

**VALIDITY AND RELIABILITY EVIDENCE OF A SHORT VERSION OF THE
PUBLIC HUMAN RESOURCE MANAGEMENT PRACTICES SCALE: A CROSS-
COUNTRY COMPARISON**

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1. INTRODUCTION

Human resource management (HRM) practices in the public sector are unique, requiring customized measurement scales specific to this context. Boon et al. (2019) analyzed over 500 articles published up to 2017 on HRM scales and found no studies that proposed or adapted an HRM scale for the public sector, highlighting a gap in the scientific literature.

Building on this gap and recognizing that public and private organizations face different challenges, such as institutional objectives, bureaucracy, job stability, and accountability (Boselie et al., 2021; Jakobsen et al., 2023), Demo et al. (2024) proposed a measurement model with strong evidence of validity and reliability within the public service context, called the Public HRM Practices Scale (PHRMPS).

Therefore, based on validated scales with solid theoretical and psychometric foundations, cross-country comparisons are crucial for providing evidence of external validity, enabling these scales to be used across different nations and cultures. Such scales are adapted and validated in new contexts (Stefana et al., 2025).

Accordingly, the present study aims to adapt the PHRMPS developed by Demo et al. (2024), originally validated in Brazil, to the context of the Spanish public sector; to examine evidence of the instrument's validity and reliability; to compare the scale's structure and measurement properties across samples from Spain and Brazil; and to propose a shortened version of the instrument, since shorter measures are increasingly needed to improve response rates, data completeness, and participants' motivation to respond (Marcus et al., 2007; Robb et al., 2017). To accomplish these objectives, the decentering technique will be used for the adaptation process (Pérez-Nebra et al., 2023a), and the original four-factor structure of the scale will be evaluated.

These objectives represent the theoretical contributions of this study. Regarding practical implications, public managers and organizations will have access to a culturally adapted and scientifically validated tool, which can support the development of more effective strategies for designing and implementing human resource management practices focused on improving the employee experience and enhancing institutional outcomes.

2. THEORETICAL BACKGROUND

Brazil and Spain have relatively recent constitutions—1988 and 1978, respectively—which emerged in similar contexts of democratic transition (Fuentes, 2021; Lorencini, 2022). Both countries incorporate principles of efficiency and effectiveness as key elements of public administration (Constitución Española, 1978; Constituição da República Federativa do Brasil, 1988). This managerial approach reflects influences from the New Public Management movement of the early 1980s and, more recently, the New Public Governance model, both of which have been adopted by various nations to modernize the state (Osborne, 2017). Consequently, the effectiveness of public policies depends on coherent human resource management practices capable of fostering performance and motivation and aligning public servants with organizational goals (Demo et al., 2024).

Several studies (Boselie et al., 2021; Leisink et al., 2020; Villajos et al., 2020) examine the differences between public and private organizational contexts regarding human resource management (HRM) practices. However, these distinctions are rarely tested empirically, with most studies assuming that the structure of HRM practices is the same across both sectors (Blom et al., 2018), which is a significant limitation. In Spain, although recent research has addressed this topic (Tordera et al., 2020; Villajos et al., 2019a; Villajos et al., 2019b; Villajos et al.,

2020), they have not specifically focused on evaluating HRM practices in public organizations. Nevertheless, the Public Human Resource Management Practices Scale (PHRMPS), developed by Demo et al. (2024) and focused on the Brazilian public sector, is the only piece of empirical evidence identified in the literature and offers a promising starting point for testing in the Spanish context.

2.1 Human Resource Management Practices in the Public Sector

Boselie et al. (2021) define human resource management (HRM) practices as managerial decisions that shape employment relationships to achieve desired outcomes. In other words, HRM practices are actions aligned with organizational goals and strategies that translate HR policies into structured activities and routines related to human relations, aiming to improve well-being and achieve targeted results (Demo et al., 2024). The prevailing view in the literature is that HRM practices contribute to healthier and more sustainable work environments and better organizational outcomes (Boon et al., 2019; Boselie et al., 2019; Villajos et al., 2019).

From a broader perspective, contextual, political, and cultural differences—such as legal and budget constraints, bureaucracy, public opinion, and complex demands—require increased attention from public managers when designing and implementing HRM practices (Jakobsen et al., 2023; Leisink et al., 2021). These particularities affect the autonomy, flexibility, job satisfaction, and freedom to innovate among public servants (Cooke et al., 2022). They also influence the development of training programs, considering the nature of organizational goals in the public sector, which are characterized by less tangibility and more complex measurement (Blom et al., 2018). Furthermore, Van der Wal (2015) questions the very parameters used to define performance in the public sector, arguing that they should include not only efficiency, well-being, progress, and innovation but also the absence of corruption.

These differences also influence both organizational and individual levels. Public organizations, for example, face difficulties in developing initiatives that balance performance—such as result-oriented management and cost efficiency—with employee well-being and satisfaction (Garcia-Juan et al., 2020). Meanwhile, public servants are motivated by an inherent and altruistic desire to serve the public good, often referred to as Public Service Motivation (Ritz et al., 2016; Van der Wal, 2015).

Given this challenging context, recent research has highlighted that selecting HRM practices should form an integrated system of actions rather than isolated measures. Therefore, the key is determining which practices should be prioritized in terms of effort and investment to reach the desired outcomes, while still considering workplace well-being and organizational sustainability (Guest, 2025). Boon et al. (2019) provide guidance, such as using more typical configurations, analyzing interactions among practices, and identifying sufficient and necessary practices for the system's effectiveness.

In this context, the study by Boon et al. (2019) identified traditional HRM practices that can serve as a basis for creating systemic HRM models, including job design, selection, training and development, participation and autonomy, compensation incentives, and performance appraisal. The arrangement of these practices can differ depending on the system's strategic goals, such as those focused on high performance, involvement, or organizational commitment, and the institutional setting itself, allowing for the addition of other practices (Boon et al., 2019). After all, the literature on human resource management practices has mostly been based on the private sector, which aims for profit, unlike the public sector and social organizations, which seek to serve the collective interest (Villajos et al., 2020). As a result, concepts like performance and commitment might be understood differently across these two spheres, requiring careful consideration when designing such systems (Guest, 2025).

In this context, the development of the Public HRM Practices Scale (PHRMPS) was based on previous studies (Demo et al., 2012, 2014), whose models included six widely used

practices in the literature (Recruitment and Selection; Involvement; Training, Development, and Education; Working Conditions; Competency-Based Performance Appraisal; and Compensation and Rewards) but were not directly applicable to the public sector. Therefore, to adapt the instrument to this specific context, a preliminary qualitative phase was conducted involving experts in public management. During this phase, Recruitment and Selection and Compensation and Rewards practices mandated by law were removed from the proposal, as they are not subject to managerial discretion. The subsequent quantitative phase, aimed at gathering evidence of validity and reliability, revealed a four-factor structure with 19 items, designed to cover practices related to performance (Training & Development and Competency and Performance Appraisal) as well as social support practices, which are more oriented toward relationships and workplace well-being (Relationship and Work Conditions), as suggested by authors such as Villajos et al. (2019).

Therefore, the PHRMPS developed by Demo et al. (2024) emerges as a key initiative to evaluate human resource management practices specific to the public sector, including the most traditional and commonly used practices identified in scale validations by Boon et al. (2019). As a first version, the model may have gaps and room for improvement by adding more practices in future validations or adaptations of the instrument. For instance, Organizational Communication Management practices could help address issues related to political influence, institutional pressure, accountability, and transparency (Guest, 2025; Van Dijck & Steen, 2022). Furthermore, Demo et al. (2024) warn that the “Relationship” factor, which includes practices related to autonomy, participation, socialization, and interactions with supervisors and peers, is an evolution of the practice called initially “Involvement” (Demo et al., 2012), partly to avoid confusion with the different concept of work involvement.

In this regard, when analyzing the applicability of models such as the PHRMPS in different contexts, it is essential to consider how Brazil and Spain are characterized in terms of public administration. Both countries have similar structures, adopting a decentralized approach with three primary levels of government and access to public services through competitive examinations based on tests or a combination of tests and academic or professional qualifications (Boix Palop, 2024; Maia, 2021). Public servants may hold permanent positions governed by specific laws and statutes or be hired temporarily under labor law regulations. In both cases, the primary goal is to perform duties to serve the public interest (Weske et al., 2019).

Therefore, considering the similarities in how public service is organized in both countries, adapting and validating the PHRMPS, initially developed in Brazil, for the Spanish context could be a practical and appropriate choice. The revised PHRMPS is expected to retain a structure similar to the original model (Brazil). As a result, Hypothesis 1 is proposed:

H1. The original structure of the PHRMPS remains after adapting it to the Spanish context.

However, using instruments adapted to different contexts from their original development—such as the Brazilian PHRMPS in the Spanish setting—requires that the measure be not only valid and reliable but also undergo thorough adaptation procedures to ensure proper equivalence, both semantically and psychometrically (Klotz et al., 2023). This process can pose challenges for researchers, as discussed below.

2.2 What Makes Measurement Scale Adaptation Challenging?

Traditionally, adapting psychometric instruments to different contexts, linguistic, cultural, or organizational, includes techniques like simple translation and back-translation (Klotz et al., 2023). These methods help align the original and translated versions; however, they can have limitations, such as literal translations and linguistic inconsistencies, as well as

challenges in maintaining the cultural meanings behind the construct being measured (Cassepp-Borges et al., 2010; Smith et al., 2013).

To minimize these limitations, these techniques can be combined with other methodological approaches, such as conducting pre-tests with the target population (Smith et al., 2013), involving bilingual committees composed of expert judges to evaluate the translated versions (Cassepp-Borges et al., 2010; Smith et al., 2013), and adopting qualitative methods such as cognitive interviews and response probing (Fischer et al., 2025). Additionally, the use of decentering, emphasizing the cultural equivalence of meanings (Pérez-Nebra et al., 2023a; Smith et al., 2013), was adopted in the present study.

These complementary strategies require more time and effort from researchers, but their implementation improves the equivalence between the adapted version and the original instrument. Measurement reliability generally increases when functional equivalence (related to the psychological construct), structural equivalence (connected with statistical validity), metric equivalence (concerned with the relationship between items and the latent variable), and scalar equivalence (linked to score comparability) are achieved (Fischer et al., 2025; Smith et al., 2013). In the case of the present study, these challenges are further intensified by the lack of previously validated HRM practice scales for the public sector in the Spanish context.

An essential aspect of adapting psychometric instruments, especially in studies comparing different groups, is assessing measurement invariance (Fischer et al., 2025). This step confirms that the measured construct is understood similarly across various contexts. While some variation in perceptions of human resource management practices between Brazil and Spain is expected, measurement invariance helps determine whether the item structure (configural invariance) and factor loadings (metric invariance) show similar patterns of the latent trait in individuals from both countries.

Therefore, due to the similarities in context between the two countries, it is anticipated that the data will act similarly. Consequently, the following hypothesis is put forward:

H2. The results from the samples collected in Brazil and Spain will demonstrate measurement invariance.

Finally, this study aims to develop a shortened version of the PHRMPS that retains adequate psychometric properties compared to the original scale (Demo et al., 2024). A more concise measure can be beneficial by saving time and costs, increasing participant engagement, and improving the feasibility of longitudinal studies. Recent research has highlighted the advantages of using shorter survey tools (Schroeders et al., 2016). Therefore, the reduced PHRMPS, based on samples from Brazil and Spain, is expected to help public leaders and managers understand public servants' perceptions of the effectiveness of HRM practices in enhancing the workplace experience. To do this, a psychometrically solid and theoretically grounded version will be created by selecting the most representative items for each factor, while maintaining strong indicators of validity and reliability compared to the full scale by Demo et al. (2024). Accordingly, an additional hypothesis is established:

H3. A shortened version of the PHRMPS can be developed that maintains good psychometric quality and acceptable levels of validity and reliability.

Therefore, this article aims to contribute by adapting a human resource management practices scale to the Spanish context, customized for the public sector and presented in a shorter version, by identifying validity and reliability indices and conducting a cross-country comparison between samples from Spain and Brazil.

3. METHODOLOGICAL APPROACH

Two studies were carried out. Study 1 aimed to adapt the PHRMPS developed by Demo et al. (2024) into Spanish. Study 2 sought to gather evidence of the scale's validity and reliability, examine the equivalence of its structure and measurement properties between the Spanish and Brazilian samples, and propose a shortened version of the instrument.

3.1 Study 1 – Scale Adaptation

The adaptation of the Public HRM Practices Scale (PHRMPS) by Demo et al. (2024) from Portuguese to Spanish was performed using the decentering method proposed by Pérez-Nebra et al. (2023). The methodology used in this study follows the guidelines established by Cassepp-Borges et al. (2010) and Smith et al. (2013) and is supplemented by the application of the Content Validity Ratio (CVR) developed by Lawshe (1975). This approach is considered more robust for cross-cultural adaptation studies, as it helps reduce cultural biases and overcomes limitations often associated with traditional translation and back-translation methods, as Klotz et al. (2023) demonstrated.

For the initial translation of the PHRMPS items, three bilingual participants fluent in Portuguese and Spanish were invited, two females and one male, each holding a master's and/or doctoral degree. A fourth translation was produced using an artificial intelligence tool (OpenAI, 2024). The translations were evaluated using the decentering method by 15 experts, including university students and Spanish workers. All participants reported a high level of proficiency in Portuguese. Most were female (73%), aged 21 to 64 years (mean = 47 years, SD = 16). Additionally, 73% held higher education degrees or a master's level of education.

The expert panel assessed the translations using a tool based on four criteria from the decentering method (Pérez-Nebra et al., 2023): (1) the most reliable translation of the original scale item; (2) the best culturally adapted translation; (3) the dimensionality of the item, meaning the construct to which the item belongs within the scale; and (4) the importance of the item for operationalizing the construct.

Regarding the procedures, four translations (A, B, C, and D) of the PHRMPS were initially evaluated. To assess criteria (1) the most reliable translation of the original scale item and (2) the best culturally adapted translation, evaluators selected the best translation among those presented. For criterion (3), the dimensionality of the item, that is, the construct to which the item belongs within the scale, evaluators assigned (1) to factor 1 (Training & Development), (2) to factor 2 (Relationships), (3) to factor 3 (Work Conditions), and (4) to factor 4 (Competency and Performance Appraisal), as outlined in the evaluation form. For criterion (4), the essentiality of the item for the operationalization of the construct, evaluators were instructed to indicate (1) for non-essential, (2) for useful but not essential, and (3) for essential. Discrepancies in evaluations regarding criteria 1 and 2 were resolved by selecting the translations that were considered best adapted, that is, the ones most easily understood by native Spanish speakers, according to the experts.

3.2 Study 2 – Validity Evidence and Testing of the Shortened Version of the PHRMPS

The participants in this study included 215 Spanish workers from public institutions at the central government level, autonomous communities, and municipalities, as well as 195 Brazilian workers from a federal public institution. Inclusion criteria required respondents to be public servants, over 18 years old, and currently employed. In the Brazilian sample, 63% identified as female, with a mean age of 45 (SD = 10); 24% held a bachelor's degree, 72% had postgraduate education, and 42% occupied leadership roles. In the Spanish sample, 63% also identified as female, with a mean age of 50 years (SD = 9); 45% had a bachelor's degree, 33% held postgraduate qualifications, and 18% held leadership positions.

The instrument used in Spain included the 19 items from the previous study, covering three categories: Training & Development (Omega reliability coefficient = 0.81; example item: “In the organization where I work, training needs are periodically assessed”), eight items for Relationship (Omega = 0.90; example item: “The organization where I work encourages employee participation in decision-making”), five items for Work Conditions (Omega = 0.79; example item: “The facilities and physical conditions of the organization where I work are adequate”), and three items for Competency and Performance Appraisal (Omega = 0.76; example item: “In the organization where I work, employees receive informal feedback on their performance”). The scale used a five-point Likert agreement format, with 1 = strongly disagree, 3 = neutral, and 5 = strongly agree. In Brazil, the scale was the original Portuguese version by Demo et al. (2024), which also included 19 items spread across the same four factors, each showing similarly strong reliability coefficients of 0.81, 0.90, 0.79, and 0.76.

Regarding data collection procedures, the research instrument was distributed electronically through Google Forms to participants in both Brazil and Spain. The questionnaire included the informed consent form and general instructions about the study. Data were collected from February to June 2025 in Spain and from October 2024 to June 2025 in Brazil. Concerning ethical considerations, this study was reviewed and approved by the Research Ethics Committee in Human and Social Sciences at the University of Brasília (approval number 7.073.847) and by the Data Protection Unit (*Unidad de Protección de Datos*, UPD) at the University of Zaragoza, Spain (RAT 2024-226).

During data analysis for evaluating Hypothesis 1, frequency analyses were initially conducted to examine data distribution, identify missing values through listwise deletion, and detect outliers using Mahalanobis distance (Tabachnick & Fidell, 2019). Subsequently, multicollinearity and singularity among variables were assessed using the variance inflation factor (VIF) (<10) and tolerance values (>0.1) (Hair et al., 2019). Assumptions for applying multivariate techniques were also verified, including linearity, homoscedasticity, and normality of the data, by inspecting residual plots, normal probability plots, and calculating Z-scores ($|z| \leq 2.58$), following methodological guidelines from Hair et al. (2019).

No violations of normality or multivariate analysis assumptions were detected. In the Spanish sample, 11 missing values and 7 outliers were identified. In the Brazilian sample, there were 12 missing values and 3 outliers. Missing data from both samples were excluded from the analyses using listwise deletion; however, outliers were retained as they did not significantly affect model fit indices and allowed for assessing whether the scale is sensitive enough to capture distinct respondent profiles (Tabachnick & Fidell, 2019). Thus, the final sample included 203 participants in Spain and 183 in Brazil, meeting the commonly accepted minimum guideline of approximately 10 participants per variable (Kline, 2023).

Next, Confirmatory Factor Analysis (CFA) was performed using Structural Equation Modeling (SEM) with maximum likelihood estimation. All analyses were carried out with the open-source software JASP (v. 0.19.3). To assess the quality of the measurement and structural models, both absolute fit indices (NC, RMSEA, and SRMR) and incremental fit indices (CFI) were used, with reference cutoff values of NC ($\chi^2/df \leq 3.0$), CFI ≥ 0.90 , and RMSEA and SRMR ≤ 0.08 (or up to 0.10) (Kline, 2023; Marôco, 2021).

For Hypothesis 2, a measurement invariance analysis was conducted between the Spanish and Brazilian samples, focusing on configural, metric, and scalar invariance. This procedure involved comparing factor loadings and model structures through multigroup confirmatory factor analysis (MGCFA). The invariance assessment was based on changes in fit indices, with ΔCFI values equal to or less than 0.01 and $\Delta RMSEA$ values equal to or less than 0.015 considered acceptable, according to guidelines proposed by Kline (2023).

Finally, to test Hypothesis 3, a correlation analysis was conducted based on the results obtained in Hypothesis 1, utilizing the reduced version of the scale and comparing it with the

full version of the PHRMPS. The criteria for proposing the reduced version included selecting items per factor with the highest factor loadings (following Comrey & Lee, 2013) and theoretical representativeness; assessing the Pearson correlation coefficient ($\rho \geq 0.80$) to identify similarity between factor structures (Hair et al., 2019; Brown, 2015); and evaluating the goodness of fit of the reduced version (Kline, 2023; Marôco, 2021).

4. RESULTS

4.1 Study 1 – Scale Adaptation

The four obtained translations were compared for the scale adaptation, and only item 17 had an identical proposed translation. The remaining items ($n = 18$) with divergent translations underwent the decentering translation process, which includes content validity assessment of the items (Content Validity Ratio, CVR), the most reliable translation to the original, and the best culturally adapted translation. The CVR indicates the essentiality of the item about the construct and is calculated as the ratio of experts who rated the item as essential to the total number of experts (Ayre & Scally, 2014). Table 1 presents the results.

Table 1. Translation indices

Item	CVR*	Factor	Most reliable translation	Best culturally adapted translation	Final translation (Spanish)
4. The organization where I work invests in developing public employees and providing their professional growth (e.g. full or partial sponsorship of undergraduate, postgraduate or language courses, improvement, continuing education, etc.)	0.71	3	A	C	La organización en la que trabajo invierte en el desarrollo de sus funcionarios/as, promoviendo su crecimiento profesional (ej.: financiación total o parcial de grados, posgrados, cursos de idiomas, de especialización, etc.)
5. The organization where I work helps the employees develop the necessary skills to carry out the work activities (e.g. training, participation in congresses, etc.)	1.00	1	A	B	La organización para la que trabajo ayuda a sus funcionarios/as a desarrollar las competencias que necesitan para desempeñar sus actividades laborales (ej.: formación, participación en conferencias, etc.).
7. In my work organization, training needs are raised periodically.	0.86	1	A	C	En la organización en la que trabajo se establecen periódicamente las necesidades de formación y capacitación de su personal.
1. Public employees are proud to work in the organization I work for.	0.14	2	A	B	Los/as funcionarios/as están orgullosos de trabajar para la organización en la que trabajan.
2. Public employees of the organization where I work are helpful.	0.29	2	A	C	Los/as funcionarios/as de la organización en la que trabajo tienen una buena disposición.
3. The organization where I work treats its employees respectfully.	0.71	3	A	B	La organización para la que trabajo trata a sus funcionarios/as con respeto.
8. In the organization where I work, there is a climate of	0.43	2	A	D	En la organización donde trabajo, hay un clima de

						cooperación entre el personal.
cooperation between public employees.						
10. The organization where I work privileges the autonomy of public employees in performing tasks.	0.57	2	B	B		La organización para la que trabajo favorece la autonomía de sus funcionarios/as en el desempeño de sus tareas.
11. In my workplace, there is trust between public employees and managers/heads.	0.29	3	A	B		En la organización donde trabajo, hay confianza entre funcionarios/as y directivos.
13. In the organization where I work, there is coherence between the discourse and the practice of managers/heads.	0.29	2	A	C		En la organización en la que trabajo, existe coherencia entre el discurso y la práctica de los/as gestores/as y jefes/as.
14. The organization where I work encourages public employees' participation in decision making.	0.57	3	A	B		La organización para la que trabajo fomenta la participación del personal en la toma de decisiones.
6. The organization I work in provides living spaces and/or convenience services (e.g. parking lots, banks, restaurants/snack bars, etc.)	-0.14	3	A	C		La organización en la que trabajo dispone de espacios de convivencia y/o servicios (ej. aparcamientos, bancos, restaurantes/cafeeterías, etc.).
12. The organization where I work provides public employees with appropriate technology (materials, software and hardware) for task performance.	1,00	3	A	B		La organización en la que trabajo proporciona a sus funcionarios/as la tecnología (materiales, software y hardware) que necesitan para desempeñar sus funciones.
16. The organization where I work has quality-of-life programs for public employees (e.g. flexible hours, workplace exercise, etc.)	-0.14	3	C	B		La organización para la que trabajo tiene programas de calidad de vida para sus funcionarios/as (ej.: horarios flexibles, gimnasia, etc.).
18. The organization where I work is concerned with the security of public employees.	0.43	3	A	B		La organización para la que trabajo se preocupa por la seguridad de sus funcionarios/as.
9. In the organization where I work, the results of the performance evaluation are communicated to public employees.	0.14	4	A	B		En la organización en la que trabajo, los resultados de la evaluación del rendimiento se comunican a los/as funcionarios/as.
15. In the organization where I work, public employees receive informal feedback about their performance.	0.29	4	A	C		En la organización en la que trabajo, los/as funcionarios/as reciben comentarios informales sobre su desempeño.
19. In the organization where I work, the performance evaluation helps elaborate a professional development plan for public employees.	0.71	4	A	C		En la organización en la que trabajo, la evaluación de desempeño contribuye a la elaboración de un plan de desarrollo profesional de los/as funcionarios/as.

Notes: *Content validity ratio; Factor 1 -Training & Development (items 4, 5,7), Factor 2 - Relationship (items 1, 2, 3, 8, 10, 11, 13, 14), Factor 3 – Work Conditions (6, 12, 16, 18) and Factor 4 – Competency and Performance Appraisal (items 9, 15, 19)

Source: Authors

Except for item 10, all other items showed discrepancies between the translation deemed most reliable and the best adapted translation. In these cases, the better-adapted translations were selected. Regarding the CVR results, there was consensus among the experts about the relevance of the items for the four factors. For 89% of the items, the CVR was above zero, indicating that more than half of the experts agreed on the essentiality of the item (Ayre & Scally, 2013). Only items 6 and 16 yielded negative CVR values; however, since the scale already presents validity evidence, these results will be considered merely indicators of potential issues to be addressed during the instrument validation process outlined in Study 2. Thus, the adaptation of the PHRMPS items was made possible through the decentering method." Subsequently, data collection procedures for Study 2 were conducted to test Hypotheses 1, 2, and 3.

4.2. Study 2 – Validity Evidence and Testing of the Shortened Version of the PHRMPS

Confirmatory Factor Analysis conducted with the Spanish sample indicated an adequate data fit. Therefore, the original four-factor structure of the PHRMPS was retained after adaptation to the Spanish context, with acceptable fit indices: NC (χ^2/df) = 2.82, CFI = 0.89, RMSEA = 0.09, and SRMR = 0.06. Thus, Hypothesis 1 of this study was confirmed.

In turn, the invariance test indicated, based on fit indices (χ^2/df , CFI, RMSEA), that the model structure is invariant across groups (configural invariance), meaning that the four-factor structure was confirmed both in Brazil and Spain. Regarding metric invariance, which refers to different groups responding similarly to the instrument's items, the results also supported invariance ($\Delta CFI \leq 0.01$ and $\Delta RMSEA \leq 0.015$) (Fischer et al., 2025; Kline, 2023). However, the scalar invariance test ($\Delta CFI = 0.03$), which compares latent mean scores, showed variance between public servants in Spain and Brazil, indicating that group membership may influence the level of the latent construct (Fischer et al., 2025). This lack of scalar invariance was expected, given that the phenomenon is measured in distinct contexts, reflecting each sample's cultural specificities and realities. Table 2 presents the results of the invariance analysis, confirming Hypothesis 2 of this study.

Table 2. Results of the measurement invariance analysis between Brazil and Spain

Level	χ^2	$\Delta\chi^2$	gl	Δgl	CFI	ΔCFI	RMSEA	$\Delta RMSEA$
Configural	732.25***	...	292	...	0.90	...	0.09	...
Metric	774.30***	42	307	15	0.90	0	0.09	0
Scalar	895.99***	122	190	117	0.87	0.03	0.09	0

Note: *** <0.001

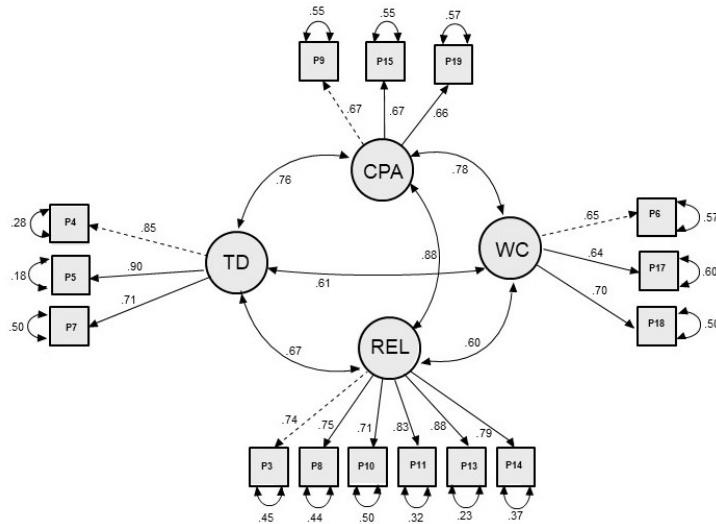
Source: Authors

Subsequently, a reduced version of the scale, maintaining the original structure and number of items, was tested in Brazil and Spain, aiming to preserve acceptable fit indices across both samples. Only the items from the Relationship (REL) and Work Conditions (WC) factors were analyzed, since the Training & Development (T&D) and Competency and Performance Appraisal (CPA) factors initially contain three items each—the minimum recommended by the literature (Kline, 2023)—and therefore are not subject to reduction. Consequently, items 1 and 2 from the REL factor and 12 and 16 from the WC factor were removed. It is noteworthy that item 16 had already shown a negative CVR during the decentering translation phase conducted in Study 1.

Thus, the reduced version of the PHRMPS comprised 15 items distributed across four factors, demonstrating excellent and very good quality (Comrey & Lee, 2013), thereby confirming its internal validity. The values for average variance extracted and reliability also

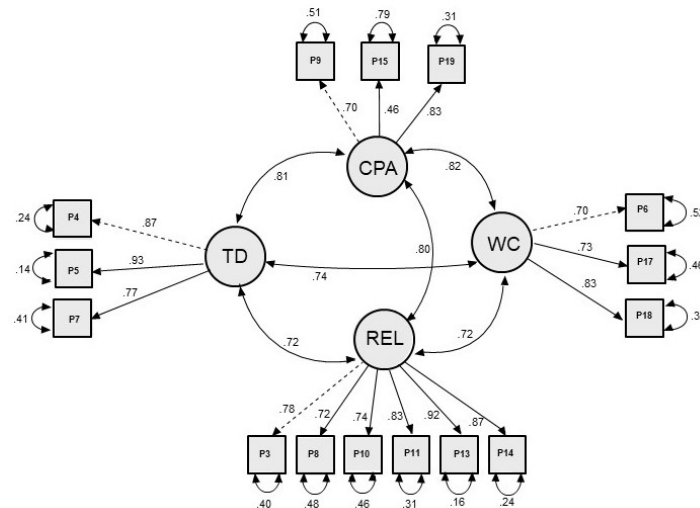
met the recommendations found in the literature (Hair et al., 2022; Zinbarg et al., 2005). Pearson correlation coefficients between the original and reduced factors were all significant ($p < 0.001$). They indicated strong positive associations, both in Brazil (0.98 and 0.86) and Spain (0.98 and 0.91) for the Relationship (REL) and Work Conditions (WC) factors, respectively. Therefore, Hypothesis 3 of this study and the external validity of the PHRMPS are confirmed. Figures 1 and 2 present the final models obtained, and Table 3 shows Brazil and Spain's fit indices and psychometric properties, respectively.

Figure 1. Reduced PHRMPS Model (Brazil)



Note: $\chi^2(84) = 155.97$; $p < 0.001$; $NC(\chi^2/DF) = 1.85$; $CFI = 0.95$; $RMSEA = 0.07$; $SRMR = 0.05$
Source: Authors

Figure 2. Reduced PHRMPS Model (Spain)



Note: $\chi^2(84) = 227.70$; $p < 0.001$; $NC(\chi^2/DF) = 2.71$; $CFI = 0.93$; $RMSEA = 0.09$; $SRMR = 0.06$
Source: Authors

Table 3. Psychometric indices of the measurement models – Reduced PHRMPS

Brazil	Spain	SE / IQ
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Dimension	EV	R	EV	R	Item	Brazil	Spain
T&D	0.67	0.87	0.73	0.90	4. The organization where I work invests in developing public employees and providing their professional growth (e.g., full or partial sponsorship of undergraduate, postgraduate or language courses, improvement, continuing education, etc.).	0,85*** (Excellent)	0,87*** (Excellent)
					5. The organization where I work helps the employees develop the necessary skills to carry out the work activities (e.g., training, participation in congresses, etc.)	0,90*** (Excellent)	0,93*** (Excellent)
					7. In my work organization, training needs are raised periodically.	0,71*** (Excellent)	0,77*** (Excellent)
REL	0.62	0.91	0.67	0.92	3. The organization where I work treats its employees respectfully.	0,74*** (Excellent)	0,78*** (Excellent)
					8. In the organization where I work, there is a climate of cooperation between public employees.	0,75*** (Excellent)	0,72*** (Excellent)
					10. The organization where I work privileges the autonomy of public employees in performing tasks.	0,71*** (Excellent)	0,74*** (Excellent)
					11. In my workplace, there is trust between public employees and managers/heads.	0,83*** (Excellent)	0,83*** (Excellent)
					13. In the organization where I work, there is coherence between the discourse and the practice of managers/heads.	0,88*** (Excellent)	0,92*** (Excellent)
					14. The organization where I work encourages public employees' participation in decision making.	0,79*** (Excellent)	0,87*** (Excellent)
WC	0.43	0.70	0.56	0.80	6. The organization I work in provides living spaces and/or convenience services (e.g., parking lots, banks, restaurants/snack bars, etc.)	0,65*** (Very good)	0,70*** (Very good)
					17. The facilities and physical conditions of the organization where I work (e.g., lighting, ventilation, noise and temperature control) are appropriate.	0,70*** (Very good)	0,73*** (Very good)
					18. The organization where I work is concerned with the security of public employees (e.g., control of access for strangers, badge requirements, etc.)	0,64*** (Very good)	0,83*** (Very good)
CPA	0.45	0.71	0.47	0.72	9. In the organization where I work, the results of the performance evaluation are communicated to public employees.	0,67*** (Very good)	0,70*** (Very good)
					15. In the organization where I work, public employees receive informal feedback about their performance.	0,67*** (Very good)	0,46*** (Reasonable)

19. In the organization where I work, the performance evaluation helps elaborate a professional development plan for public employees. 0.66*** (Very good) 0.83*** (Excellent)

Notes: *** p-value < 0.01. EV = Extracted Variance; R = Reliability (McDonald omega); SE = Standardized Estimate; IQ = Item Quality.
Source: Authors

Finally, the direction and strength of the association among the four factors of the reduced version of the PHRMPS were analyzed using Pearson’s correlation coefficient (*r*). This analysis aimed to verify whether the HRM practices in the model constitute an integrated system of complementary practices or if conflicts exist among them. Overall, all observed correlations were significant and positive, ranging from moderate (≥ 0.30) to strong (≥ 0.50) (Cohen, 1992) in both countries. These results indicate that the practices comprising the PHRMPS, focused on performance (T&D and CPA) and those oriented toward social support (WC and REL), form a synergistic model and are perceived as a unified construct by the public servants who participated in the study. Table 5 presents the correlation results.

Table 5. Correlation among the factors of the Reduced PHRMPS

Factor		T&D		REL		WC		CPA	
		Brazil	Spain	Brazil	Spain	Brazil	Spain	Brazil	Spain
T&D	<i>Pearson (r)</i>	-	-						
REL	<i>Pearson (r)</i>	0.59***	0.64***	-	-				
WC	<i>Pearson (r)</i>	0.45***	0.54***	0.42***	0.54***	-	-		
CPA	<i>Pearson (r)</i>	0.53***	0.56***	0.67***	0.61***	0.42***	0.54***	-	-

Notas: *** p-value < 0.001. T&D (Training & Development), REL (Relationship), WC (Work Conditions), CPA (Competency and Performance Appraisal)

5. DISCUSSION, LIMITATIONS, AND FUTURE DIRECTIONS

The results obtained in Studies 1 and 2 of this research demonstrate that it was possible to adapt, obtain strong evidence of validity and reliability, and propose a reduced version of the PHRMPS within the Spanish context. The initial decentering strategy proposed by Pérez-Nebra et al. (2023a), employed for the measure’s adaptation, facilitated greater cultural adequacy and equivalence of the items. Klotz et al. (2023) had previously highlighted the need to advance beyond traditional methods of measure adaptation. The negative Content Validity Ratio (CVR) indices for items 6 and 16, which could indicate issues during the validation phase conducted in Study 2, were partially confirmed. Item 16 was retained in the reduced version of the PHRMPS, exhibiting very good and excellent quality in Brazil and Spain, respectively, and it did not adversely affect the fit indices.

In terms of structure, the original four-factor configuration of the Brazilian PHRMPS was maintained after adaptation to the public service context in Spain, demonstrating good reliability indices (factor omega ranging from 0.73 to 0.90) and factor loadings classified as very good to excellent (Comrey & Lee, 2013). The PHRMPS was designed to focus on the public sector, encompassing classical practices consolidated in Administration and Psychology (Boon et al., 2019). These results confirm the scale’s reliability and psychometric quality, enabling comparison between similar bureaucratic contexts.

Furthermore, configural and metric invariance were expected, whereas scalar variance was anticipated in the cross-country comparison. Indeed, both configural and metric invariance of the scale were confirmed, demonstrating that the structure and items comprising the PHRMPS remained consistent across the two samples (configural invariance), and that the relationship between the items and factors, in terms of factor loadings, did not vary between

Brazil and Spain (metric invariance) (Fischer et al., 2025). On the other hand, as also expected, scalar invariance (equality of item intercepts) was not observed between the groups, which is common in studies of this nature (Pérez-Nebra et al., 2023b). This lack of scalar invariance can be attributed to the influence of specific public policies, which are highly dependent on sociopolitical and institutional contexts, thereby impacting HRM practices differently (Stavrou et al., 2023). Therefore, when using this scale, it is essential to consider these contextual particularities (Tordera et al., 2020).

Finally, the proposed reduced version of the scale demonstrated highly satisfactory fit indices, reliability, and internal validity, as assessed by the quality of factor loadings. Additionally, the Pearson correlation coefficients (r) between the reduced and original factors were very strong, ranging from 0.86 to 0.98 in Brazil and Spain. These results provide preliminary evidence of internal and external validity (Demo et al., 2024) and underscore the scale's potential utility in research and public management practice. Furthermore, the positive dynamics among the scale's factors were confirmed, as theoretically expected (Boon et al., 2019), suggesting that the practices comprising the model form a mutually reinforcing system and highlighting the scale's potential to identify interrelationships within human resource management.

Despite its theoretical and practical contributions, this article has some limitations. In Spain, the sample comprised public servants from institutions at various levels of government (central, autonomous community, and local), whereas in Brazil, data collection was concentrated in a single federal-level public institution. Therefore, future analyses should consider samples representing public institutions with comparable levels and administrative maturity.

Furthermore, future research needs to investigate the scale's predictive potential regarding organizational performance. While the factors "Relationship" and "Work Conditions" include practices aimed at providing social support to employees, which the literature recognizes as relevant (Guest, 2025; Villajos et al., 2019), the other factors are strongly oriented toward results and performance. Therefore, future studies could explore how the scale can predict performance indicators and workplace well-being (Pérez-Nebra et al., 2021), to examine its predictive capacity across different relevant domains of the work experience.

From a practical perspective, it is also proposed to explore the moderating role of the perception of human resource management practices in the relationship between psychosocial risks and employee illness, particularly in light of Regulatory Standard No. 1 (NR-01), especially within the Brazilian public sector context. Furthermore, it is suggested that the mediating role of HRM practices in different structural models (Boon et al., 2019) be tested, such as the relationship between leadership and workplace well-being in the public sector.

Finally, validations with public servants from Latin American countries are also encouraged, aiming to verify the suitability of the Spanish version of the scale proposed in this research, thereby strengthening the evidence of validity and reliability of the PHRMPS and promoting scientific exchange within the Global South.

6. CONCLUSION

The objectives of this study were achieved, and the three research hypotheses were confirmed, as it was possible to adapt, gather evidence of internal and external validity, and establish reliability. Additionally, a shortened version of the PHRMPS for the Spanish public service was proposed. Therefore, the reduced PHRMPS functions as a valid and reliable operational measure suitable for relational studies. Theoretical contributions to organizational research aim to strengthen the debate around public sector-specific human resource

management practices, especially in refining instruments so the PHRMPS structure can be continually improved and updated.

From a practical standpoint, this research provides a scientifically adapted diagnostic tool for the Spanish context and Spanish-speaking Latin American countries. Moreover, the shortened version obtained, which shows validity and reliability indicators comparable to the original scale, may increase respondent engagement, especially in longitudinal studies. Consequently, public managers and leaders are equipped with a valuable instrument to implement human resource management strategies and make evidence-based decisions that support public servants' performance and well-being, ultimately impacting the quality of services delivered to society.

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