The Spanish Journal of Psychology (2019), **22**, e23, 1–11.

doi:10.1017/sjp.2019.23

CAMBRIDGE UNIVERSITY PRESS

Validity Evidence of the Retirement Resources Inventory

Silvia Miranda Amorim and Lucia Helena de Freitas Pinho França

Universidade Salgado de Oliveira (Brazil)

Abstract. The current populational aging context requires that society reflect on the variables related with well-being and discuss ways of how to ensure them. The Conservation of Resources Theory (Hobfoll, 1989, 2002) posits that individuals who possess more material or social resources are more capable of resolving conflicts and dealing with stressful situations, thus maintaining good levels of well-being. However, there is a lack of instruments aimed at measuring the necessary resources for retirement well-being. The objective of this study was to translate and analyse the psychometric qualities of the Retirement Resources Inventory (RRI) (Leung & Earl, 2012) as applied to 1002 Brazilian retirees. Exploratory and confirmatory factor analysis were undertaken using two independent subsamples consisting of 401 and 601 retirees respectively. Two viable models arose from the exploratory analysis: A five-factor model, χ^2(gl) = 816.644 (271); CFI = 0.88; GFI = 0.98; RMSEA = 0.07; R^2 = 0.55; and a six-factor model, χ^2(gl) = 1028.291 (400); CFI = 0.88; GFI = 0.98; RMSEA = 0.03; R^2= 0.53, with good fit indices, but similar to each other. Confirmatory analysis pointed towards an instrument consisting of 29 items and five factors with good fit indices, $\chi^2(gl)$ = 1,274(364); CFI = 0.87; TLI: 0.86; RMSEA: 0.06, corroborating the model proposed by Wang and Shultz (2010). The analyses also highlighted the need for actions that take into account the gender, age and region of the country where the retiree lives. Future cross-cultural studies are recommended seeing that retirement planning is an emerging issue that affects the world as a whole.

Received 28 March 2018; Revised 18 March 2019; Accepted 1 April 2019

Keywords: planning, retirement, scales, well-being.

Population aging has been experienced in the majority of developed countries and is a subject that is being increasingly discussed in current, modern day Brazil (Boehs, Medina, Bardagi, Luna, & Silva, 2017). According to the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística* - IBGE, 2017), between 1960 and 2016, life expectancy in Brazil increased from 54 to 75 years. The prospect of rising life expectancy coincided with a high number of retirees being expected for the coming years. If, on one hand, an increase in the number of this population is to be celebrated, on the other, it requires that efforts be made to promote the well-being of these individuals once their working life comes to and end (França & Hershey, 2018).

The drastic changes to people's lifestyles caused by retirement make this a stressing event, and analysing it has gained increasing academic importance (Boehs et al., 2017; Dingemans & Henkens, 2014). As a psychological construct, retirement has been the object of study with regards to three aspects: (i) The decision-making process, where emphasis is placed on making a decision, followed by a decrease in work activities and an increase in leisure activities; (ii) the adjustment process, based on the characteristics of the transition process; and (iii) career transition, which prioritizes the ways career goals can be aligned with life as a retiree (Vogelsang, Shultz, & Oslon, 2018).

França and Vaughan (2008) argue that the retirement process is based on people's attitudes towards retirement, or how they perceive this event, either from a positive perspective (benefits or advantages) or from a negative perspective (losses or disadvantages). For these authors, the attitudes precede the decision to retire.

Szinovacz (2013) argues that the process can be understood by looking at the macro, meso and micro levels of context. The macro context takes into account aspects of culture, population structure and economic context. The meso context relates to the environment,

Correspondence concerning this article should be addressed to Lucia Helena de Freitas Pinho França. Universidade Salgado de Oliveira, UNIVERSO. Programa de Pós-graduação em Psicologia. Rua Marechal Deodoro 211, 2° andar, Bairro Centro. Niterói, Rio de Janeiro (Brazil). CEP: 24020–420.

E-mail: lucia.franca@gmail.com

The first author acknowledges The Coordination of Improvement of Personal Higher Education in Brazil (Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - CAPES - http://www.capes.gov.br) for the financial support received during her doctoral studies (2016 to 2019).

How to cite this article:
Amorim, S. M., & França, L. H. d. F. P. (2019). Evidence of validity of the Retirement Resources Inventory. *The Spanish Journal of Psychology, 22*. e23. Doi: 10.1017/sjp.2019.23

including infrastructure and the labour market, among others. And finally, the micro context consists of individual structure and experience.

For Hobfoll (1989, 2002), individual characteristics, be they material or social, and the conditions valued by individuals used to achieve their goals, can be defined as resources. Hobfoll (1989) proposed the conservation of resources theory be used together with other theories of psychosocial resources that distanced themselves from psychopathological models and took well-being and resilience into consideration (Baltes, 1987; Diener & Fujita, 1995). The theory suggests that people are motivated to acquire, protect and maintain what they have acquired and value, and stress is the result of any situation that reduces or threatens these resources, interfering with well-being (Hobfoll, 2002; Holmgrenn, Tirone, Gerhart, & Hobfoll, 2017).

From the point of view of Holmgrenn et al. (2017), the value of a resource is related to its level of requirement for survival. For example, primary resources such as food, health, and housing are values that are considered to be universal. Resources such as social support and employment are secondary, but increase in value when associated with the primary resources. On the other hand, values related with fulfilment and social status are tertiary seeing they are of cultural construction.

The conservation of resources theory is based on an integrated and long-term model that assumes resources are essential conditions for well-being (Heaven et al., 2015; Hobfoll, 1989). Such a posit supports results that confirm that changes to the standard of well-being of retirees were foreseen by individual variables, resulting in the continuation of studies on retirement that are not necessarily related with the decision-making process, but rather with adjustment or career transition (Henkens et al., 2017).

Based on the theory proposed by Hobfoll (1989, 2002), Wang and Shultz (2010) proposed a theory of resources specific to retirement. The authors stated that the capacity to totally attain essential needs includes physical, cognitive, motivational, financial, social and emotional resources (Wang & Shultz, 2010). These resources influence decision-making, preparation and the adaptation process for retirement, and other consequences resulting from retirement (Shultz & Wang, 2011; Yeung, 2018).

By developing this model, Wang and Shultz (2010) considered previous theories and results, seeing that most of the resources have been object of isolated research or included in decision-making, adjustment or well-being models during retirement. Among the various types of health evaluations, physical resources are the most used constructs with regards to their relevance to retirement (Amorim, França, & Valentini, 2017), together with financial condition and preparation (Hershey, van Dalen, Conen, & Henkens, 2017), with extensive literature published on the subject.

Bearing in mind that, subjacent to the concept of the theory that the loss of resources can be compensated, replaced directly or indirectly with other resources, or even accumulated (Hobfoll, 2002), well-being would vary during retirement according to the alteration of resources, resulting in a natural adjustment process inherent to the post-retirement trajectory (Wang & Shults, 2010). Heaven et al. (2015) add that, during the transition to retirement, well-being is a result of the capacity to mobilize resources to reach goals that are appropriate with the context and effectively respond to circumstantial changes.

Understanding the resources available to a given population means mapping out the needs and values of a culture (Hobfoll, 1989). Looking at retirement from the resources point of view may help to understand the various types of transitions, by analysing the relationship between resources and antecedents at a macro, organizational, work and individual level (Wang & Shultz, 2010).

In Brazil, although the issue of retirement is emerging and is cause for concern among researchers (Boehs et al., 2017), few studies apply the resources approach. Recent empirical studies, such as the one undertaken by Amorim et al. (2017), have highlighted primary resources and health as predictors of happiness for retirees. In a study undertaken by Bressan, Mafra, França, Melo and de Loretto (2013), health and the financial situation, which are related to the risk and survival dimensions, were considered to be essential for retirement well-being. Resources from other levels also seem to be valued by Brazilian retirees, as demonstrated by Nalin and França (2015) in a study where not only were relationships between social economic satisfaction and retirement well-being found, but also between resilience and well-being in this stage.

In national and international studies, sociodemographic variables have frequently been considered to be relevant for the analysis of individual resources. Zhang, Tao, Ueda, Wei, and Fang (2013) found differences between the financial resources between men and women, which are associated with their roles in society. The decrease of social relations at work, seen as a loss during retirement (França & Vaughan, 2008) and the level of social support during retirement may depend on conjugal status (Amorim et al., 2017; Cho & Lee, 2014) and socioeconomic level (Cho & Lee, 2014; Dingemans & Henkens, 2014; Vogelsang et al., 2018). Cognitive decline is to be expected at advanced ages (Bandura, 1997) as well as the search for information and access to knowledge is greater among those with

https://doi.org/10.1017/sjp.2019.23 Published online by Cambridge University Press

higher levels of education (Gutierrez & Hershey, 2014). Finally, the place of residence can offer different types of opportunities, needs and lifestyles, resulting in a different retirement experience according to the location of residence (Amorim et al., 2017, Cho & Lee, 2014; Henkens et al., 2017). In an attempt to identify which resources were necessary for retirement well-being, Leung and Earl (2012) developed the instrument *Retirement Resources Inventory* (RRI).

The instrument provides a comprehensive measurement, with good psychometric properties and empirically explores retirement resources. The RRI consists of 35 items and six domains (physical, financial, social, emotional, cognitive and motivational resources), as suggested by Wang and Shultz (2010).

The analyses performed by Leung and Earl (2012) suggested a three-domain instrument that took into account the predetermined content (emotional, cognitive or motivational resources, social resources and physical and financial resources) in which the resources measured by RRI represented an additional variance to retirement satisfaction and retirement adjustment, in addition to what was accounted for by the demographic variables gender, age, marital status, education, years retired, years working, income and number of dependants.

Considering the relevance of resources in retirement, the lack of instruments that measure them, the validity attributed to RRI and, at the same time, the characteristics of Brazilians at a micro, meso and macro level, the general objective of this study was to translate and analyse RRI psychometric qualities in a Brazilian Portuguese context, seeking evidence of validity of the instrument when applied to retirees by analysing their resources with regards to the existing sociodemographic differences. The specific objectives were: (i) To verify the internal validity of RRI in Brazil and maintain the theoretical six factor structure as proposed by Leung and Earl (2012) and Wang, and Shultz (2010); (ii) to verify if RRI is a homogeneous instrument with regards to gender, education, income and the Brazilian region, seeing that one of the important statistical assumptions is that the instruments should apply equally to the sample subjects (Franco, Valentini, & Iglesias, 2018); and (iii) to conduct an analysis of available resources based on the demographic characteristics of the sample.

Considering the third specific objective, it is essential to consider the results of the studies that highlight the influence of demographic variables on retirement satisfaction models, as observed in the research conducted by Cho and Lee, (2014); Dingemans and Henkens (2014); Gutierrez and Hershey (2014); and Price and Balaswamy (2009). Therefore, it was deemed appropriate to consider individual and demographic differences as a part of the individual resources to outline the following hypotheses:

H_1: Does gender difference exist between financial resources.
H_2: Would retirees who have a stable affective relationship benefit from greater social resources as opposed to single, divorced or widowed retirees.
H_3: Would younger retirees have greater cognitive resources available as opposed to older retirees.
H_4: The greater the individual's education, the greater their accumulated resources for retirement.
H_5: The better the financial situation of the retiree, the lower the retirement income loss during retirement and the fewer the dependants, the greater the accumulated resources during retirement would be.
H_6: Generally, would resources between retirees vary according to their place of residence.

Method

Procedures

Translation and adaptation

The RRI was translated using a translation and back-translation procedure, which consists of the translation of the items into Brazilian Portuguese, followed by their translation back into English and the comparison of these two versions, in order to verify the conceptual equivalence between the two English versions. As such, the scale was first translated by two Brazilian psychologists, fluent in English, both holding at least a master's degree in this field. The back-translation of these versions was carried out by a psychologist, Brazilian, residing in Europe and fluent in Portuguese and English. The comparison between the original version, the translation and back-translation, as well as the adaptation stage into the Brazilian context was carried out by a group of four Brazilian psychologists, holding at least a master's degree, and who conduct research either in the field of aging or in the field of retirement. During the adaptation stage, all items remained the same as in the original version, except Items 5, 8, 15 and 16, which were subjected to semantic adaptation to exemplify item content in order to cover the context of Brazilian retirees.

Data collection

The research was submitted to the Research Ethics Committee of the Salgado de Oliveira University. All participants were treated in accordance with the ethical procedures specified by the American Psychological Association (APA). After its approval, collection was conducted online by means of a GoogleDocs platform form. Retirees were invited to participate by means of invitations sent by message and e-mail, which were

https://doi.org/10.1017/sjp.2019.23 Published online by Cambridge University Press

obtained after publishing the form on social networks, and with the support of companies and associations, and by relying on the snowball effect, where participants forwarded the form to other retirees. Those who replied and agreed to participate in the survey were provided with a Free and Informed Consent Form containing all the necessary information relating to the procedure being conducted and ensuring the confidentiality and anonymity of the information. The only condition for acceptance in the research was to be retired.

Participants

One-thousand and two (1,002) retirees residing throughout Brazil took part in the research. As can be seen in Table 1 below, the sample consisted of more women than men (46%). Participants were between 44 and 88 years old and the average age was 62 years (DP = 6.59), with the majority being retirees between the ages of 56 and 65. With regards to education, the largest group had attended university and approximately one third (29.8%) had postgraduate degrees. One quarter had attended secondary school and only 3% had primary education. Regarding marital status, the greater part of participants reported being in a stable partnership, while the lesser part declared being single, divorced or widowed.

With respect to monthly family income, a considerable part of the participants earned between three to nine minimum wages, while the other, also a considerable part, earned more than 9 minimum wages. Just over one tenth of the participants (13.7%) earned less than three minimum wages.

At the time of data collection, the majority (74%) of the participants were permanently retired and one quarter still worked at the same job or at a different job, despite receiving a pension. Of those who worked, more than half worked less than 30 hours, and just less than half worked 30 hours or more per week. With regards to post-retirement loss of income, the majority of participants reported a loss of income of up to 40% upon retirement, and less than one tenth reported a loss of income greater than 60%. As for the number of dependants, the majority had up to three dependants.

Consistent with the distribution of the retired Brazilian population (IBGE, 2017), most of the participants lived in the south-eastern region (43.5%) of the country, followed by one quarter in the north-eastern region, 17.5% in the southern region, almost one tenth in the mid-western region and 5% in the northern region. To confirm the results of two different samples, the full sample was divided into two sub-samples during analysis, which were created by stratified randomization according to region of residence, in which the first consisted of 401 retirees and the other of 601 retirees. Information relating to the general sample and subsamples can be seen in Table 1.

Instruments

Personal Resources

RRI (Leung & Earl, 2012) was used, a Likert-type scale (with a variance between 1–5 in scales based on satisfaction, quantity, frequency or concordance) consisting of six domains. The domains were: (i) Physical resources (relating to perceived health, inexistence of deficiencies and high levels of energy), (ii) financial resources (relating to various income sources, such as personal savings, investments and government pensions), (iii) social resources (relating to the existence of sources of social support, such as marriage, family, friendship networks and associations, and the quality of those interactions), (iv) emotional resources (relating to the experience of positive emotions and emotional intelligence), (v) cognitive resources (relating to both, normal cognitive functions and adaptative cognition, such as self-esteem and optimism), and (vi) motivational resources (relating to the pursuit of objectives and establishing goals).

When it was created, the instrument was applied to a sample of 267 Australian retirees above 50 years of age, resulting in a three-factor structure consisting of the six predetermined factors, in which the first factor included items relating to emotional, cognitive or motivational resources, the second included social resources and the third, physical and financial resources. In general, the three factors showed good internal consistency (α = .81 and .89) and test-retest reliability (α = .83 – .88) within a period of one month.

Sociodemographic characteristics

In this study, the sociodemographic characteristics of participants were measured using eight items: gender (categorized between 0 and 1, in which 0 were women and 1 were men), age, education (according to the stages of the Brazilian education system), marital status (categorized between 1 and 2, in which 1 represented being married or in a stable relationship, and 2 represented being single, divorced or widowed), family income, number of dependants, post-retirement loss of income, working status (categorized between 1 and 3, in which 1 represents definitive retirement, 2 is a transition job and 3 is continued work) and the region of residence (categorized between 1 and 5, in which 1 represents the southern region, 2 is the south-eastern region, 3 the north-eastern region and 5 is the northern region).

Data analysis

With regards to data analysis procedures, the data base was first cleaned and any omissions or extreme

https://doi.org/10.1017/sjp.2019.23 Published online by Cambridge University Press

Table 1. *Characteristics of the Whole Sample and Subsamples*

Variables	Whole sample (n = 1002)	Subsample 1 (n = 401)	Subsample 2 (n = 601)
Gender			
Male	46.2	39.7	50.5
Female	53.8	60.3	49.5
Age			
Average (*SD*)	61.9 (6.6)	61.6 (6.3)	62.1 (6.8)
44 to 55 years	16.1	16.7	15.5
56 to 65 years	56.6	56.7	55.6
66 to 75 years	23.7	23.3	25.0
76 to 88 years	3.6	1.8	3.8
Marital Status			
Married or in a stable relationship	73.0	69.8	75.1
Single, divorced or widower	27.0	30.2	24.9
Education			
Alphabetization	0.3	-	0.5
Basic Education	2.6	1.7	3.2
Secondary Education	25.2	24.7	25.5
University	42.2	40.1	43.5
Post-graduation	29.8	33.4	27.3
Income			
Up to 1 minimum wage	1.8	1.7	1.8
Between 1 and 3 minimum wages	11.9	12.0	11.8
Between 3 and 6 minimum wages	23.5	22.4	24.2
Between 6 and 9 minimum wages	20.1	24.7	17.0
Between 9 and 12 minimum wages	16.4	14.5	17.7
Between 12 and 15 minimum wages	10.2	10.0	10.3
More than 15 minimum wages	16.2	14.7	17.2
Income Loss			
Less than 20%	34.9	33.4	35.8
Between 20% and 40%	37.8	35.9	39.0
Between 40% and 60%	18.6	20.9	17.0
Between 60% and 80%	6.0	5.2	6.5
More than 80%	2.8	4.5	1.7
Number of Dependants			
Average (Standard Deviation)	2.8 (1.4)	2.8 (1.5)	2.8 (1.4)
Up to 3 dependants	73.2	71.5	74.2
4 to 6 dependants	25.3	26.4	24.6
7 to 9 dependants	1.5	2.1	1.2
Work Activity			
Permanently Retired	74.2	76.1	73.0
Working less than 30h	12.3	12.7	12.0
Working more than 30h	13.5	11.2	15.0
Region			
Southern	17.5	18.0	17.2
South-eastern	43.5	43.4	43.5
Mid-western	9.4	9.0	9.7
North-eastern	24.9	24.9	24.8
Northern	4.8	4.7	4.8

situations were checked for, adding that no omissions were detected. Seeing this was the first time the RRI was applied in the Brazilian context, exploratory factor analysis (EFA) was conducted using a subsample of 401 participants, using the software Factor, version 10. Next, confirmatory factor analysis (CFA) was performed with a subsample of 601 participants with the objective of identifying the model with better fit, using

https://doi.org/10.1017/sjp.2019.23 Published online by Cambridge University Press

the software MPlus, version 6. For both EFA and CFA, the fit indices CFI, GFI, TLI, RMSEA and chi-squared were considered and evaluated as recommended by Byrne (2001) for well-adjusted models. Satisfactory fit cut-off criteria were based on CFI values close to 0.90, GFI values close to 0.90, TLI values close to 0.90 and RMSEA values close to, or less than 0.08.

With regards to internal validity and hypothesis testing, and aside from the average variance extracted, correlations between RRI factors and some of the socio-demographic variables were checked. As suggested by Miles and Shevlin (2001), low (between 0.10 and 0.29), moderate (0.30 and 0.49) and high (greater than 0.50) correlations were considered. Finally, in order to test the differences between averages and variance between groups, multiple group factorial analysis was conducted using the software R, version 3.1.2, RStudio package, version 0.99.892.

Results

Exploratory Factor Analysis

In order to confirm or refute the factor structure of the instrument previously tested on Australian retirees, exploratory factor analysis (Leung & Earl, 2012) was performed using the 401 retiree subsample. Parallel analysis, which compares the values of the real data eigenvalues with the random data eigenvalues (Monte Carlo method, 500 replications), and the Hull method, which includes all the existing data in the least possible number of points (Hauck, 2016), pointed towards the three- and four-factor solutions. Additional testing of the five- and six-factor models was then performed to check if they supported, totally or partially, the results produced by Leung and Earl (2012) and Wang and Shultz's (2010) theory. The weighted oblimin rotation, which is more adequate for the psychological measurement of complex factor loads (Hauck, 2016), was used.

During the exploratory process, six items showed factorial loads below 0.30 in one or more factors. Items 17, 22, 23, 31, 34 and 35 were removed from the original instrument (Leung & Earl, 2012) and referred to tangible support received, perceived control, self-esteem, effort, stagnation and unrealistic goals.

Among the four models tested, the three-factor model, $\chi^2(gl)$ = 1,378.183(375); CFI = 0.73; GFI = 0.96; RMSEA = 0.08; variance = 43%, and four-factor model, $\chi^2(gl)$ = 1,146.144(347); CFI = 0,83; GFI = 0,96; RMSEA = 0,05; variance = 48%, fell short of expectations. The five-factor model, $\chi^2(gl)$ = 816.644(271); CFI = 0.88; GFI = 0.98; RMSEA = 0.07; variance = 55%, and the six-factor model, $\chi^2(gl)$ = 1,028.291(400); CFI = 0.88; GFI = 0.98; RMSEA = 0.03; variance = 53%, showed the best adjustment indices, and were very similar. In the five-factor model, the variance percentages obtained were 29.8%, 10.7%, 9.6%, 5.8% and 4.7%, respectively. In the six-factor model, the variance percentages obtained were 28.3%, 10.4%, 9.8%, 5.9%, 4.5% and 4.2%, respectively.

Confirmatory Factor Analysis

In order to assess model, fit of the factorial models obtained in the analysis, confirmatory factor analysis was conducted on the subsample consisting of 601 retirees. The five- and six-factor models were tested using a Weighted Least Squares Mean and Variance Adjusted (WLSMV) estimator, which is considered to be an improvement over the Weighted Least Squares (WLS) estimator seeing it takes into account that the ordinal variables obtained result from a set of underlying continuous variables with lower skewing (Beauducel & Herzberg, 2006). The five-factor model showed better fit indices, $\chi^2(gl)$ = 1,274(364); CFI = 0.87; TLI = 0.86; RMSEA = 0.06, than the six-factor model, $\chi^2(gl)$ = 1,597(3390); CFI = 0.83; TLI = 0.81; RMSEA = 0.07.

The final structure of the instrument, as seen in Table 2, consisted of five factors and 29 items. All items produced factorial loads greater than 0.50, except one item in factor three and two items in factor five, providing factorial loads $\geq$ 0.40. The structure found seems to support the results obtained by Leung and Earl (2012), the first factor relating to physical or health resources, the second relating to financial resources, followed by social resources, emotional resources, and the fifth and final factor relating to cognitive and emotional resources.

Model Validity and Hypothesis Testing

Once the model with the best fit was identified using structural equation modelling, the average variance extracted (AVE) and the correlations between latent variables (Table 3) were shown. Average variance extracted (AVE) showed that the factors accounted, on average, for more than 30% of item variance. With regards to the relationship between variables, on can see that AVE values were, for the most part, greater than the coefficients of determination (r^2) between latent variables (e.g. AVE > r^2). These results suggest the absence of multicollinearity, except for the multicollinearity found between factor four and five. The RRI factors are latent variables that suggest internal structure validity.

To check for evidence of validity of the construct (Pasquali, 2007) and perform hypothesis testing, correlations between the five factors and the variables: Gender, education, family income, number of dependants and post-retirement income loss, were performed. As can be seen in Table 4, all included variables showed correlation with at least one factor, which confirms the evidence of validity of the instrument's

https://doi.org/10.1017/sjp.2019.23 Published online by Cambridge University Press

Table 2. *RRI Factor Structure consisting of Five Factors and 29 Items (n = 601)*

Item	F1	F2	F3	F4	F5
1. I would consider my general health condition to be	.69				
2. I am ... affected by one or more major physical illnesses (e.g. heart disease, diabetes, foot problems, arthritis, hypertension).[a]	.59				
3. I am ... affected by one or more mental disorders (e.g. dementia, depression, anxiety disorder, panic disorder).[a]	.56				
4. I have ... energy to carry out daily activities or activities that I am interested in.	.69				
5. I possess ... income to support my and/or my family's living expenses.		.72			
6. I have ... financial support from my personal savings.		.87			
7. I have ... financial support from my investments.		.80			
8. I have ... financial support from my pension fund (state, company or private).		.68			
9. I have ... friends whom I can interact with regularly.			.74		
10. I have ... family members whom I can interact with regularly.			.71		
11. I know ... people from various sources (e.g. religious groups, leisure groups, sporting teams, volunteer groups, work).			.74		
12. I would consider interactions with friends (in general) to be ... supportive.			.70		
13. I would consider interactions with family members (in general) to be ... supportive.			.65		
14. I would consider interactions with acquaintances from various sources (e.g. religious groups, leisure groups, sporting teams, volunteer groups, work) to be ... supportive.			.70		
15. I ... receive informational support (receiving information or advice from someone on handling difficult circumstances, rectifying a situation, following through with a solution, following-up on a difficult event, and receiving constructive criticism).			.52		
16. I ... receive emotional support from others, (someone who is available to listen, to acknowledge my feelings, to support me in stressful situations, to act as a confidant, and to express interest in my well-being).			.48		
18. I experience ... positive emotions (e.g. interested, excited, strong, enthusiastic, proud, determined, alert, inspired, attentive, active).				.55	
19. I have ... ability to perceive my and/or the emotions of others accurately.				.72	
20. I possess ... knowledge about how emotions vary or influence behaviour.				.71	
21. In general, I feel that I have ... ability to use emotions to facilitate my thoughts and communication.				.73	
24. I ... forget where I have been or things I have done in the recent past. [a]					.51
25. I have ... ability to recall events that happened a while ago.					.56
26. I have ... ability to recall meanings and spellings of different words/concepts.					.62
27. I have ... ability to acquire new knowledge/skills.					.73
28. I would consider my speed of processing information (e.g. numbers, texts) to be generally ...					.71
29. I have ... ability to understand and solve problems.					.74
30. I have ... ability to perform good decision making.					.66
32. Even when things seem hopeless, I keep fighting to reach my goals.					.40
33. I can easily adapt to changes in goals, plans or circumstances.					.47

Note: [a] Items with inverted factorial loads. F1 = Physical resources; F2 = Financial resources; F3 = Social resources; F4 = Emotional resources; F5 = Cognitive and motivational resources.

internal structure. These results partially confirmed Hypotheses 1 and 6, fully confirmed Hypotheses 2, 4 and 5 and refuted Hypothesis 3.

Invariance Analysis

Invariance Analysis was conducted to test average and invariance differences between the groups of the following variables: Gender, education, family income and region of the country. According to Franco et al. (2018), configural invariance consists of a model with a fixed number of factors and items, metric invariance consists of fixed factorial loads and scalar invariance consists of fixed intercepts.

The chi-squared test results relating to metric and scalar invariance were significant with regards to the gender, age, marital status, education and region of the country variables, indicating the heterogeneity of these variables. Nevertheless, the fit indices of the models did not fit the data, supporting the invariance model. These results can be seen in Table 5.

https://doi.org/10.1017/sjp.2019.23 Published online by Cambridge University Press

Table 3. *Average Variance Extracted (AVE), Correlations between RRI Factors (Below Diagonal) and the Coefficient of Determination (Above Diagonal) (n = 601)*

	AVE	1	2	3	4	5
F1 - Physical Resources	.39		*.20*	*.16*	*.18*	*.23*
F2 - Financial Resources	.58	.45*		*.11*	*.09*	*.07*
F3 - Social Resources	.44	.40*	.34*		*.30*	*.14*
F4 - Emotional Resources	.46	.42*	.30*	.55*		*.54*
F5 - Cognitive and Motivational Resources	.37	.48*	.27*	.37*	.74*	

Note: *$p < .05$.

Table 4. *Correlations between the Five RRI Factors and Sociodemographic Variables (n = 601)*

Variables	F1	F2	F3	F4	F5
Gender	–.02	–.10*	.11*	.12*	–.01
Age	–.03	.01	.01	–.10*	-.13*
Marital Status	.07	.12*	.01	–.02	.01
Education	.19*	.22*	.20*	.27*	.31*
Family Income	.27*	.54*	.19*	.26*	.29*
Post-retirement loss of income	–.15*	–.27*	–.08	.01	.04
Number of Dependants	–.10*	–.08*	.01	–.02	–.01
Work Activity	.07	.05	.15*	.08	.06
Region of the Country	–.02	–.02	–.01	–.15*	–.12*

Note: F1 = Physical resources; F2 = Financial resources; F3 = Social resources; F4 = Emotional resources; F5 = Cognitive and motivational resources.

*$p < .05$.

Table 5. *Configural, Metric and Scalar Invariance for Gender, Education, Family Income and Region of the Country (n = 601)*

Variables	χ^2	CFI	TLI	RMSEA
Gender				
Configural	1,973.2	.82	.81	.07
Metric	1,993.5*	.82	.81	.07
Scalar	2,076.4*	.82	.81	.07
Age				
Configural	4,392.9	.66	.63	.11
Metric	4,505.7*	.66	.64	.11
Scalar	4,594.3	.66	.65	.11
Marital Status				
Configural	1,899.4	.83	.82	.07
Metric	1,920.0	.83	.82	.07
Scalar	1,944.9	.83	.83	.07
Education				
Configural	4,344.0	.66	.62	.11
Metric	4,479.5*	.65	.63	.11
Scalar	4,605.0*	.64	.64	.11
Family Income				
Configural	4,359.0	.70	.56	.12
Metric	4,471.0	.70	.58	.10
Scalar	4,562.1	.70	.59	.10
Region				
Configural	5,986.6	.60	.66	.12
Metric	6,175.4*	.60	.68	.12
Scalar	6,422.0*	.58	.69	.12

Note: *$p < .005$.

Discussion

In order to translate and analyse the psychometric qualities of the Retirement Resources Inventory - RRI into Brazilian Portuguese, determine evidence of validity of the instrument with regards to Brazilian retirees and perform an analysis of the sample's available resources, this study counted on the participation of 1,002 retirees representing all regions of the country. To test the hypotheses, exploratory and confirmatory factor analysis were conducted as well as Pearson's correlation coefficient and invariance analysis.

The structure found in the Brazilian sample, consisting of 29 items and five factors (physical resources, financial resources, social resources, emotional resources and cognitive and motivational resources), does not fully corroborate the structure suggested by Leung and Earl (2012), in which the instrument consisted of three factors (emotional, cognitive and motivational resources, social resources and physical and financial resources) and 35 items. This result seems to demonstrate a greater alignment with the initial theory suggested by Wang and Shultz (2010), expected when tested on larger samples.

Considering the results, Brazilians seem to distinguish social and emotional resources from the other resources, perhaps due to the importance attributed to them in our society, including retirees (Amorim et al., 2017; França & Vaughan, 2008). Despite this, the difference is not substantial, since both structures encompass the six factors (physical, financial, social, emotional, cognitive and motivational resources) suggested by Wang and Shultz's (2010) theory. It was possible to assess both the internal and external validity of the instrument by means of AVE and correlations respectively, thus meeting the first specific objective.

On the subject of the instrument's structure, this study highlights the multidimensionality and complexity of the construct by indicating five resource factors that are important to retirement, as already suggested in previous studies (Leung & Earl, 2012; Wang & Shultz, 2010). The development of practices, policies and research should encompass resources of different natures, giving priority to primary resources (health and finance), which have a greater impact on well-being (Amorim et al., 2017; Bressan et al., 2013; Nalin & França, 2015). This reality is particularly true

https://doi.org/10.1017/sjp.2019.23 Published online by Cambridge University Press

in Brazilian culture, where citizens are permanently faced with the urgency of solving problems that should have been solved in the past (França & Hershey, 2018). Precisely because of this, it is necessary to encourage that primary resources be planned for over the long-term, not just a few years before retirement. Nevertheless, even if they are successful in planning for primary resources, other resources become relevant with regards to retirement well-being.

Invariance analysis allowed us to argue that the instrument is equally valid for the full sample, considering the second specific objective that called for the adaptation and validation of the instrument in Brazil. As such, it can be concluded that the instrument has been successfully adapted into Brazilian Portuguese and shows evidence of validity for use with the retired Brazilian population.

The instrument can be used, for example, to identify the resources of groups preparing for retirement, in which the focus of the meetings could fall on the resources in which the pre-retirees scored the lowest (França & Vaughan, 2008; Heaven et al., 2015). For those who are already retired and did not have the opportunity to think about the moment they would stop working, as is the case of involuntary retirement, it is equally important to identify the resources that need to be developed, in a group or individually (Dingemans & Henkens, 2014; Vogelsang et al., 2018). At a macro level, the current demographic context urges for actions that can achieve economic and practical strength when properly planned (Wang & Shultz, 2010).

The correlations conducted partially support the first hypothesis, seeing that the gender variable correlated negatively with the second factor and positively with the third and fourth factors, which shows a tendency for men to have greater financial resources and women greater social and emotional resources. This tendency makes sense among the Brazilian retirees, where even today men have more jobs and are, for the most part, the family income earners (IBGE, 2017), while family activities are the responsibility of women (França, Stepansky, & Amorim, 2017). Furthermore, Price and Balaswamy (2009) point out the importance given by retired women to social and psychological aspects, such as voluntary work and self-esteem. It is possible that this situation will change in the coming years and be reflected in education, family income and responsibilities due to the gender equality movement (França et al., 2017).

The age variable showed a negative correlation with the fourth and fifth factors, emphasizing that the older the individual answering, the lower the levels of emotional and cognitive or motivational resources, which supports the second hypothesis. In addition to the normal decline in cognitive abilities due to aging (World Health Organization - WHO, 2005), Bandura (1997) stated that the decline of the individual's motivational sense can cause cognitive and behavioural losses, especially in the absence of stimulation, which may justify the results found. This refers to the need for the constant updating of knowledge in older individuals and the opportunities for intergenerational contact and exchange, where the young and old benefit from each other (França & Hershey, 2018).

The marital status variable showed a positive correlation only with the second factor, showing that financial resources increase in a stable relationship situation, thus not supporting the third hypothesis. Despite this, the results show higher income concerns when a spouse exists, supporting Hershey et al. (2017) in that the loss of a partner, either by divorce or death, can lead to a decline in both primary and secondary resources.

All RRI factors presented positive and significant correlations with regards to education and income, confirming the importance of these variables that had already been highlighted in international studies (Cho & Lee, 2014; Gutierrez & Hershey, 2014; Hershey et al., 2017). Education directly influences qualification and can determine retirement-related decisions (Cho & Lee, 2014), and financial independence in retirement directly contributes to the quality of life and the achievement of retirees' goals (Gutierrez & Hershey, 2014; Vogelsang et al., 2018). In Brazil, IBGE confirms that there is a positive relationship between the level of education and the income of Brazilian workers (IBGE, 2017). These results, together with the correlations found between the number of dependants and retiree income loss and social and financial resources, confirm the fourth and fifth hypotheses.

The retirement work activity variable also seems to have some influence on the social dimension, i.e. those who are still working have greater social resources. The return to work after retirement can be found in the recent study conducted by Guerson, França and Amorim (2018).

Finally, the region variable showed a negative correlation with factors four and five of the RRI, suggesting that, the further north a retiree lives, the lower the levels of emotional, cognitive and motivational resources. As suggested by the IBGE (2017), part of the residents in the northern and north-eastern states have low income households, which could result in lower levels of secondary resources considering the influence of the financial situation on the acquisition and maintenance of resources related to well-being at this stage of life (Gutierrez & Hershey, 2014; Hershey et al., 2017; Henkens et al., 2017).

Despite the referred contributions, this study has some limitations. The first limitation is that the digital

https://doi.org/10.1017/sjp.2019.23 Published online by Cambridge University Press

data collection method used allows for duplicate responses by the participants or for accidental duplication, and may compromise the results. The second limitation is that the sample, although it contains participants from all regions of the country, is not fully representative seeing that the collection was made through the internet. Although there were 1,002 participants, the education of this sample was higher than the Brazilian norm (IBGE, 2017), and future interinstitutional studies will be required to improve on this aspect and obtain more general conclusions. Finally, using a more representative sample could avoid the complete mismatch of the data matrix model, according to the margin recommended by Byrne (2001) for fit indicators (CFI > 0.90 and TLI > 0.90).

It is suggested that longitudinal studies be conducted with workers who are 5 or 10 years away from retirement and workers who have been retired for 5 or 10 years in order to compare the progress of resources and well-being after entering this stage. New validations of this instrument in Brazil are also recommended, using methods such as convergent validity and temporal stability, as well as in other countries, to infer what the required global resources are to plan for retirement and what the specific resources are with regards to the socio-cultural context where the participants are inserted.

The general and specific objectives of this study were met. The RRI was translated into Brazilian Portuguese with evidence of validity and homogeneity between the sample subjects. Analysis of the resources available allowed for the conclusion that actions focusing on the development of retirement resources should take into account gender, age, education, income and the region of the country where the retiree lives and if he plans on retiring definitively or plans to keep working. Therefore, retirement planning should take into account gender differences and the need to develop resources, giving priority to older individuals with lower education and income. The northern and north-eastern regions of Brazil are in need of actions related with emotional, cognitive and motivational resources.

In their drive for the theoretical advancement of this field, any future studies should investigate the impact of these resources on retirement well-being, as suggested by Hobfoll (2002), deepening our understanding of regional and gender specificities by considering their implications with regards to both, resources and well-being, during this stage. In this study, recommendations and suggestions were made with regards to retirement resource planning, in which the wish to stimulate workers to create primary resources well before their transition into retirement is highlighted. The development of secondary resources, on the other hand, should be higher in regions of lower income, where access to information is scarce and post-retirement opportunities are limited. Furthermore, emphasis is placed on the continuation of work activities with reduced working hours in light of the social resources they provide.

Hopefully, this study will promote the development of the Retirement Resources construct and inspire more research. In methodological and practical terms, this RRI validation may be used by work organisations to measure the resources required for retirement, seeing that the instrument can provide basic information that can be included in retirement preparation programmes.

References

Amorim S. M., França L. H. d. F. P., & Valentini F. (2017). Predictors of happiness among retired from urban and rural areas in Brazil. *Psicologia: Reflexão e Crítica*, *30*(2). https://doi.org/10.1186/s41155-016-0055-3

Bandura A. (1997). *Self-efficacy: The exercise of control*. New York, NY: Freeman.

Baltes P. B. (1987). Theoretical propositions of lifespan developmental psychology: On the dynamics between growth and decline. *Developmental Psychology*, *23*, 611–626. https://doi.org/10.1037/0012-1649.23.5.611

Beauducel A., & Herzberg P. Y. (2006). On the performance of maximum likelihood versus means and variance adjusted weighted least squares estimation in CFA. *Structural Equation Modeling*, *13*(2), 186–203. https://doi.org/10.1207/s15328007sem1302_2

Boehs S. d. T. M., Medina P. F., Bardagi M. P., Luna I. N., & Silva N. (2017). *Revisão da literatura latino-americana sobre aposentadoria e trabalho: Perspectivas psicológicas* [Review of Latin American literature on retirement and work: Psychological perspectives]. *Revista Psicologia Organizações e Trabalho*, *17*(1), 54–61. https://doi.org/10.17652/rpot/2017.1.11598

Bressan M. A. L. C., Mafra S. C. T., França L. H. d. F. P., Melo M. S. d. S., & de Loretto M. d. D. S. (2013). Bem-estar na aposentadoria: O que isto significa para os servidores públicos federais? [Retirement well-being: What does this means to federal civil servants?]. *Revista Brasileira de Geriatria e Gerontologia*, *16*(2), 259–272. https://doi.org/10.1590/S1809-98232013000200006

Byrne B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications, and programing*. New Jersey, NJ: Lawrence Erlbaum Associates.

Cho J., & Lee A. (2014). Life satisfaction of the aged in the retirement process: A comparative study of South Korea with Germany and Switzerland. *Applied Research in Quality of Life*, *9*(2), 179–195. https://doi.org/10.1007/s11482-013-9237-7

Dingemans E., & Henkens K. (2014). Involuntary retirement, bridge employment, and satisfaction with life: A longitudinal investigation. *Journal of Organizational Behavior*, *35*(4), 575–591. https://doi.org/10.1002/job.1914

Diener E., & Fujita F. (1995). Resources, personal strivings, and subjective well-being: A nomothetic and idiographic approach. *Journal of Personality and Social Psychology*, *68*, 926–935. https://doi.org/10.1037/0022-3514.68.5.926

França L. H. F., & Hershey D. A. (2018). Financial preparation for retirement in Brazil: A cross-cultural test of the interdisciplinary financial planning model. *Journal of Cross-Cultural Gerontology*, *33*(2), 43–64. https://doi.org/10.1007/s10823-018-9343-y

França L. H. d. F. P., Stepansky D., & Amorim S. (2017). Work-life balance in a scenario of Brazilian change: Theoretical aspects and possibilities of interventions. In E. Neiva, C. Torres, & H. Mendonça (Eds.), *Organizational psychology and evidence-based management* (pp. 121–133). Cham, Switzerland: Springer.

França L. H. d. F. P., & Vaughan G. (2008). Ganhos e perdas na aposentadoria: Percepção dos executivos brasileiros e neozelandeses [Gains and losses: Attitudes of Brazilian and New Zealand executives towards retirement]. *Psicologia em Estudo*, *13*(2), 207–216. https://doi.org/10.1590/S1413-73722008000200002

Franco V. R., Valentini F., & Iglesias F. (2018). Introdução à análise fatorial confirmatória [Introduction to confirmatory factor analysis]. In B. F. Damásio & J. C. Borsa (Eds.), *Instrumentos psicológicos: Manual de desenvolvimento* [Psychological instruments: Development manual] (pp. 295–322). Sao Paulo, Brazil: Vetor.

Guerson L. R. d. S. C., França L. H. d. F. P., & Amorim S. M. (2018). Life satisfaction of retirees who are still working. *Paidéia*, *28*, e2812. https://doi.org/10.1590/1982-4327e2812

Gutierrez H. C., & Hershey D. A. (2014). Age differences in expected satisfaction with life in retirement. *The International Journal of Aging and Human Development*, *78*(2), 93–114. https://doi.org/10.2190/AG.78.2.a

Hauck N. (2016). Editorial. *Avaliação Psicológica*, *15*(2). https://doi.org/10.15689/ap.2016.1502.ed

Heaven B., O'Brien N., Evans E. H., White M., Meyer T. D., Mathers J. C., & Moffatt S. (2015). Mobilizing resources for well-being: Implications for developing interventions in the retirement transition. *The Gerontologist*, *56*(4), 615–629. https://doi.org/10.1093/geront/gnu159

Henkens K., van Dalen H. P, Ekerdt D. J., Hershey D. A., Hyde M., Radl, Zacher H. (2017). What we need to know about retirement: Pressing issues for the coming decade. *The Gerontologist*, *58*, 805–812. https://doi.org/10.1093/geront/gnx095

Hershey D. A., van Dalen H. P., Conen W., & Henkens K. (2017). Are 'voluntary' self-employed better prepared for retirement than 'forced' self-employed? *Work, Aging and Retirement*, *3*(3), 243–256. https://doi.org/10.1093/workar/wax008

Hobfoll S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, *44*, 513–524. https://doi.org/10.1037/0003-066X.44.3.513

Hobfoll S. E. (2002). Social and psychological resources and adaptation. *Review of General Psychology*, *6*, 307–324. https://doi.org/10.1037/1089-2680.6.4.307

Holmgrenn L., Tirone V., Gerhart J., & Hobfoll S. E. (2017). Conservation of resources theory: Resource caravans and passageways in health contexts. In C. L. Cooper & J. C. Quick (Eds.), *The handbook of stress and health: A guide to research and practice* (pp.443–457). New Delhi, India: Wiley Blackwell.

Instituto Brasileiro de Geografia e Estatística - IBGE (2017). *Síntese dos Indicadores Sociais:Uma análise das condições de vida da população brasileira* [Synthesis of Social Indicators: An analysis of the living conditions of the Brazilian population]. Brasilia, Brazil: Author.

Leung C. S. Y., & Earl J. K. (2012). Retirement Resources Inventory: Construction, factor structure and psychometric properties. *Journal of Vocational Behavior*, *81*, 171–182. https://doi.org/10.1016/j.jvb.2012.06.005

Miles J., & Shevlin M. (2001). *Applying regression & correlation: A guide for students and researchers.* London, UK: Sage Publications.

Nalin C. P., & França L. H. d. F. P. (2015). The importance of resilience for retirement well-being. *Paidéia*, *25*(61), 191–199. https://doi.org/10.1590/1982-43272561201507

Pasquali L. (2007). Validade dos testes psicológicos: Será possível reencontrar o caminho [The validity of the psychological tests: Is it possible to find the way again?]. *Psicologia: Teoria e Pesquisa*, *23*, 99–107.

Price C. A., & Balaswamy S. (2009). Beyond health and wealth: Predictors of women's retirement satisfaction. *The International Journal of Aging and Human Development*, *68*(3), 195–214. https://doi.org/10.2190/AG.68.3.b

Shultz K. S., & Wang M. (2011). Psychological perspectives on the changing nature of retirement. *American Psychologist*, *66*(3), 170–179. https://doi.org/10.1037/a0022411

Szinovacz E. M. (2013). A multilevel perspective for retirement research. In M. Wang (Ed.), *The Oxford handbook of retirement* (pp. 152–173). New York, NY: Oxford University Press.

Vogelsang E. M., Shultz K. S., & Oslon D. A. (2018). Emotional well-being following a later life career change: The roles of agency and resources. *The International Journal of Aging and Human Development*, *0*(00), 1–20. https://doi.org/10.1177/0091415017745972

Yeung D. Y. (2018). Adjustment to retirement: effects of resource change on physical and psychological well-being. *European Journal of Ageing*, *15*(3), 301–309. https://doi.org/10.1007/s10433-017-0440-5

Wang M., & Shultz K. S. (2010). Employee retirement: A review and recommendations for future investigation. *Journal of Management*, *36*, 172–206. https://doi.org/10.1177/0149206309347957

World Health Organization - WHO (2005). *Envelhecimento ativo: uma política de saúde* [Active aging: A health policy]. Brasilia, Brazil: Organização Pan-Americana da Saúde.

Zhang S.-C., Tao F.-B., Ueda A., Wei C.-N., & Fang J. (2013). The influence of health-promoting lifestyles on the quality of life of retired workers in a medium-sized city of Northeastern China. *Environmental Health and Preventive Medicine*, *18*(6), 458–465. https://doi.org/10.1007/s12199-013-0342-x