Research report

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Cross-cultural adaptation and validity evidence of the engaging leadership scale in Brazil

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Abstract
This study aimed to conduct a cross-cultural adaptation and examine validity evidence for the Engaging Leadership Scale in samples of Brazilian employees and leaders. The adaptation process comprised translation, back-translation, expert evaluation, and focus groups. Two cross-sectional studies were conducted: Study 1 included a general sample of 425 employees, whereas Study 2 comprised 131 leaders from the judiciary. In Study 1, confirmatory factor analysis indicated an excellent fit for the unidimensional model (χ^2/df = 3.85; comparative fit index = 0.996; Tucker-Lewis index = 0.996; root mean square error of approximation [90% confidence interval] = 0.082 [0.070–0.094]) and high reliability (ω = 0.969). In Study 2, the unidimensional structure was supported, with satisfactory reliability (ω = 0.896) and convergent validity (r = 0.473; p < 0.001). Overall, the findings indicate that the Engaging Leadership Scale demonstrates adequate psychometric properties for Brazilian employees and provides encouraging preliminary evidence for its application among leaders.
Keywords: Work engagement; Psychometrics; Psychological assessment.

Adaptação transcultural e evidências de validade da Escala de Liderança Engajadora no Brasil

Resumo
O objetivo deste estudo foi realizar a adaptação transcultural e avaliar as evidências de validade da *Engaging Leadership Scale* (Escala de Liderança Engajadora) para trabalhadores e líderes brasileiros. O processo de adaptação incluiu tradução, retrotradução, avaliação por juízes e grupos focais. Dois estudos transversais foram realizados: o primeiro com 425 trabalhadores em geral e o segundo com 131 líderes do setor judiciário. No Estudo 1, a Análise Fatorial Confirmatória (AFC) apresentou excelente ajuste para o modelo unifatorial [χ^2/gl = 3,85; CFI = 0,996; TLI = 0,996; RMSEA (IC90%) = 0,082 (0,070–0,094)] e alta confiabilidade (ω = 0,969). No Estudo 2, a estrutura unifatorial também foi sustentada (ω = 0,896), com correlação significativa para validade convergente (r = 0,473; p < 0,001). Concluímos que a Escala de Liderança Engajadora apresenta propriedades psicométricas adequadas para a população de trabalhadores brasileiros e resultados preliminares promissores para líderes.
Palavras-chave: Engajamento no trabalho; Psicometria; Avaliação psicológica.

Adaptación transcultural y evidencias de validez de la Escala de Liderazgo Comprometido en Brasil

Resumen
El objetivo de este estudio fue realizar la adaptación transcultural y evaluar las evidencias de validez de la Engaging Leadership Scale para trabajadores y líderes brasileños. El proceso de adaptación incluyó traducción, retrotraducción, evaluación por jueces y grupos focales. Se realizaron dos estudios transversales: el primero con 425 trabajadores en general y el segundo con 131 líderes del sector judicial. En el Estudio 1, el Análisis Factorial Confirmatorio (AFC) mostró un ajuste excelente para el modelo unifactorial [χ^2/gl = 3,85; CFI = 0,996; TLI = 0,996; RMSEA (IC90%) = 0,082 (0,070–0,094)] y una alta confiabilidad (ω = 0,969). En el Estudio 2, la estructura unifactorial también fue sustentada (ω = 0,896), con una correlación significativa para la validez convergente (r = 0,473; p < 0,001). Concluimos que la Escala de Liderazgo Comprometido presenta propiedades psicométricas adecuadas para la población de trabajadores brasileños y resultados preliminares prometedores para líderes.
Palabras clave: Compromiso laboral; Evaluación psicológica; Psicometría.

Introduction

Leadership is a social phenomenon inherent to organizational contexts and expressed through influence, cultivating commitment, and coordinating individual and collective efforts toward shared goals (Yukl, 2012). When effectively exercised, leadership is strategic for organizational development and contributes positively to organizational outcomes and employee well-being (Calvosa et al., 2022; Melo & Santos, 2017; Nixon et al., 2012; Noval et al., 2022).

Schaufeli (2015a, 2015b, 2021) conceptualizes engaging leadership as a leader's effort to inspire, strengthen, empower, and connect employees. Studies indicate that this leadership style is associated with lower stress (Selander et al., 2023), exhaustion (Salas-Vallina et al., 2021), and greater optimism, resilience, self-efficacy (Mazzetti & Schaufeli, 2022), and improved well-being and happiness at work (Salas-Vallina et al., 2021).

Engaging leadership is grounded in the principles of Self-Determination Theory, rather than being conceived merely as a job resource (Bakker et al., 2023; Deci & Ryan, 2000). This theory distinguishes three types of motivation: autonomous, controlled, and amotivation, each associated with personal development, work performance, and well-being (Deci & Ryan, 2008). Autonomous motivation arises from intrinsic interest and satisfaction, controlled motivation is driven by external rewards or pressures, and amotivation reflects a lack of intention or commitment to activities (Deci & Ryan, 2008).

Ethical, transactional, authentic, situational, and transformational leadership approaches differ from engaging leadership in that the latter is explicitly employee-centered (Piwowar-Sulej & Iqbal, 2023; Sarwar et al., 2022). This approach focuses on satisfying three basic psychological needs essential to employee health and well-being: autonomy (a sense of control), competence (a sense of effectiveness), and relatedness (a sense of being valued and cared for (Deci & Ryan, 2000; Schaufeli, 2015a, 2015b). When these needs are fulfilled, employees are more engaged at work, which in turn improves job performance (Deci & Ryan, 2012).

Work engagement is defined as the physical, cognitive, and emotional investment individuals bring to their work roles (Kahn, 1990). Schaufeli et al. (2002) described engagement as a persistent psychological state marked by positive and pleasurable attitudes toward work, characterized by vigor, dedication, and absorption. Research has shown that engaged employees are more creative (Demerouti et al., 2015), interested in learning, innovative (Rahmadani et al., 2020), and more assiduous at work (van Tuin et al., 2021), as engagement mediates the relationship between engaging leadership and work performance.

Workers' perceptions of engaging leadership can be measured using the Engaging Leadership Scale, a self-report instrument containing 12 statements about the immediate leader, rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) (Schaufeli, 2021). The scale was originally developed in a pilot study with 195 Dutch workers and, subsequently, its factor structure was confirmed in a sample of 1,213 workers from the same country (Schaufeli, 2015a). The scale showed good fit for a model with four domains (inspiration, strengthening, connection, and empowerment) and high reliability (Cronbach's alpha [α] between 0.88 and 0.93) (Schaufeli, 2015a). Its psychometric properties were later validated in samples of Indonesian (n = 607) and Russian (n = 384) public servants, demonstrating good reliability indices (α = 0.86 to 0.95) (Rahmadani et al., 2019). Nonetheless, a strong correlation among the four domains was observed in both samples (Indonesia: r = 0.41 to 0.66; Russia: r = 0.59 to 0.84) (Rahmadani et al., 2019), a result corroborated by subsequent research (Nikolova et al., 2021; Rahmadani et al., 2020).

The strong correlations among these domains have prompted a shift toward using a global engaging leadership score instead of a four-domain structure (Robijn, 2021; Schaufeli, 2021). Schaufeli (2021) posited that the domains are so closely interrelated that, in practice, engaging leadership is more appropriately considered a unidimensional construct.

The lack of validity evidence for the Engaging Leadership Scale in the Brazilian context limits both scientific research and its practical application in organizations. Addressing this gap is essential for encouraging leadership practices that enhance employee well-being, with positive implications for work engagement and performance. Although the scale's original version assesses leadership behaviors from the subordinate's perspective, an adaptation of pronouns may allow its use for self-assessment by leaders by converting third-person items (e.g., "My leader promotes…") into first-person statements (e.g., "I promote…").

Given these gaps, this study sought to conduct a cross-cultural adaptation of the Engaging

Leadership Scale and to examine evidence of its validity in the Brazilian context. We hypothesized that the instrument would demonstrate a unidimensional structure and that the adapted version would show adequate evidence of validity and reliability for use with the Brazilian population, encompassing both leaders and followers.

Method

This study comprised two cross-sectional studies: Study 1 was conducted with general employees and Study 2 was conducted with leaders from a public institution in the judiciary. Given that the sections on translation and cultural adaptation, instrument description, and statistical analyses are common to both studies, they are reported only in Study 1. The study protocol was not preregistered, and the data are available from the corresponding author upon request.

Study 1

Participants

A total of 425 employees participated in Study 1, with a mean age of 36.7 years (standard deviation [SD] = 10.7). Most were female (53.6%), held an undergraduate degree (24.7%) or a graduate degree (32.0%), and worked in private organizations (61.6%). Participants had worked in their current organization for a mean of 8.8 years (SD = 9.3) and had 15.9 years of professional experience (SD = 10.2). A total of 34.1% held managerial positions. The sample was predominantly drawn from Brazilian states, particularly Goiás (81.2%), followed by Ceará (6.4%) and São Paulo (5.4%). Additional participant characteristics are presented in Supplementary Material 1.

Translation and cultural adaptation process

The translation and back-translation of the Engaging Leadership Scale for Study 1 were conducted in accordance with the Test Adaptation Reporting Standards (Iliescu et al., 2024), the American Educational Research Association guidelines (American Educational Research Association et al., 2014), and recommendations by Ozolins et al. (2020). The process comprised the following steps: (i) translation by three bilingual researchers; (ii) evaluating the translated items by three experts in psychological assessment to assess semantic, idiomatic, experiential, and conceptual equivalence; (iii) assessing item clarity, content, wording, and comprehensibility in three focus groups representing diverse characteristics (e.g., sex and level of education); (iv) preparing the final version of the instrument; (v) back-translation into English by two independent translators; and (vi) reviewing the English version by the original author, who provided formal authorization for its use and adaptation. No items were added or removed, and the original instructions and five-point Likert response scale were maintained. The final instrument is presented in Table 1.

Procedures

We collected data through an online questionnaire administered in Brazilian Portuguese via Google Forms, with an estimated completion time of approximately 20 minutes. Snowball sampling was utilized; eligible individuals completed the questionnaire and then shared the link within their social networks (Costa, 2018). With this approach, the questionnaire was disseminated across 14 Brazilian states, albeit the final sample was concentrated mainly in Goiás. This study was approved by the Research Ethics Committee of the Pontifical Catholic University of Goiás (PUC-GO) (opinion no. 5.886.028, CAAE: 65939022.9.0000.0037), in compliance with Brazilian National Health Council Resolution 510/2016 and related regulations.

Instruments

We employed four instruments: a personal and sociodemographic data form, the Engaging Leadership Scale, the Utrecht Work Engagement Scale-9 (UWES-9), and the Perception of Human Resource Management Policies Scale.

Personal and sociodemographic data questionnaire

This instrument was developed by the research team to collect information for characterizing the participants (e.g., gender, age, education, income, etc.).

Engaging Leadership Scale

The Engaging Leadership Scale (Schaufeli, 2015a, 2021) was translated into Brazilian Portuguese [*Escala de Liderança Engajadora*] and validated. It is a 12-item self-report instrument rated on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree) and assesses employees' perceptions of their immediate leader's behaviors. Previous validation with Dutch workers demonstrated excellent internal consistency (α = 0.88–0.93) (Schaufeli, 2015a).

Table 1.
Engaging Leadership Scale – Employee Version

Description: The items presented below are intended to assess the leadership style used by your supervisor. Please read each statement carefully and indicate the extent to which you agree or disagree with it. When responding, consider the leader who directly manages your work.
1 – Strongly disagree 2 – Disagree 3 – Neither disagree nor agree 4 – Agree 5 – Strongly agree
1. My leader is able to enthuse team members with their plans.
2. My leader makes team members feel that their work is meaningful.
3. My leader inspires team members.
4. My leader encourages team members to develop their talents as much as possible.
5. My leader delegates tasks and responsibilities to team members.
6. My leader encourages team members to use their own strengths.
7. My leader encourages collaboration among team members.
8. My leader encourages team members to pursue shared goals.
9. My leader promotes team spirit.
10. My leader gives team members enough freedom and responsibility to complete their tasks.
11. My leader encourages team members to voice their opinions.
12. My leader gives credit to team members for their contributions.

Utrecht Work Engagement Scale-9

The UWES-9 was developed by Schaufeli et al. (2006) and adapted to the Brazilian context by Vazquez et al. (2015). It is a self-report nine-item instrument designed to assess levels of vigor, dedication, and absorption at work, with items rated on a five-point Likert scale (1 = strongly disagree; 5 = strongly agree). Its Brazilian version presents a unifactorial structure and demonstrated excellent internal consistency ($\alpha = 0.94$) (Vazquez et al., 2015).

Perception of Personnel Management Policies Scale

Developed and validated in Brazil by Fiuza (2008), this scale assesses employees' perceptions of organizational policies related to people management. It is a 19-item self-report instrument, with items rated on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree). Its factor structure comprises four dimensions, all showing good internal consistency: involvement ($\alpha = 0.88$); training, development, and education ($\alpha = 0.72$); working conditions ($\alpha = 0.77$); and rewards ($\alpha = 0.78$) (Fiuza, 2008).

Statistical analyses

We used descriptive statistics to characterize the study variables and conducted exploratory factor analyses (EFA) to examine the scale's dimensional structure. A polychoric correlation matrix, appropriate for ordinal variables, was applied along with the minimum residual extraction method. The number of factors was determined based on a combination of Kaiser's criterion (eigenvalues > 1) and visual inspection of the scree plot. Sphericity was assessed using Bartlett's test, and overall sampling adequacy was evaluated using the Kaiser-Meyer-Olkin (KMO) measure.

Confirmatory factor analysis (CFA) was performed using the diagonal weighted least squares estimator. Model fit was evaluated using multiple indices: the chi-square to degrees of freedom ratio (χ^2/df; desirable < 3), Tucker-Lewis Index (TLI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). Here, TLI and CFI above 0.90 indicate good fit, while RMSEA values below 0.08 are considered acceptable.

The psychometric evaluation included analyses of measurement invariance, reliability, and discriminant validity. Measurement invariance across sex was tested using a sequence of structural equation models: configural (equivalence of factor structure), metric (equivalence of factor loadings), and scalar (equivalence of intercepts). Reliability was estimated with McDonald's omega coefficient (ω). Convergent

validity was examined through Pearson's bivariate correlations between the Engaging Leadership Scale and the UWES-S-9 and Perception of Personnel Management Policies scales. Discriminant validity was assessed using the Fornell and Larcker (1981) criterion, which states that the square root of the average variance extracted for a given construct should exceed its correlations with other constructs. All analyses were conducted using JASP software (v. 0.19.3), with a significance level of 5% ($p < 0.05$).

Results of Study 1

Exploratory factor analysis

We performed exploratory factor analysis (EFA) to examine the scale's dimensional structure (Table 2). Bartlett's test of sphericity was statistically significant ($\chi^2 = 7024.05$; df = 66; $p < 0.001$), and the model demonstrated excellent sampling adequacy (KMO = 0.954). The scree plot (Figure 1) showed a clear inflection point after the first factor, suggesting a unidimensional solution. This finding was corroborated by Kaiser's criterion (eigenvalue > 1), such that only one factor was retained. This factor explained 78% of the total variance, reflecting an excellent explanatory capacity. All items presented factor loadings above 0.80 and communalities above 0.64, evidencing a strong relationship with the latent construct (Table 2).

Confirmatory factor analysis

The CFA results supported the unidimensional model (Table 3). Although the chi-square test was statistically significant ($\chi^2 = 208.2$; df = 54; $p < 0.001$), the model demonstrated acceptable overall fit (χ^2/df = 3.85), excellent incremental fit indices (TLI = 0.996; CFI = 0.996), acceptable approximation

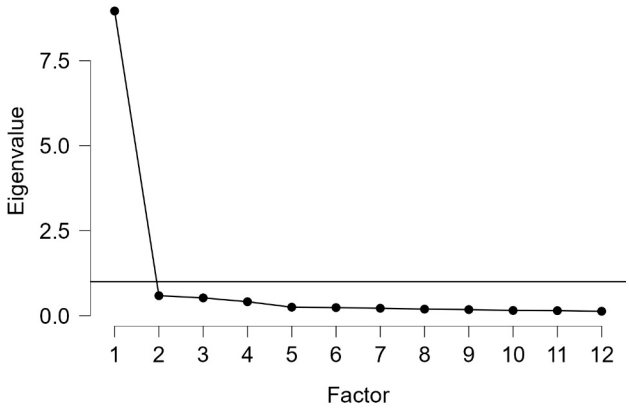

Figure 1. Scree plot

Table 2.
Exploratory factor analysis of the Engaging Leadership Scale in a general sample of employees

Items	Factor loading	h²	MSA
1. My leader is able to enthuse team members with their plans.	0.911	0.830	0.954
2. My leader makes team members feel that their work is meaningful.	0.909	0.827	0.955
3. My leader inspires team members.	0.884	0.782	0.960
4. My leader encourages team members to develop their talents as much as possible.	0.919	0.844	0.949
5. My leader delegates tasks and responsibilities to team members.	0.801	0.642	0.952
6. My leader encourages team members to use their own strengths.	0.912	0.832	0.955
7. My leader encourages collaboration among team members.	0.907	0.822	0.963
8. My leader encourages team members to pursue shared goals.	0.855	0.730	0.965
9. My leader promotes team spirit.	0.918	0.842	0.961
10. My leader gives team members enough freedom and responsibility to complete their tasks.	0.863	0.745	0.959
11. My leader encourages team members to voice their opinions.	0.869	0.755	0.940
12. My leader gives credit to team members for their contributions.	0.874	0.763	0.929

Note. h² = communality; MSA = measure of sampling adequacy

Table 3.
Confirmatory factor analysis of the Engaging Leadership Scale in a sample of general employees

Items	Factor loading	h^2
1. My leader is able to enthuse team members with their plans.	0.989	0.978
2. My leader makes team members feel that their work is meaningful.	0.983	0.966
3. My leader inspires team members.	0.983	0.966
4. My leader encourages team members to develop their talents as much as possible.	0.988	0.976
5. My leader delegates tasks and responsibilities to team members.	0.948	0.899
6. My leader encourages team members to use their own strengths.	0.984	0.968
7. My leader encourages collaboration among team members.	0.993	0.986
8. My leader encourages team members to pursue shared goals.	0.976	0.953
9. My leader promotes team spirit.	0.991	0.982
10. My leader gives team members enough freedom and responsibility to complete their tasks.	0.978	0.956
11. My leader encourages team members to voice their opinions.	0.981	0.962
12. My leader gives credit to team members for their contributions.	0.978	0.956

Note. h^2 = communality.

error (RMSEA = 0.082 [90% CI = 0.070–0.094]), and high internal consistency ($\omega = 0.969$). These indices are consistent with the high standardized factor loadings (>0.90), emphasizing the meaningful contribution of each item to the construct.

The four-factor model was also tested (see Supplementary Material 2). Overall, this model showed a deterioration in fit ($\chi^2/df = 5.95$) and an unacceptable approximation error (RMSEA = 0.11 [90% CI = 0.096–0.120]). Despite these limitations, the instrument demonstrated excellent internal consistency for the inspiration ($\omega = 0.929$), strengthening ($\omega = 0.898$), connection ($\omega = 0.919$), and empowerment ($\omega = 0.923$) factors, with standardized factor loadings of >0.90.

Sex invariance

The configural model demonstrated adequate fit ($\chi^2 = 246.34$; df = 106; CFI = 0.998; TLI = 0.998; RMSEA = 0.079), showing that the questionnaire's basic factor structure was equivalent for both men and women. The comparison between the metric and configural models was not statistically significant ($\Delta\chi^2$ [11] = 13.34; $p = 0.271$), and fit indices remained stable (CFI = 0.998; TLI = 0.998; RMSEA = 0.076), indicating invariance of factor loadings across sexes. Similarly, the imposition of scalar constraints did not result in a significant deterioration of model fit ($\Delta\chi^2$ [36] = 50.38; $p = 0.056$; CFI = 0.998; TLI = 0.998; RMSEA = 0.070), suggesting invariance of item intercepts. These results indicate that the Engaging Leadership Scale demonstrates invariance between genders, with factor loadings and item means equivalent for both men and women.

Convergent and discriminant validity

Convergent validity was supported by moderate to strong correlations between the Engaging Leadership Scale, the UWES-S-9, and the Perception of Personnel Management Policies Scale. Specifically, correlations were found with the UWES-S-9 ($r = 0.584$) and with the Perception of Personnel Management Policies Scale components ($r = 0.431$–0.594). These results indicate that engaging leadership shares substantial variance with theoretically related constructs, suggesting convergent validity. Discriminant validity was established according to Fornell and Larcker's (1981) criterion, as the square root of the average variance extracted exceeded the correlations with other constructs. Complete results for convergent and discriminant validity are provided in Supplementary Material 3.

Study 2

Participants

This study included 131 leaders from the judiciary, with a mean age of 50.7 years (SD = 8). Most were male (54.2%), held a graduate degree (69.5%), were married or in a stable relationship (74%), and had no children (75.6%). Participants had 7.4 years (SD = 6.5) of experience in leadership positions and 21.9 years (SD = 8.7) of professional experience. Most were responsible for operational activities (67.2%). A detailed characterization of the sample is provided in Supplementary Material 1.

Translation and cultural adaptation process

Following the translation and cross-cultural adaptation procedures described in Study 1, all items were rewritten in the first person to enable leaders' self-assessment, replacing third-person formulations (e.g., "My leader promotes…") with first-person statements (e.g., "I promote…"). The complete version of this instrument is shown in Table 4.

Procedures

The Engaging Leadership Scale was administered to managers in the judicial sector in Campinas (São Paulo State). Participants held formally recognized leadership positions and supervised at least one subordinate. A convenience sample was used, as data collection occurred before a course on engaging leadership delivered by a member of the research team. All eligible participants signed an informed consent form prior to their participation and completing the questionnaires. The acceptance rate was 78%. Responses were collected via the SurveyMonkey platform, with an average completion time of approximately 10 minutes. This study was approved by the Research Ethics Committee of the Federal University of Health Sciences of Porto Alegre (UFCSPA) (opinion no. 6.011.643, CAAE: 78617617.8.0000.5345).

Instruments

We used three instruments: a personal and sociodemographic data form, the Engaging Leadership Scale, and the UWES-9. The complete description of these instruments is provided in Study 1.

Statistical analyses

For the EFA, we initially used the minimum residual extraction method with a polychoric correlation matrix, which did not converge. Subsequently, for reasons of parsimony, we used Pearson's correlation matrix. The CFA and reliability analysis were conducted according to the procedures adopted in Study 1. Convergent

Table 4.
Engaging Leadership Scale – Leader version

Description: Read each statement carefully and evaluate your leadership according to the response options below.				
1 – Strongly disagree	2 – Disagree	3 – Neither disagree nor agree	4 – Agree	5 – Strongly agree
1. I am able to enthuse team members with my plans.				
2. I make team members feel that their work is meaningful.				
3. I inspire team members.				
4. I encourage team members to develop their talents as much as possible.				
5. I delegate tasks and responsibilities to team members.				
6. I encourage team members to use their own strengths.				
7. I encourage collaboration among team members.				
8. I encourage team members to pursue shared goals.				
9. I promote team spirit.				
10. I give team members enough freedom and responsibility to complete their tasks.				
11. I encourage team members to voice their opinions.				
12. I give credit to team members for their contributions.				

validity was tested using bivariate correlations between the Engaging Leadership Scale and the UWES-9. The significance level was set at 5% ($p < 0.05$).

Results of Study 2

Exploratory factor analysis

The EFA results for Study 2 are listed in Table 5. Bartlett's test of sphericity was statistically significant ($\chi^2 = 705.02$, df = 66; $p < 0.001$), and the model showed good overall adequacy (KMO = 0.885). The Engaging Leadership Scale again exhibited a single-factor structure, accounting for 42.4% of the total variance. Factor loadings ranged from 0.53 to 0.82.

Confirmatory factor analysis

The CFA results are presented in Table 6. In the unidimensional model, although the chi-square test was statistically significant ($\chi^2 = 189.9$; df = 54; $p < 0.001$), the model showed acceptable overall fit ($\chi^2/df = 3.51$), with good indices of adequacy (TLI = 0.938; CFI = 0.949) and reliability ($\omega = 0.896$). On the other hand, the RMSEA of 0.139 (90% CI [0.117, 0.161]) indicated a high approximation error, possibly due to the small sample size (n = 131). Attempts to analyze measurement invariance across sex were not feasible because the configural model (i.e., the baseline model) did not converge. The four-factor model also failed to converge using the diagonal weighted least squares estimator and weighted least squares mean and variance adjusted estimators, so the unidimensional structure was considered the most parsimonious option.

Convergent and discriminant validity

Convergent validity was assessed through the correlation between the total scores of the Engaging Leadership Scale and UWES-9. We observed a moderate positive correlation ($r = 0.473$), which was statistically significant ($p < 0.001$), supporting the convergent validity of the Engaging Leadership Scale.

Discussion

This study aimed to conduct a cross-cultural adaptation, examine evidence of validity for the Engaging Leadership Scale in the Brazilian context, and adapt a version of the scale that could be applied to both leaders and employees. For this, we performed two studies with different samples that included general employees and leaders in the Brazilian judiciary.

In Study 1, although the Engaging Leadership Scale was initially proposed with a four-factor structure, the analyses indicated that a unidimensional model provided better fit indices, explaining 78% of

Table 5.
Exploratory factor analysis of the Engaging Leadership Scale in a sample of leaders from the judiciary

Items	Factor loading	h^2	MSA
1. I am able to enthuse team members with my plans.	0.557	0.310	0.876
2. I make team members feel that their work is meaningful.	0.716	0.513	0.888
3. I inspire team members.	0.541	0.293	0.886
4. I encourage team members to develop their talents as much as possible.	0.625	0.391	0.897
5. I delegate tasks and responsibilities to team members.	0.640	0.409	0.945
6. I encourage team members to use their own strengths.	0.670	0.449	0.874
7. I encourage collaboration among team members.	0.823	0.677	0.865
8. I encourage team members to pursue shared goals.	0.746	0.556	0.893
9. I promote team spirit.	0.748	0.560	0.941
10. I give team members enough freedom and responsibility to complete their tasks.	0.583	0.340	0.884
11. I encourage team members to voice their opinions.	0.546	0.298	0.826
12. I give credit to team members for their contributions.	0.536	0.287	0.834

Note. h^2 = Communality; MSA = measure of sampling adequacy.

Table 6.
Confirmatory factor analysis of the Engaging Leadership Scale in a sample of leaders from the judiciary

Items	Factor loading	h^2
1. I am able to enthuse team members with my plans.	0.706	0.498
2. I make team members feel that their work is meaningful.	0.818	0.669
3. I inspire team members.	0.637	0.406
4. I encourage team members to develop their talents as much as possible.	0.717	0.514
5. I delegate tasks and responsibilities to team members.	0.696	0.484
6. I encourage team members to use their own strengths.	0.790	0.624
7. I encourage collaboration among team members.	0.942	0.887
8. I encourage team members to pursue shared goals.	0.850	0.723
9. I promote team spirit.	0.826	0.682
10. I give team members enough freedom and responsibility to complete their tasks.	0.706	0.498
11. I encourage team members to voice their opinions.	0.687	0.472
12. I give credit to team members for their contributions.	0.756	0.572

Note. h^2 = Communality; MSA = measure of sampling adequacy.

the total variance. These results suggest that, among employees, the construct can be adequately represented by a global engaging leadership score, corroborating Schaufeli's (2021) recommendations. The unidimensional structure is consistent with previous studies showing strong correlations among the inspiration, empowerment, strengthening, and connection factors (Rahmadani & Schaufeli, 2022; Robijn et al., 2020; Schaufeli, 2021). In this model, factor loadings were high (> 0.90), and internal consistency was strong (ω = 0.969), in line with commonly observed values (α = 0.86–0.95) (Rahmadani et al., 2019; Rahmadani & Schaufeli, 2022), demonstrating the robustness of the results. Sex invariance, as well as convergent and discriminant validity, were also supported, further strengthening the study's findings. Given the satisfactory psychometric properties, all items were retained, preserving the original version proposed by Schaufeli (2015a, 2021).

In Study 2, the EFA retained a single factor, explaining 42.4% of the total variance. Confirmatory factor analysis further supported this structure, revealing high factor loadings (λ > 0.60) and excellent internal consistency (ω = 0.896). Nevertheless, the model showed a high approximation error (RMSEA = 0.139), and convergence issues prevented the sex invariance analysis and four-factor model testing. Kyriazos (2018) emphasizes that sample size is a critical parameter in CFA, as a limited number of observations can affect several statistical indicators, such as residual estimates, confidence interval width, and overall model fit indices. The small sample size could compromise the discriminant validity assessment; consequently, it was not conducted in Study 2, as highlighted by Henseler et al. (2015). Although the unidimensional structure demonstrated adequate psychometric properties related to reliability and factor loadings, future studies with larger samples are necessary to address gaps associated with the version for leaders.

Limitations

In Study 1, the primary limitation was the employees' geographic distribution. Although snowball sampling was intended to reach professionals across Brazil, this strategy proved only partially effective. Nonetheless, sample heterogeneity in education, income, training, institutional affiliation, and professional experience partially offsets this limitation and contributes to the generalizability of the findings.

The most substantial limitations were observed in Study 2. The sample comprised exclusively leaders from a single institution within the judiciary, resulting in homogeneous organizational and professional

characteristics. The small sample size, coupled with the focus on leaders from the same sector, operating under identical regulations and within the same area of knowledge, limited the generalizability of the findings. These limitations may also have hindered more complex statistical analyses, as reflected in convergence issues and higher RMSEA values.

Final considerations

Robust evidence of validity was obtained for the Engaging Leadership Scale when applied to Brazilian employees. The unidimensional structure showed the best fit, indicating that the inspiration, empowerment, strengthening, and connection factors form a cohesive and highly correlated construct. Although the results for the leader self-assessment version are promising, sample limitations restricted a fuller psychometric evaluation. Future investigations with broader and more diverse samples of Brazilian leaders would strengthen these findings.

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Appendix A

Brazilian Version of the Engaging Leadership Scale

Escala de Liderança Engajadora – Versão Trabalhadores

Escala de Liderança Engajadora - Versão Trabalhadores Descrição: Os itens apresentados a seguir têm o objetivo de avaliar o estilo de liderança utilizado pelo seu chefe. Leia atentamente as frases abaixo e assinale a resposta que corresponda ao quanto você concorda ou discorda das afirmações. Ao responder, pense no chefe que atua como sua liderança imediata.
1 – Discordo totalmente 2 – Discordo 3 – Nem discordo nem concordo 4 – Concordo 5 – Concordo totalmente
1. Meu líder é capaz de entusiasmar os membros da equipe com seus planos.
2. Meu líder faz com que os membros da equipe sintam que eles contribuem para algo importante.
3. Meu líder é inspirador.
4. Meu líder incentiva os membros da equipe a desenvolver seus talentos tanto quanto possível.
5. Meu líder delega tarefas e responsabilidades para os membros da equipe.
6. Meu líder incentiva os membros da equipe a usar seus próprios pontos fortes.
7. Meu líder encoraja a colaboração entre membros da equipe.
8. Meu líder encoraja ativamente os membros da equipe a buscar os mesmos objetivos.
9. Meu líder promove espírito de equipe.
10. Meu líder dá à equipe liberdade e responsabilidade suficientes para completar suas tarefas.
11. Meu líder encoraja membros da equipe a dar sua própria opinião.
12. Meu líder reconhece a autoria das contribuições dos membros da equipe.

Escala de Liderança Engajadora – Versão Líderes

Escala de Liderança Engajadora - Versão Líderes Descrição: Leia atentamente as frases e avalie a sua liderança conforme as opções abaixo.
1 – Discordo totalmente 2 – Discordo 3 – Nem discordo nem concordo 4 – Concordo 5 – Concordo totalmente
1. Sou capaz de entusiasmar os membros da minha equipe com meus planos.
2. Faço com que os membros da minha equipe sintam que eles contribuem para algo importante.
3. Sou inspirador(a).
4. Incentivo os membros da minha equipe a desenvolver seus talentos tanto quanto possível.
5. Delego tarefas e responsabilidades para os membros da minha equipe.
6. Incentivo os membros da minha equipe a usar seus próprios pontos fortes.
7. Encorajo a colaboração entre membros da minha equipe.
8. Encorajo ativamente os membros da minha equipe a buscar os mesmos objetivos.
9. Promovo espírito de equipe.
10. Dou à minha equipe liberdade e responsabilidade suficientes para completar suas tarefas.
11. Encorajo membros da minha equipe a dar sua própria opinião.
12. Reconheço a autoria das contribuições dos membros da minha equipe.

Supplementary material 1

Study 1 – *Participant's sociodemographic profile*

Variables	n	%
Female sex	228	53.6
Age (mean, SD)	36.7	10.7
Living with a partner	258	61.4
Has children	243	57.2
Number of children (mean, SD)	1.8	0.8
Living with children	191	78.6
Number of dependents (mean, SD)	2.1	1.5
Level of education		
Middle school	9	2.1
High school	102	24.0
Technical/vocational education	42	9.9
Undergraduate degree	105	24.7
Graduate degree	136	32.0
Master's degree	21	4.9
Doctoral degree	10	2.4
Type of organization		
Private	262	61.6
Public	149	35.1
Third sector (non-profit)	14	3.3
Time (years) in current organization (mean, SD)	8.8	9.3
Professional experience (years) (mean, SD)	15.9	10.2
Holding a leadership position	145	34.1
Monthly gross income (BRL)		
≤ 1,320.00	15	3.5
1,321.00–3,960.00	115	27.1
3,961.00–7,920.00	161	37.9
7,921.00–11,880.00	69	16.2
11,881.00–26,400.00	55	12.9
>26,401.00	10	2.4

Note. n = Absolute frequency; % = relative frequency; SD = standard deviation.

Study 2 – *Participant's sociodemographic profile*

Variables	n	%
Male sex	71	54.2
Age (mean, SD)	50.7	8.0
Marital status		
Single	17	13.0
Married/living with a partner	97	74.0
Separated/divorced	15	11.5
Widowed	2	1.5
Has children	32	24.4
Number of children (mean, SD)	2.0	1.9
Level of education		
High school	6	4.6
Undergraduate degree	34	26.0
Graduate degree	91	69.5
Professional experience (years) (mean, SD)	21.9	8.7
Time in leadership positions (years) (mean, SD)	7.4	6.5
Number of direct reports (mean, SD)	9.3	13.9
Level of management		
Strategic	11	8.4
Tactical	32	24.4
Operational	88	67.2

Note. n = Absolute frequency; % = relative frequency; SD = standard deviation.

Supplementary material 2

Confirmatory factor analysis of the four-factor model

Engaging Leadership Scale – Employee report: model fit indices for the four-factor model (n = 425)

Fit index	Result	Interpretation
χ^2/df	5.95	Poor fit (< 3)
Comparative fit index	0.992	Excellent fit (> 0.95)
Tucker-Lewis index	0.989	Excellent fit (> 0.95)
RMSEA	0.108	High (> 0.08)
RMSEA (90% CI)	0.096–0.120	-

Note. The estimator used was diagonally weighted least squares. df = degrees of freedom; RMSEA = root mean square error of approximation.

Engaging Leadership Scale – Employee report: standardized factor loadings and reliability by factor

Factor and items	Factor loading	ω
F1: Inspiration	-	0.929
LE1. Enthuse team members	0.989	-
LE2. Contribute to something meaningful	0.983	-
LE3. Be inspiring	0.983	-
F2: Strengthening	-	0.898
LE4. Develop talents	0.988	-
LE5. Delegate tasks	0.948	-
LE6. Use strengths	0.984	-
F3: Connection	-	0.919
LE7. Encourage collaboration	0.993	-
LE8. Pursue shared goals	0.976	-
LE9. Promote team spirit	0.991	-
F4: Empowerment	-	0.923
LE10. Give freedom and responsibility	0.978	-
LE11. Encourage expression of opinions	0.981	-
LE12. Give credit for contributions	0.978	-

Supplementary material 3

Convergent and discriminant validity analysis

Correlations between work engagement and perceived human resource management practices with engaging leadership

Constructs	Factors	AVE	√AVE	r	*p*
Engaging leadership	-	0.797	0.893	-	-
Work engagement	-	0.692	0.832	0.584	< 0.001
Perceived human resource management	Involvement	0.738	0.859	0.594	< 0.001
	Training	0.718	0.847	0.431	< 0.001
	Working conditions	0.650	0.806	0.505	< 0.001
	Rewards	0.732	0.856	0.467	< 0.001

Note. AVE = Average variance extracted.

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