCTA and providing a comprehensive instrument to identify the reasons some individuals decide to continue working in retirement.

The application of this instrument can deepen our understanding of retirement and prove very useful in different contexts: for example, among workers with different profiles (age, state, country, organization, social context and so forth). Beyond a focus on the retirement phase, it will also make it possible to study not only decisions in the transition from work to retirement but also allow individuals to reflect on their professional life and the future paths they want to take.

A relevant limitation of this study is that although the sample is robust, it is not representative of the general Brazilian population. These findings about the reasons individuals prefer or decide to continue working in retirement cannot be generalized. Given this, we believe that future studies will be important to compare the use of this instrument in other countries and verify the applicability of the proposed structure in different cultures.

References

Amorim, S. M., & França, L. H. (2019). Reasons for Retirement and Retirement Satisfaction. *Psicologia: Teoria e Pesquisa, 35*, e3558. doi: 10.1590/0102.3772e3558

Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York: Guilford.

Camarano, A. & Carvalho, D. & Kanso, S. (2019). Saída precoce do mercado de trabalho: aposentadoria ou discriminação? *Ciência & Saúde Coletiva.* 24. 3183-3192. doi: 10.1590/1413-81232018249.17452019.

Carvalho, M. C. N. (2009). *Relacionamento Interpessoal: Como preservar o sujeito coletivo*. Rio de Janeiro: Livros Técnicos e Científicos Editora.

Cavanagh, S. J. (1992). Job satisfaction of nursing staff working in hospitals. *Journal of Advanced Nursing, 17*(6), 704-711.

Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling, 9*(2), 233-255. doi: 10.1207/S15328007SEM0902_5

Confederação Nacional das Empresas de Seguros Gerais, Previdência Privada e Vida, Saúde Suplementar e Capitalização. *Sistema de horário flexível. Guia para implantação*. SUREM 1ª versão dezembro de 2014. http://www.cnseg.org.br/data/files/BD/D1/C2/88/E03895104B627495A88AA8A8/Cartilha%20Horários%20flexíveis.pdf

Conselho Nacional dos Direitos do Idoso. (2003). *Plano de ação internacional para o envelhecimento*. Retrieved from http://pfdc.pgr.mpf.mp.br/atuacao-e-conteudos-de-apoio/publicacoes/pessoa-idosa/plano-acao-internacional-envelhecimento

Damásio, B. F. (2013). Contribuições da análise fatorial confirmatória multigrupo (AFCMG) na avaliação de invariância de instrumentos psicométricos. *Psico-USF, 18*(2), 211-220. doi: 10.1590/S1413-82712013000200005

França, L. H. F. P. (2002). *Repensando aposentadoria com qualidade*. Um manual para facilitadores de programas de educação para aposentadoria em comunidades. Universidade do Estado do Rio de Janeiro. http://www.crde-unati.uerj.br/publicacoes/pdf/repensando.pdf

França, L. H. F. P. (2012). *Envelhecimento dos trabalhadores nas organizações: Estamos preparados*? In L. H. F. P. França e D. Stepansky (Eds.), Propostas multidisciplinares para o bem-estar na aposentadoria (pp. 25-52). Rio de Janeiro: Quarter- FAPERJ.

França, L. H. F. P., Menezes, G, S., Bendassolli, P. F., & Macêdo, L. S. S. (2013). Aposentar-se ou continuar trabalhando? O que influencia essa decisão? *Psicologia Ciência e Profissão, 33*(3), 548-563. doi: 10.1590/S1414-98932013000300004

França, L. H. F. P., & Vaughan, G. (2008). Ganhos e perdas: Atitudes dos executivos brasileiros e neozelandeses frente à aposentadoria. *Psicologia em Estudo, 13*(2), 207-216.

Guerson, L. R. S. C., França, L. H. F. P., & Amorim, S. M. (2018). Satisfação com a vida em aposentados que continuam trabalhando. *Paidéia. (Ribeirão Preto), 28*, e 2812. doi: 10.1590/1982-4327e2812

Khoury, H., Ferreira, A., Souza, R. A., Matos, A. P., & Barbagelata-Góes, S. (2010). Por que aposentados retornam ao trabalho? O papel dos fatores psicossociais. *Revista Kairós Gerontologia, 13*(1), 147-165.

Instituto Brasileiro de Geografia e Estatística. (2017). *Conceitos*. http://www.ibge.gov.br/home/estatistica/populacao/condicaodevida/indicadoresminimos/conceitos.shtm

International Labour Organization. (2014). Social protection for older persons: *Key policy trends and statistics.* International Labour Office, Social Protection Department. Geneva: ILO. http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_310211.pdf

Jorgensen, T. D. (2016). *semTools: Useful tools for structural equation modeling*. https://CRAN.R-project.org/package=semTools

Kim, S., & Feldman, D. C. (2000). Working in retirement: The antecedents of bridge employment and its consequences for quality of life in retirement. *Academy of Management Journal, 43*(6), 1195-1210.

Macêdo, L. S. S.; Bendassolli, P. F.; Torres, T. L. & França, L. H. F.P. (2020). Adaptação e Validação Brasileira da Escala Older Workers' Intentions to Continue Working. *Psico-USF, 25*(1), 127-138. doi: 10.1590/1413-82712020250111

Macêdo, L. S. S., Bendassolli, P. F.; Torres, T. L. (2017). Representações sociais da aposentadoria e intenção de continuar trabalhando. *Psicologia & Sociedade, 29*(1), 1-11. doi: 10.1590/1807-0310/2017v29145010

Magalhães, M. O. (2008). Generatividade e vínculos com a carreira e a organização: Problematizando as bases do comprometimento organizacional. *Revista Brasileira de Orientação Profissional, 9*(2), 67-80.

Menezes, G. & França, L. H. F. P. (2012). Preditores da decisão da aposentadoria por servidores públicos federais. *Revista Psicologia Organizações e Trabalho*, *12*(3), 315-328.

Luttigards, P. M. (2018). *Envelhecimento e gestão da idade: Perspectiva e atuação dos profissionais da área de gestão de pessoas*. Dissertação de Mestrado. Universidade Federal da Bahia. http://repositorio.ufba.br/ri/handle/ri/26614

Moreira, J. (2011). Imaginários sobre aposentadoria, trabalho, velhice: Estudo de caso com professores universitários. *Psicologia em Estudo, 16* (4), 541-550. http://br.123dok.com/document/4zpo4l7q-imaginarios-sobre-aposentadoria-trabalho-velhice-estudo-de-caso-com-professores-universitarios.html

Organização Mundial de Saúde. (1994). *Global strategy on occupational health for all: The way to health at work*. http://www.who.int/occupational_health/publications/globstrategy/en/index4.html

Organización Mundial de la Salud (2014). *Documentos básicos, 48*. http://apps.who.int/gb/bd/PDF/bd48/basic-documents-48th-edition-sp.pdf

Pasquali, L. (1998). Princípios de elaboração de escalas psicológicas. *Revista Psiquiatria Clínica, 25*(5), 206-213.

Programa das Nações Unidas para o Desenvolvimento - PNUD. (2014). Atlas do desenvolvimento humano nas Regiões Metropolitanas Brasileiras. (2014). http://www.secid.ma.gov.br/files/2015/04/Atlas-do-Desenvolvimento-Humanonas-Regiões-Metropolitanas.pdf

Pitt-Catsouphes, M., & Smyer, M. A. (2006). How old are today's older workers? *The center aging & work*, s/v(4), 1-7.

R Core Team. (2017). *R: A language and environment for statistical computing.* R Foundation for Statitiscal Computing, Vienna, Austria. http://www.R-project.org/

Revelle, W. (2014). *Psych: Procedures for Personality and Psychological Research*. R package version 1.4.3. CRAN Project. http://cran.r-project.org/web/packages/psych/psych.pdf

Rossell, Y. (2012). Lavaan: An R package for structural equation modeling. *Journal of Statistical Software, 48*(2), 1-36.

Schneider, R. H., & Irigaray, T. Q. (2008). O envelhecimento na atualidade: Aspectos cronológicos, biológicos, psicológicos e sociais. *Estudos de Psicologia (Campinas), 25*(4), 585-593.

Shacklock, K., & Brunetto, Y. (2011). A model of older workers' intentions to continue working. *Personnel Review, (40)*2, 252-274. doi: 10.1108/00483481111106110

Super, D. E. (1980). A life-span, life-space approach to career development. *Journal of Vocational Behavior, 16*(3), 282-298. doi: 10.1016/0001-8791(80)90056-1

Templer, A., Armstrong-Stassen, M., & Cattaneo, J. (2010). Antecedents of older workers' motives for continuing to work. *Career Development International, 15*(5), 479-500. doi: 10.1108/13620431011075349

Wang, M., Zhan, Y., Liu, S., & Shultz, K. S. (2008). Antecedents of bridge employment: A longitudinal investigation. *Journal of Applied Psychology, 93*(4), 818-830. doi: 10.1037/0021-9010.93.4.818.

Zanelli, J. C. (2000). O programa de preparação para aposentadoria como um processo de intervençãoao final de uma carreira. *Revista de Ciências Humanas*. Edição Especial Temática, 157-176.

Authors' participation: a) Conception and design of the work; b) Data acquisition;c) Analysis and interpretation of data; d) Writing of the manuscript; e) Critical review of the manuscript.
A.P.S. has contributed in a,b,c,d,e; L.H.F.P.F. in a,c,d,e.

Scientific Editor in charge: Dra. Cecilia Cracco