Psychological Assessment

Psicologia: Teoria e Prática, 26(3), ePTPPA15620. São Paulo, SP, 2024.
ISSN 1516-3687 (print), ISSN 1980-6906 (electronic version). **Evaluation system:** double-blind review.
https://doi.org/10.5935/1980-6906/ePTPPA15620.en
Universidade Presbiteriana Mackenzie

Brief Scale of Reasons to Continue Working After Retirement: Psychometric Evidence in the Educational Sector

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Received: October 10, 2022.
Accepted: June 10, 2024.
Section editor: Alexandre Serpa.

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Abstract

The moment when the decision to retire is made can offer workers a choice between retiring permanently, working in a flexible format, or postponing retirement by remaining at work. This decision depends on several reasons or predictors. This study sought initial evidence based on the internal structure and relationship with other variables of the Brief Scale of Reasons to Continue Working in Retirement – SRCWR-*r*. The sample consisted of 239 workers with an average age of 58.7 years, and the majority being female (52%), from a public university in the state of Rio de Janeiro. The original version of SRCWR-*r* with 21 items and seven factors (Financial Situation, Physical Conditions, Work Conditions, Importance of Work, Relationship at Work, Relationship with the Organization, and Intellectual Development) showed a good fit for the data. The results showed that the SRCWR-*r* presents adequate psychometric properties, recommending its replication in other organizational contexts.

Keywords: aging, decision-making, work, retirement, psychometrics

ESCALA BREVE DE MOTIVOS PARA CONTINUAR TRABALHANDO APÓS A APOSENTADORIA: EVIDÊNCIAS PSICOMÉTRICAS NO SETOR EDUCACIONAL

EMCTA reduzida: Evidências psicométricas no Setor Educacional

Resumo

O momento da decisão da aposentadoria pode oferecer opções ao trabalhador que abrange se aposentar em definitivo; trabalhar em formato flexível ou postergar a aposentadoria permanecendo no trabalho. Esta decisão depende de diversos motivos ou preditores. O presente estudo buscou evidências baseadas na estrutura interna e na relação com outras variáveis da Escala Breve de Motivos para Continuar Trabalhando na Aposentadoria – EMCTA-*r*. A amostra é composta por 239 trabalhadores com média de idade de 58,7 anos e maioria do sexo feminino (52%), de uma universidade pública no estado do Rio de Janeiro. A versão original da EMCTA-*r* com 21 itens e sete fatores (Situação Financeira, Condições Físicas, Condições de Trabalho, Importância do Trabalho, Relacionamento no Trabalho, Relacionamento com a Organização e Desenvolvimento Intelectual) apresentou bom ajuste aos dados. Os resultados evidenciaram que a EMCTA-*r* apresenta propriedades psicométricas adequadas, recomendando sua replicação em outros contextos organizacionais.

Palavras-chave: envelhecimento, tomada de decisão, trabalho, aposentadoria, psicometria

ESCALA BREVE DE RAZONES PARA SEGUIR TRABAJANDO DESPUÉS DE LA JUBILACIÓN: EVIDENCIA PSICOMÉTRICA EN EL SECTOR EDUCATIVO

EMCTA Reducida: Evidencia psicométrica en el sector educativo

Resumen

El momento de la decisión de jubilarse puede ofrecer opciones al trabajador que incluyen: jubilarse definitivamente; trabajar en un formato flexible o posponer la jubilación permaneciendo en el trabajo. Esta decisión depende de varias razones o predictores. El presente estudio buscó evidencia basada en la estructura interna y la relación con otras variables de la Breve Escalas de Razones para Continuar Trabajando en la jubilación – EMCTA-r. La muestra está compuesta por 239 trabajadores con una edad promedio de 58,7 años y la mayoría son mujeres (52%), de una universidad pública del estado de Rio de Janeiro. La versión original del EMCTA-r con 21 ítems y siete factores (Situación Financiera, Condiciones Físicas, Condiciones de Trabajo, Importancia del Trabajo, Relación en el Trabajo, Relación con la Organización y Desarrollo Intelectual) presentó un buen ajuste a los datos. Los resultados mostraron que el EMCTA-r presenta propiedades psicométricas adecuadas, recomendando su replicación en otros contextos organizacionales.

Palabras clave: envejecimiento, toma de decisiones, trabajo, jubilación, psicometria

Various reasons can lead an older worker to remain in the workplace and postpone retirement. When making the decision to retire, it is necessary to understand the reasons that lead older workers to choose an option in this transition, whether it is to remain in the same organization or to continue in the job market, adopt another form of work, or employment, or even leaving the market for full retirement.

Motivation stems from desires, intentions, and goals which, in turn, take into account a series of factors from the governmental, organizational, socio-family, and individual levels. Motivation is one of the most important explanatory processes of human conduct, especially in the workplace, and guides what a person will do in the future (Gondim & Silva, 2014). Despite the relevance of this topic, there is still a lack of statistical models to explain the factors involved in the decision to either stay in the job market or leave it through retirement (França et al., 2013; Oliveira et al., 2021).

Individual aspects such as chronological age, family relationships, job characteristics, and financial status also influence the employee's decision to continue working or retire permanently (França et al., 2013; Levi et al., 2020). Therefore, evaluating career decisions that affect family relationships (children, elderly parents, and even the partner) can explain much of the career choices of adults in the world of work (Anxo et al., 2019) even at the time of retirement, since this decision often depends on the family context.

França et al. (2013) pointed out that some factors can be more influential than others in the decision to retire, such as nationality, professional groups, and even the type of organization (public or private). These authors also point out that the same predictors (such as age) can encourage some individuals to stay and others to take the opposite approach, i.e. to retire. The so-called pull and push effect (Shultz et al., 1998) is used to analyze the variables that could retain a worker (pull) or push them out of the organization (push). Beehr and Bennett (2007) also used the concepts of pull (attract, retain) and push (push, pressure) in the retirement decision. These authors emphasized that push factors can be considered predictors that pressure workers to leave their jobs, while pull factors are predictors that motivate workers to continue working.

The most relevant aspects of the decision to retire are called risk and survival aspects (Leandro-França & Murta, 2017), which deal with health and financial conditions. In the public sector, financial stability is one of the main factors for postponing retirement. This situation does not seem to be very different in the private sector, where many are unable to accumulate sufficient financial resources to retire (Sartori et al., 2016; Schuabb et al., 2019). The lack of financial planning for retirement may be one of the reasons for continuing to work.

With regard to health, it is important to note that on the one hand, having an excellent health assessment can make people stay in work longer. On the other hand, having a serious illness or poor health can restrict your ability to work and force you to reduce your workload or even withdraw from the workforce (Ackerman & Kanfer, 2020).

There are also organizational and work-related reasons that influence older people to stay in organizations, even after retirement age: a sense of belonging, the company of colleagues, flexible working hours, and greater control over their work (Menezes & França, 2012). Leaving the job market means no longer having the company of colleagues, loss of social status, and lower self-esteem, among other things (Andrade & Torres, 2020). Despite these losses, retirement for those who choose to leave the labor market can be motivated by spending more time with family, fulfilling old dreams, and having time for travel, and cultural and leisure activities (França et al., 2013).

From the government's point of view, one variable that influences workers' retirement decisions is the social security legislation in force at the time of the retirement decision (Oliveira et al., 2021). For a number of reasons, be it the insolvency of the public pension payment system (Welfare State) or the consequent change in rules that modify the legal minimum age requirement or the length of contributions for pensions to be granted, an increase or decrease in the number of retirements can be observed immediately after a social security change.

It is a fact that changes in age distribution indicate the need for older workers to remain in the labor market. This will force organizations to maximize their strategies for productivity, human capital formation, and the health, well-being, and safety of these workers. Therefore, understanding the decision-making process of these workers can provide data for the HR department to plan measures to be adopted for retention or the organization of retirement preparation programs for those who choose to leave (Menezes & França, 2012).

Older employees have unique skills and experiences that are not easily replaced by new members of the workforce and this represents a huge gap for the organizations they leave (Chand & Markova, 2018). In today's context, rapid and continuous changes in the workplace create the need to acquire knowledge and skills more dynamically. They also create an obligation to adapt organizations to this new reality, given that the technology used today is not part of the environment of workers aged 50 and over (Raymundo & Castro, 2019). However, mature workers also need to keep up to date with technological advances and the competitiveness caused by the scarcity of jobs.

Therefore, welcoming older workers into an environment of rapid technological progress can be achieved through training that meets this population's needs, with a focus on learning new technologies, which can minimize inequalities among older workers. Actions aimed at increasing the worker's ability to deal with future work situations contribute to professional development (Mourão et al., 2014). Thus, continuously training and developing older workers will keep them up to date with the skills they need as the economy changes (Chand & Markova, 2018).

Continuously educating adult professionals by investing in training and skills development is a critical step in keeping older workers active in the labor market (Majeed et al., 2017). In the private sector, training projects, and actions that encourage learning, active aging, or education for retirement depend on the People Management of each organization. In the public sector, this

decision is not left to the discretion of one body or another, since the public sector must be guided in its activities by legal principles.

This is why the Public Administration has proposed subsidizing programs, projects, and actions to promote retirement education for civil servants of the Federal Government, municipalities, and federal public foundations (Ordinance No. 12 of November 2018). Some guidelines of this ordinance aim to develop intergenerational programs and actions to prevent ageism, reinforce positive attitudes of individuals about aging, and stimulate the development of institutional and personal competencies during the planning, decision, transition, and adaptation to retirement.

Given the importance of the issue, Souza and França (2020) developed a specific measure to assess the permanence of older workers in the labor market. The SRCWR was tested on 511 workers (aged 45 or over) from an energy company in the state of Rio de Janeiro and after confirmatory factor analysis, the Brazilian version had 44 items and 7 factors: economic situation, physical conditions, working conditions, the importance of work, relationships at work, relationships with the organization and intellectual development. To clarify, here are the definitions of the seven factors:

Economic/financial situation – One of the main reasons why older workers want to continue working is the economic issue and the fact that they can not imagine themselves as a person who does not work (Fontoura et al., 2015).

Importance of work – When work is perceived as one of the most important aspects of an older worker's life, it becomes the main reason for those who wish to continue working (Shacklock & Brunetto, 2011).

Intellectual development – Intellectual development is one of the aspects of lifelong learning. Thus, older workers, when they are updated and stimulated by the organization, can perform work in the same way or better (França & Soares, 2009).

Working conditions – Control and flexibility in jobs can give older workers the freedom to better organize and manage their time between life and work (Souza & França, 2018).

Physical conditions – Those who have good health conditions are more likely to choose to continue working (Shacklock & Brunetto, 2011).

Relationship at work – Interpersonal interaction at work is one of the subjective expectations of workers regarding future work situations (Macêdo, 2014).

Relationship with the organization – Organizations that offer mechanisms to ensure the well-being of older workers and their relationships with younger workers motivate the productivity of intergenerational teams (França, 2008).

The analyses showed high adjustment indices, robust evidence, and internal consistency in each factor of the scale. The results of the Multi-Group Factor Analysis (MGFCA) showed invariance of the item parameters between the following groups: male and female; workers who

had or did not have dependents and those who considered that they had or did not have sufficient resources for retirement.

In order to propose a more succinct and practical measuring instrument, the SRCWR-*r* – Scale of Reasons for Continuing to Work in Retirement – reduced version was developed (França et al., 2021). The SRCWR-*r* was tested in its reduced version for the energy sector, and the three most robust items were selected from the factor loadings of each factor, resulting in twenty-one items that confirmed the original model of seven correlated factors (financial situation, physical conditions, working conditions, importance of work, relationship at work, relationship with organization, and intellectual development). The SRCWR in both its complete form and reduced version produced high levels of internal consistency.

As pointed out in these studies, it is essential that a new scale, especially in terms of its reduction, be tested in other contexts. With this in mind, the aim of this study was to look for evidence of validity based on internal consistency (alpha and omega), internal structure (confirmatory factor analysis), and the relationship with other external variables (external validity).

Two constructs were used to analyze the relationship between the SRCWR-*r* and external variables: perception of organizational learning opportunities and volition at work. The perception of organizational learning opportunities (Mourão et al., 2014) includes formal educational actions and support actions for informal learning in the workplace. Germano et al. (2021) in a study of administrative technical staff found that the greater the learning opportunity, the lower the intention to leave the institution. Volition at work can be defined as an individual's perception of choice when making career decisions, despite restrictions (Steger et al., 2012). Pires and Andrade (2022) identified in their studies that volitional capacity in relation to work tends to maximize job satisfaction.

The perception of organizational learning opportunities can be measured by a one-dimensional scale to be presented in the instruments section. Similarly, volition at work can be measured by three dimensions: volition, financial constraints, and structural constraints. In this article, only the volition dimension was used, which deals specifically with the perception that the person is capable of making their work choices. Thus, this dimension allows for the exploration of choices that define work and the transitions experienced (Pires & Andrade, 2022). It would therefore be expected that these choices would be associated with the reasons why they wish to continue working. The financial constraints and structural constraints dimensions present an unfavorable perception of work and the volition dimension is the only one that presents favorable aspects to the choices made at work (Pires & Andrade, 2022). To achieve the purpose of this study, two hypotheses were formulated:

Souza and França (2020) tested initial evidence of SRCWR's validity and found that the model of seven correlated factors in the full version of SRCWR showed high levels of fit.

Hypothesis 1: The SRCWR-*r* will confirm the structure of the original SRCWR, which is made up of seven factors: financial situation, physical conditions, working conditions, the

importance of work, relationship at work, relationship with the organization, and intellectual development.

Analyzing the invariance of an instrument is an essential procedure in the creation and application of psychometric instruments, as it makes it possible to draw conclusions about the stability of the instrument's structure and parameters in different groups, ensuring its future usefulness in these groups (Fischer & Karl, 2019). In this study, invariance was tested in the group divided by gender and job title. According to França (2002), adaptation to retirement differs between men and women, as women seem to balance their various roles in society better (as wife, grandmother, mother, and daughter) and the absence of a work activity may not be as significant as it is for men. This may influence their decision to continue working or retire. In terms of job title, Machado and Scorzafave (2016) showed that, in academic careers, professors have higher salaries than other professionals, which may favor the postponement and difficulty of facing the retirement transition for the former. Despite these differences, the structure of the scale is expected to be invariant in these different groups. Thus, the following hypothesis was formulated:

Hypothesis 2: The Reasons to Continue Working Scale is invariant according to gender and job title.

Method

Participants

The convenience sample consisted of 239 active male and female workers from a Federal Higher Education Institution operating in 32 municipalities in Rio de Janeiro. The inclusion and exclusion criteria are described in the following data collection procedures.

Data Collection Procedures

Contact was made with the University's Personnel Administration Department to request the participation of its civil servants in this survey. The questionnaire was sent via Google Forms to institutional and/or personal email addresses, as well as via the institution's weekly newsletter, along with a letter of invitation to all civil servants, given that the system provided by the institution did not make it possible to filter by age. Despite this, employees aged 50 or over, both men and women, who worked in teaching or technical-administrative positions, were invited.

In the specific case of the civil service workers at this public university, we used the age criterion of 50 or over because they were older workers who would be closer to retirement. This criterion is based on the World Health Organization, which considers that the process of functional aging begins at the age of 45 (Organização Mundial da Saúde, 2015). In addition, several previous studies have used age 45 or 50 as the base criterion for the term "older workers" (Castro et al., 2020; Ilmarinen, 2001; Peroni et al., 2023).

It wasn't possible to have a filter or emails of civil service workers aged 50 or over, which was our main criterion for inclusion in the survey because they were closer to retirement. We

therefore used the university's total database of 4,163 civil service workers, comprising 2,131 teaching staff and 2,032 technical staff, in which civil service workers aged 50 or over were invited to take part in the survey. The main researcher made several follow-ups, including visits to managers to reinforce filling in the questionnaire and providing the survey link via Google Forms. By the end of the survey, 269 service workers had responded. Of these, service workers under the age of 50 and others who had already retired were excluded, giving a total of 239 respondents.

The data for this survey was collected in the second half of 2021. The Free and Informed Consent Term was sent along with the questionnaires, containing all the necessary information. The study was submitted to the Research Ethics Committee of the authors' institution and approved under CAAE number 40533620.4.0000.5289.

Description of participants

The sample was made up of service workers aged between 50 and 71 (M=58.7; SD=5.35), just over half of these 239 service workers were technical-administrative staff (54%) and almost half were teachers (46%). Among the participants, there was a balance in terms of gender: 52% female and 48% male. As for marital status, the majority of respondents (71%) were married or in a stable relationship with a partner. As expected in a university, this is a sample with a high level of education, considering that a quarter (23%) had a postgraduate degree, followed by 18% of workers with a postgraduate Master's degree. To gauge the desired retirement age, participants were asked how old they would like to retire, to which the majority (74%) replied 66, well above the average retirement age in Brazil, which according to the OECD (2015) was 55 for men and 50 for women, and although some people still retire a few years earlier, the legal minimum retirement age as of 2019 (Constitutional Amendment No. 103 of 12/11/2019) is 65 for men and 62 for women.

Instruments

Questionnaires were used which contained information on sociodemographics, work, health, schooling, monthly income, and age. In addition, questions were asked about subjective age, measured with the question: "In general, how old do you think you are?" as well as self-perceived health, which is considered one of the risk aspects in the decision to retire and can force workers to retire before the legal period, known as *early retirement* (França, 2002; Leandro-França & Murta, 2017). Perceived health was measured with the question "How would you describe your current health?" which was answered with five options, ranging from (1) needing a lot of attention to (5) excellent.

Finally, the following scales were used: Reduced Scale of Reasons to Continue Working in Retirement (SRCWR-*r*) with 21 items and seven dimensions (França et al., 2021), respectively for economic situation, physical conditions, working conditions, importance of work, relationship at work, relationship in the organization and intellectual development. Example items: "To support

my standard of living" (financial situation); "To feel productive" (physical conditions); "Because I have autonomy over my work" (working conditions); "To continue taking part in training" (importance of the job); "To teach something to younger people" (relationship at work); "Because the environment is pleasant" (relationship with the organization) and "Because it is a challenging job" (intellectual development). The *SRCWR* is a 5-point Likert scale, where (1) did not influence at all to (5) totally influenced and showed adequate internal consistency, with Cronbach's alpha ranging from 0.82 to 0.94. It is important to note that the factor loadings ranged from 0.64 to 0.95 (M = 0.83), demonstrating that the factors explain most of the variance in the items.

The perception of learning opportunities was measured using the Perceived Learning Opportunities in Organizations Scale (PLOS) scale by Mourão et al. (2014). In this study, with the agreement of the first author of the PLOS, it was decided to use the seven most relevant items for the purpose of this research, which were answered on a 10-point Likert scale from (1) strongly disagree to (10) strongly agree. Example item: "Project future training needs". In the study by Mourão et al. (2014), the PLOS's internal consistency, assessed by Cronbach's alpha, was 0.94 and in this study, the instrument's internal consistency indices, calculated using Cronbach's alpha and McDonald's omega, were equal to 0.95 and 0.94, respectively.

The Reduced Volition at Work Scale (RVWS) was used to assess volition at work, using the four items of the "Volition" factor of the RVWS (Pires & Andrade, 2022), which were answered on a 7-point *Likert* scale from (1) strongly disagree to (7) strongly agree, whose Cronbach's alpha and McDonald's omega internal consistency indices were equal to 0.82 and 0.84, respectively. Example item: "I was able to choose the jobs I wanted".

Data Analysis Procedures

The reduced version of the Reasons to Continue Working Scale (SRCWR-*r*) was made up of 21 items, distributed equally across seven factors: financial situation, physical conditions, working conditions, the importance of work, relationship at work, relationship with the organization, and intellectual development. In order to verify the internal structure of the reduced version of the Reasons to Continue to Work Scale (SRCWR-*r*), a Confirmatory Factor Analysis (CFA) was carried out using Structural Equation Modeling, using the R software, version 4.0.2 (R Core Team, 2021) and the Lavaan – Latent Variable Analysis package (Rossel, 2012), adopting the WLSMV (Weighted Least Squares Mean-and Variance-adjusted) estimator. This estimator was chosen because it is robust and provides estimates of weighted least squares and adjusted mean-variance for the chi-square test.

To assess the fit of the model to the data, the following indicators were considered: chi-square, Root-Mean-Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), and Tucker-Lewis Index (TLI) (Byrne, 2012). Values below 0.10 for RMSEA and R and greater than 0.95 for CFI and TLI were adopted as good fit indices (Gana & Broc, 2019).

The instrument's internal consistency was analyzed using Cronbach's Alpha, as it is the most widely used, and also the Omega coefficient, where values above 0.70 are considered

acceptable. To assess the invariance of the measure between the groups separated by gender and job title, we used Multigroup Structural Equation Modeling (Damásio, 2013), in the R software (R Core Team, 2017), in the semTools package (Jorgensen, 2016). This analysis tested models in which the number of items and factors (configural invariance), factor loadings (metric invariance), intercepts (scalar invariance), and measurement errors (residual invariance) were determined. The differences between the models' fits were assessed using the chi-squared difference ($\Delta\chi^2$), the CFI (ΔCFI), the TLI (ΔTLI), and the RMSEA (ΔRMSEA). These differences should be small and practically negligible. Thus, the differences in CFI, TLI, and RMSEA should be less than 0.01, in order to indicate that the factor loadings, intercepts, and measurement errors are invariant between the groups analyzed (Cheung & Rensvold, 2002).

Evidence of the scale's convergent validity was investigated through correlations between the instrument and other related measures, using Structural Equation Modeling. Finally, evidence of discriminant validity was sought in order to investigate whether the factors in the scale differed from each other. For this analysis, the *Discriminant Validity* function from the semTools package in the RStudio software was used. This function assumes that the object is a set of confirmatory factor analysis results where the latent variables are scaled by setting their variances to one so that the covariances of the factors are estimated as correlations. Thus, the model of seven correlated factors was compared with a model in which the correlations between the latent variables are fixed at 1. Such models must be significantly different for the factors to be considered distinct (Rönkkö & Cho, 2022).

Results

Based on the study by Souza and França (2020) and França et al. (2021), the model with seven correlated factors and 21 items (three for each factor) was tested. The model obtained good fit indices: χ^2 (GL) = 483.05(168); CFI = 0.985; TLI = 0.982; RMSEA = 0.089 (0.080 – 0.098). The factors showed positive and significant correlations with each other. The standardized factor loadings of the seven-factor model ranged from 0.79 to 0.97 (M = 0.91) and are shown in Table 1, all of which were significant ($p<0.001$) and above 0.70. The internal consistency indices of the scale factors are shown in Table 1. These results therefore showed that the reduced version of the Scale of Reasons to Continue Working in Retirement – SRCWR-*r* was made up of 21 items, distributed over seven dimensions, which made it possible to confirm Hypothesis 1. In other words: The SRCWR-*r* applied to education professionals at a public university confirmed the structure presented by França et al. (2021) with workers in the energy sector.

Table 1

Factors, Items, and Standardized Factor Loadings SRCWR-r in the Educational Context.

Dimensions	Items	Loadings	Alpha	Omega
Financial situation	To sustain my living standards	0.90	0.89	0.89
	To maintain the benefits I receive from work	0.91		
	To save some income for the future	0.88		
Physical Conditions	Because I feel physically healthy	0.91	0.92	0.91
	To keep my memory in good working order	0.91		
	To feel productive	0.94		
Working Conditions	Because I have autonomy over my work	0.91	0.90	0.90
	Because I have a balance between my personal and professional life	0.90		
	Because I have the freedom to set priorities at work	0.89		
Importance of Work	Because when I socialize with people at work I don't think about other problems	0.79	0.80	0.82
	To continue taking part in training courses	0.83		
	Because I'm more interested in work than doing other activities	0.82		
Relationships at Work	To share my experience with others	0.94	0.95	0.96
	To teach something to younger people	0.98		
	To contribute to future generations	0.98		
Relationship with the Organization	Because I meet different people at work	0.93	0.91	0.92
	Because the working environment is pleasant	0.90		
	Because I feel relaxed when I meet people at work	0.93		
Intellectual Development	Because it's an interesting job	0.97	0.94	0.94
	Because it's a challenging job	0.93		
	Because I'm able to use my knowledge	0.95		

Note. N = 239 participants in the Educational Context.

Considering the seven-dimensional first-order structure model found, MGFCA was used to assess the invariance of the measure between the groups formed in terms of male and female gender and technical and teaching positions. The analysis of the data obtained revealed that the imposition of restrictions resulted in small and practically negligible differences in the indicators analyzed, i.e. the differences in CFI, TLI, and RMSEA were less than 0.01. These results indicate that, for the model of seven first-order correlated factors, the factor loadings, intercepts, and measurement errors were invariant between the groups analyzed (Cheung & Rensvold, 2002). These results can be seen in Table 2.

Table 2

Instrument Invariance Analysis – SRCWR-r in the Context of Education.

Models (Gender)	χ^2 (GL)	$\Delta\chi^2$	CFI	ΔCFI	TLI	ΔTLI	RMSEA	ΔRMSEA
Configural	496.02 (348)	–	0.999	–	0.999	–	0.060	–
Métric	516,07 (368)	20.05	0.999	0.000	0.999	0.000	0.058	0.002
Scalar	639,50 (430)	123.43	0.998	0.001	0.998	0.000	0.064	0.006
Residual	649,91 (431)	10.41	0.998	0.000	0.998	0.000	0.065	0.001
Models (Role)	**χ^2 (GL)**	**$\Delta\chi^2$**	**CFI**	**ΔCFI**	**TLI**	**ΔTLI**	**RMSEA**	**ΔRMSEA**
Configural	484.96 (348)	–	0.999	–	0.999	–	0.058	–
Metric	509.13 (368)	24.17	0.999	0.000	0.999	0.000	0.057	0.001
Scalar	648.09 (430)	138.96	0.999	0.000	0.999	0.000	0.065	0.008
Residual	652.31 (431)	4.22	0.999	0.000	0.999	0.000	0.066	0.001

Notes. χ^2 = chi-square; $\Delta\chi2$ = difference of chi-square CFI = Comparative Fix Index; ΔCFI = difference of CFI; RMSEA = Root Mean Square Error of Approximation; ΔRMSEA = difference of RMSEA.

Configural = factor structure fixed between groups; Metric = factor structure and factor loadings fixed between groups; Scalar = factor structure, factor loadings, intercepts between groups; Residual = factor structure, factor loadings, intercepts, and measurement errors fixed between groups.

n men = 115; n women = 124; n teaching positions = 110; n technical positions = 129.

Based on the factor structure found in the SRCWR-*r*, the Measurement Model was tested, with each construct being inserted as a factor in order to check whether the items were explained by their latent variables. A model with nine factors (the seven SRCWR-*r* factors, the perception of learning opportunity, and the volition factor) and 31 items were tested. This model showed good fit indices: χ^2 (GL) = 764.45(396); CFI = 0.988; TLI = 0.986; RMSEA = 0.063 (0.056 – 0.069). In addition, the items in the model had high factor loadings (ranging from 0.79 to 0.97, M = 0.89), demonstrating that the items can be explained by their respective latent variables.

In this measurement model, the instrument was also correlated with external variables (perception of learning opportunity – PLOS and volition at work – RVWS). The data obtained from calculating these correlations showed that the correlations between the SRCWR-*r* factors and PLOS and RVWS were positive and significant, with the exception of the financial situation factor, which showed no significant correlation with the external variables. The results can be seen in Table 3.

Table 3

Correlations between SRCWR-r, Perceived Learning Opportunity, and Volition.

Variables	1	2	3	4	5	6	7	8
1. Financial situation	-	-	-	-	-	-	-	-
2. Physical conditions	0.52***	-	-	-	-	-	-	-
3. Working conditions	0.42***	0.85***	-	-	-	-	-	-
4. Importance of the work	0.43***	0.75***	0.75***	-	-	-	-	-
5. Relationships at work	0.39***	0.70***	0.73***	0.75***	-	-	-	-
6. Relationship with the organization	0.45***	0.73***	0.70***	0.85***	0.71***	-	-	-
7. Intellectual development	0.45***	0.83***	0.79***	0.78***	0.83***	0.83***	-	-
8. POL	0.06	0.22**	0.20**	0.33***	0.13*	0.24***	0.21**	-
9. Volition	-0.03	0.17**	0.24***	0.27***	0.27***	0.14*	0.26***	0.34***

Notes. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

POA = Perceived Opportunity to Learn.

N = 239

In the search for evidence of discriminant validity between the factors of the scale, the results showed that there was evidence of discriminant validity between all the factors ($p < 0.001$). These findings indicate that, despite high correlations, these factors can be considered different, which provides additional empirical evidence for the seven-factor structure.

When comparing the application of the SRCWR-*r* (short version) in education with the application of the SRCWR in energy sector workers (Souza and França, 2020), small differences were found. However, all the internal consistency indices were higher when applied to workers in the education sector, as shown in Table 4. The similarity of the results can be explained by the fact that the participants in the two surveys were employees of two organizations (energy sector and education sector) in indirect public administration. The small differences found in the higher level of internal consistency in the education sector may reflect the fact that the possibility of continuing to work is more pronounced at the university where the study in question was carried out.

Table 4

Comparison of SRCWR-r Reliability Levels in Two Different Samples.

Dimensions	Energy	Education
	Alpha	Alpha
Financial situation	0.82	0.89
Physical conditions	0.88	0.92
Working conditions	0.85	0.90
Importance of work	0.71	0.82
Relationship at work	0.94	0.96
Relationship with the Organization	0.90	0.92
Development Intellectual	0.93	0.94

Note. Values presented in Cronbach's Alpha.

Discussion

The main aim of this study was to find initial evidence of the validity of the Reduced Scale of Reasons for Continuing to Work in Retirement - SRCWR-*r* for education workers at a public university in the state of Rio de Janeiro. Thus, this study reinforced what had already been found by França et al. (2021) in the reduced version of this scale carried out with workers in the energy sector. According to Field (2020), the validation of instruments in other samples with groups from different categories helps to improve them with a view to possible generalization.

In this study, after the confirmatory factor analysis, it was found that the model with the best fit remained that of 7 (seven) distinct and correlated factors (financial situation, physical conditions, working conditions, importance of work, relationship at work, relationship with the organization, and intellectual development). These results confirm the original model of the SRCWR scale by Souza and França (2020) and the results obtained from the SRCWR-Reduced version by França et al. (2021) with workers in the energy sector. The results obtained provide evidence that the structure of the instrument is maintained, even though its original application was in the organizational context of the energy sector.

It is worth noting that the measure was not invariant between public and private educational institutions. However, it is well known that continuity of work in the field of education in the public sector is quite different from the private system and that in the former case, many service workers continue to work at the same institution even though the financial value of the additional work in retirement is small. What seems to count is job satisfaction, an aspect observed in the studies by Bressan et al. (2012) and Macedo et al. (2017), in which it was observed that the majority of service workers, especially teachers, would like to continue working. Macedo et al. (2017) argue that among the predictors of this intention to continue working are the perception of personal autonomy, interpersonal interaction, and flexible working conditions.

The first hypothesis posits that the SRCWR-*r* version would confirm the structure of the original SRCWR, according to the study by Souza and França (2020). This study also corroborated

the evidence of the validity of the reduced scale, which had already been tested in the energy sector (França et al., 2021), in terms of the practicality and use of the reduced scale and the maintenance of excellent psychometric properties. The scale is recommended for older workers (both in the energy and education sectors) who are in the transition to retirement but still wish to remain in the job market for longer. Therefore, the reduced version of the scale has shown adequate accuracy in the estimates of the scores studied, confirming hypothesis 1.

The MGFCA results showed that the scale has small and negligible differences when it comes to gender analysis and the analysis of technical and teaching positions, demonstrating invariance between the groups analyzed. These findings confirm Hypothesis 2 of this study and suggest that the SRCWR-*r* can be measured in the same way for men and women, as well as for different positions. In other words, although the literature points to possible differences in retirement decisions in terms of gender (França, 2002) and job title (Machado & Scorzafave, 2016), the results found here indicate that the instrument can be used indiscriminately between these groups, without response bias (Fischer & Karl, 2019).

Concerning the dimensions of the SRCWR-*r*, the strongest correlation was observed between the physical conditions and working conditions variables. With regard to the external variables, it was possible to verify that the dimensions of the SRCWR-*r* showed a positive and significant correlation with the perception of learning opportunity and volition at work, indicating good evidence of external validity.

Considering that Perceived Learning Opportunity, as measured by PLOS, is also one of the factors influencing workers' turnover intention, one would expect a correlation between these constructs, as in fact occurred. Thus, the greater the perception of learning opportunities, the greater the desire to continue working in the dimensions of physical conditions, working conditions, the importance of work, relationship at work, relationship with the organization, and intellectual development.

The SRCWR-*r* scale also showed a significant positive correlation with the reduced version of volition at work. Volition at work represents the worker's control over their job choices, which is vital for decision-making (Pires & Andrade, 2022). The decision to retire and volition at work are career decisions, which would explain this correlation.

Two limitations should be noted. The first is that the SRCWR-*r* was previously studied at a national mixed-economy institution in the energy sector and the present study was carried out at a public university only in the state of Rio de Janeiro. Thus, it is not possible to make comparisons between a national sample and a regional one, nor is it possible to generalize its results in terms of the public and private sectors. It should be noted, however, that the scope of this research and its contribution is focused on investigating the reasons for continuing to work in a public university, which, given the number of service workers in this condition, already makes the manuscript relevant. As far as a future research agenda is concerned, we suggest a greater diversity in the sample of participants (professional categories, organizations, jobs and positions, and regions of Brazil and other countries) and checking whether the results are similar in more robust samples.

The second limitation concerns the size of the sample, which did not allow us to test the invariance of different age groups aged 50 and over. This study intended to test how a sample of service workers aged 50 or over at a public university behaved in terms of remaining working at the institution, even after the legal retirement age. Therefore, further research is needed to test age invariance, observing the behavior of subgroups of workers aged between 50 and 65 and over 65 when it comes to the desire to remain working or retire.

Despite the limitations pointed out, the correlations obtained between the SRCWR-r and the external variables related to it therefore indicate that the measure of reasons for continuing to work is reliable. These results confirm the evidence of the scale's convergent validity and, together with the results on the validity of its internal structure, reinforce the possibility of using the instrument in other similar samples.

The results of this study indicate that the Reduced version of the Scale of Reasons for Continuing to Work (SRCWR-*r*) showed evidence of validity in its internal structure and in relation to external variables, even demonstrating invariance at four levels of analysis (configural, metric, scalar, and residual) in a group of service workers aged 50 or over at a Federal University, meeting expectations regarding its replication in similar contexts. It is recommended that the SRCWR-*r* be used in other studies where work motivation in the retirement decision is a variable to be considered.

Final Considerations

The aim of this study was to find evidence of the validity of the reduced version of the Scale of Reasons for Continuing to Work in Retirement - SRCWR-*r*, based on internal consistency, internal structure, and the relationship with other external variables in a sample of 239 public service workers in the field of education. The SRCWR-*r* was applied and correlated with other measures to confirm two hypotheses: the reduced version of the Scale of Reasons for Continuing to Work confirmed the structure of the original SRCWR, which is also made up of seven factors: financial situation, physical conditions, working conditions, the importance of work, relationship at work, relationship with the organization and intellectual development and the SRCWR-*r* is invariant with regard to gender and position.

The authors recommend that further studies be carried out on SRCWR-*r* comparing different types of work and organizational settings, whether public or private, regional, national, or cross-cultural. Various actions and policies can be taken on the basis of identifying these motives within the corporate and educational world, so that older workers can glimpse the motives that lead them to continue their careers in organizations or outside them, in search of a bridging job with more flexible hours, entrepreneurship or even leaving the world of work. The SRCWR-*r* can be used as an initial diagnosis to gauge the reasons for the worker to continue in the world of work or even to develop more complex models, using other variables and constructs that may come into play in the retirement decision process.

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Fabiana da Conceição Pereira: Designed the study, conducted literature review, acquired and analyzed data, and drafted the manuscript.

Lucia Helena de Freitas Pinho França: Provided guidance on study design, conducted literature review, interpreted data and contributed to manuscript drafting.

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