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The paths of entrenchment in the public service: a longitudinal analysis in multigroups

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Little more than a decade separates this research from the first academic proposition of organizational entrenchment. To date, no longitudinal research has been carried out despite the recognized importance of this method for enriching studies in the behavioral field. This research aimed to identify characteristics of organizational entrenchment among civil servants at federal educational institutions in Brazil based on a longitudinal assessment of latent profiles. A quantitative and longitudinal survey was carried out with 1060 participants in the first collection. Descriptive analysis, comparison of means, and latent transition analysis were carried out. The civil servants in the sample showed low levels of entrenchment. Among the main findings are the stability of the profiles formed by the civil servants and the higher averages found in the dimensions of adjustments to social position and impersonal bureaucratic arrangements, reinforcing some cross-sectional theoretical findings. The results help to guide managers on the importance of internal factors for the entrenchment of civil servants and how attention to the items in the dimension of adjustments to social position can favor working with this bond. This research found that, over time, entrenchment is a stable bond.
Keywords: organizational entrenchment; longitudinal; public service; latent transition analysis.

Os caminhos do entrincheiramento no serviço público: uma análise longitudinal em multigrupos

Pouco mais de uma década separa este estudo da primeira proposição acadêmica do entrincheiramento organizacional, e, até o momento, pesquisas longitudinais não foram realizadas, apesar da importância reconhecida desse método para enriquecer os estudos no campo comportamental. Este artigo objetivou identificar características do entrincheiramento organizacional entre servidores de instituições federais de ensino no Brasil, com base na avaliação longitudinal dos perfis latentes. Realizou-se uma pesquisa quantitativa e longitudinal com 1060 participantes na primeira coleta. Foram feitas análises descritivas, de comparação de médias e análise de transição latente. Os servidores da amostra apresentaram baixos níveis de entrincheiramento. Entre os principais achados, está a estabilidade dos perfis formados pelos servidores, tendo as médias mais altas sido encontradas nas dimensões "ajustamentos à posição social" e "arranjos burocráticos impessoais", o que reforça alguns achados teóricos transversais. Os resultados desta pesquisa contribuem para orientar gestores sobre a importância dos fatores internos para o entrincheiramento dos servidores e sobre como a atenção aos itens da dimensão "ajustamentos à

posição social" pode favorecer o trabalho com esse vínculo. O presente estudo encontrou que, ao longo do tempo, o entrincheiramento é um vínculo estável.

Palavras-chave: entrincheiramento organizacional; longitudinal; serviço público; análise de transição latente.

Los caminos de atrincheramiento en el servicio público: un análisis longitudinal en multigrupos

Ha transcurrido poco más de una década entre la primera propuesta académica de atrincheramiento organizacional y el presente estudio y, hasta la fecha, no se ha llevado a cabo ninguna investigación longitudinal, a pesar de la reconocida importancia de este método para enriquecer los estudios en el campo del comportamiento. Esta investigación tuvo como objetivo identificar las características del atrincheramiento organizacional entre funcionarios de instituciones federales de enseñanza en Brasil, a partir de una evaluación longitudinal de perfiles latentes. Se realizó una encuesta cuantitativa y longitudinal con 1060 participantes. Se realizaron análisis descriptivos, comparación de medias y análisis de transición latente. Los funcionarios de la muestra presentaron bajos niveles de atrincheramiento. Entre los principales hallazgos están la estabilidad de los perfiles formados por los funcionarios, con las medias más altas encontradas en las dimensiones ajustes a la posición social y arreglos burocráticos impersonales, lo que refuerza algunos hallazgos teóricos transversales. Los resultados de esta investigación ayudan a orientar a los gestores sobre la importancia de los factores internos para el atrincheramiento de los funcionarios y sobre cómo la atención a los ítems de la dimensión ajustes a la posición social puede favorecer el trabajo con ese vínculo. Esta investigación constató que el atrincheramiento es un vínculo estable a lo largo del tiempo.

Palabras clave: atrincheramiento organizacional; longitudinal; función pública; análisis latente de transición.

1. INTRODUCTION

Just over a decade ago, the study of a specific bond, organizational entrenchment (OE), gained prominence in the field of organizational behavior, based on several studies, as the one by Rodrigues and Bastos (2012). The debate on the definition of organizational bonds has expanded its conceptual and dimensional reach (Rodrigues et al., 2019; Wasti et al., 2016), with many studies in the field presenting new types of links derived from organizational commitment (OC) (Tomazzoni et al., 2020). Among these emerging ties that stem from commitment is that of entrenchment.

The use of the term and the concept were taken from career studies, after Carson et al. (1995) have coined the expression, alluding to war trenches and to the idea of a necessary permanence. When it migrated to the organizational field, the concept has continued to gather evidence of its importance (Costa, 2021), and was capable of explaining the permanence of workers in their organizations for different reasons of commitment (Rodrigues et al., 2021; Tomazzoni et al., 2020).

Entrenched permanence means the worker's self-perception that he/she stays in the organization for fear of losing the benefits received, combined with the shortage of better opportunities in the external market (Rodrigues & Bastos, 2015). The theoretical and methodological building of this link started from separating the basis of continuation present in the three-dimensional model of commitment (Meyer & Allen, 1991). Statistical and theoretical evidence indicates an overlap of the continuity base and the OE bond (Rodrigues et al., 2019; Rodrigues et al., 2021), and many studies mention the construct validity as the appropriate measure for a new bond (Rodrigues et al., 2021).

Since the emergence of the OE agenda, some gaps were found and suggestions for studies to fill them have appeared. As an example, two of them were included in this paper for different and potentially interesting reasons. The first is the lack of longitudinal OE research, although this has been a recurring suggestion since OE's inception until more recent studies. This is a relevant suggestion, because it is a useful analysis for better understanding the bonding process (Rodrigues & Bastos, 2012; Rodrigues et al., 2021), besides considering the significant nature of this type of research for behavioral

and organizational sciences (Costa & Bastos, 2014). The second gap can be found in recent studies like the one by Bottini et al. (2021), who consider the scope, complexity, and size of the Brazilian public sector as appropriate for research in this area.

This study is based on the following questions: (1) if we know how individuals and organizations adapt to entrenchment over time, how can we help organizations that want to identify, stimulate, or reduce this type of bond? (2) Hence, from a longitudinal perspective, how does organizational entrenchment behave?

The length of stay in a public institution shows signs of influencing the bond between worker and organization (Nóbrega & Rowe, 2022). A longitudinal analysis can help understand this phenomenon and propose solutions to reduce potential undesirable impacts. On an individual level, such impacts may be demotivation, dissatisfaction, stagnation, and physical and mental illness. For the organization, entrenchment can lead to a vegetative life, lack of innovation, and loss of productivity (Pinho et al., 2015). For public servants in education, this study's target, there is a similar notion that entrenchment is related to negative aspects, such as illness and inefficiency (Nóbrega & Rowe, 2022).

For Rodrigues and Alvares (2020), although OE is not significantly or positively associated with performance, it is not necessarily linked to unproductivity, and may be needed and wished in certain organizational contexts, as long as combined with commitment (Rodrigues & Bastos, 2013; Tomazzoni & Costa, 2020). This is possible because the bonds coexist and are not mutually exclusive (Kim & Beehr, 2018; Silva et al., 2018). Therefore, observing and dealing with levels of entrenchment are necessary management actions.

Given these possibilities, and considering that, in the public service, entrenchment was greatly influenced by management (Nóbrega & Rowe, 2022), the role of managers becomes more evident. Hence, knowing better this link and its characteristics can foster and facilitate exercising the public managerial function; otherwise, by adopting inappropriate policies and practices of people management, incidences of entrenchment can be strengthened (Bottini et al., 2021).

It is also known that public service has peculiarities that reveal specific efforts in management practices (Bottini et al., 2021). Some of these characteristics are linked to entrenchment, such as stability (Maia & Bastos, 2015; Nóbrega & Rowe, 2022), which, for many people, is a benefit that favors permanence in public organizations (Oliveira et al., 2021). On the one hand, if this can bring more satisfaction and involvement with the organization, on the other, it can increase entrenchment, by associating leaving with loss (Rodrigues et al., 2013). The *status* acquired through stability and the investments made to become a civil servant can also favor OE (Nóbrega & Rowe, 2022; Rodrigues & Bastos, 2015). However, some studies consider that bonds are influenced by time (Klein et al., 2020), including those on public organizations (Nóbrega & Rowe, 2022), so that finding ways to handle entrenchment is a practical contribution of this study.

We sought methodological strategies that, in an unprecedented way, could contribute theoretically and practically to understanding the following objective: to identify characteristics of organizational entrenchment among civil servants at Brazilian federal education institutions, based on a longitudinal assessment of latent profiles. This strategy has proved appropriate for analyzing constructs in the field of organizational behavior and focuses on identifying and understanding people's behavior based on the formation of subgroups and on the attributes that bring them together and keep them apart (Meyer et al., 2019; Milhome& Rowe, 2018).

Therefore, the range of professionals in public organizations - with norms, goals, values, and management models, as well as a stable and attractive structure for most of them - is a favorable scenario for comparing data and forming subgroups for latent profile analysis. In addition, among the 32 articles found on the subject, between 2011 and 2020, around 19% address this context (Costa, 2020).

This paper is organized in the following sections, in addition to this Introduction: theoretical overview of the OE bond, description of the method used, results, discussion, and conclusions.

2. THEORETICAL BACKGROUND AND STUDY HYPOTHESES

The "entrenchment" construct derives from studies on commitment and issues around its concept. The earliest understanding defines commitment as an attitude of strong identification and attachment to the organization (Mowday et al., 1982; Rodrigues & Bastos, 2012). Meyer and Allen (1991) presented a wide-range model made up of three bases: affective, normative, and of continuation. The combination of elements from these bases would define an individual's level of commitment.

Today, commitment faces a constructive conflict between unidimensional and multidimensional definitions (Allen, 2016; Klein & Park, 2016). Considering commitment as an emotional bond (Klein & Park, 2016), there has been a growing discussion on the overlap between the bases that analyze commitment and the existence of other ties. Rodrigues et al. (2019) and Rodrigues et al. (2021) have gathered theoretical arguments and empirical evidence that support OE as overlapping the continuation basis, following up on the work by Rodrigues and Bastos (2015), who define OE as a tendency to stay in the organization based on need, avoiding potential losses from leaving and from the lack of alternative opportunities in the external market.

Conceptually, the OE model covers three dimensions with the same theoretical basis of commitment to continuation. The dimension "adjustments to social position" (APS) refers to the investments made by the worker and the subjective and objective costs he/she incurs for adapting. The dimension "impersonal bureaucratic arrangements" (ABI) regards the extrinsic aspects of security and the financial gains linked to the job, which can be lost by leaving the organization. Finally, the dimension "limitation of alternatives" (LA) combines extrinsic and intrinsic aspects that measure the worker's individual assessment of the opportunity or lack of it in the external market, as well as the self-evaluation of his/her employability (Rodrigues & Bastos, 2012).

Currently, there are studies where OE is associated to issues such as well-being (Souza et al., 2018), organizational values (Formiga et al., 2018;Tomazzoni & Costa, 2020), quality of life at work (Milhome et al., 2018; Paiva et al., 2020), training transfer support (Balsan et al., 2020), work-family conflict (Aguiar et al., 2014), commitment (Milhome & Rowe, 2018), people management practices (Mariano & Moscon, 2018), sense of work (Costa et al., 2022), meaning of work (Balsan et al., 2019), work engagement (Pereira & Lopes, 2019), and organizational performance (Rodrigues & Alvares, 2020). This is a good example of the efforts to understand the dynamics of entrenchment in different spaces and ways of interaction.

Through a survey at Google Scholar, Spell, and Capes Platform databases, using the search engine 'organizational entrenchment', we selected 34 articles on the subject, between 2012 and 2022, after excluding those repeated or which addressed career entrenchment. Costa (2021) found 32 articles in

his bibliometric study, between 2011 and 2020. Excluding the author's own study from this selection, we added one more article to those findings. In general, there is a diversified professional profile of participants, from different areas, with a higher number of studies on the public service.

Among the practical reasons for better explaining the dynamics of entrenchment is the attempt to elucidate the behaviors expected from entrenched workers, and the relationships that predict this bond. Hence, it is possible to contribute to guidance, training, and planning of management practices. A more traditional view of bonds saw the development of commitment as a way of enhancing productive behaviors, such as performance, organizational citizenship, satisfaction, and organizational effectiveness (Becker et al., 2013). On the other hand, OE should be discouraged for having, through undesirable behaviors, a positive relationship that would affect issues like performance and productivity (Bastos et al., 2013).

Although this negative view of entrenchment is shared by managers who associate entrenched employees with a higher cost of organization's involvement to foster performance (Nóbrega & Rowe, 2022; Pinho et al., 2015; Tomazzoni & Costa, 2020), entrenchment does not exclude achieving goals. The entrenched worker focuses on the goal and performance of the intended activities. This shows that they are productive and guides management towards identifying, understanding, encouraging, and using the type of bonds, in line with the organization's context and goals (Tomazzoni & Costa, 2020).

Some extrinsic aspects that serve as a measure of the level of entrenchment also act as enhancers. The ABI dimension represents aspects linked to stability and financial gains that would be lost if the worker left the organization (Rodrigues & Bastos, 2012). Milhome et al. (2018) show that elements such as payment and benefits, assessed in this dimension, can serve as conditions for entrenchment and commitment. In turn, Scheible and Bastos (2013) found that remuneration and benefit practices fostered OE, while Rodrigues et al. (2021) observed that compensation can strengthen both types of bonds, especially the instrumental.

These authors agree with Morrow (2011) and believe that remuneration practices lead to evaluations with strong subjective satisfaction criteria, and workers tend to make more negative than positive evaluations. This means that the impacts of these aspects on the type of bond are smaller.

Regarding public institutions, where stability is a strong attraction for workers (Nóbrega & Rowe, 2022; Oliveira et al., 2021), we can assume that the criteria of this dimension, well known by the employee before joining the firm, foster a type of positive attachment that affects entrenchment. The effects of these conditions on the bond may vary over time, since, as Nóbrega and Rowe (2022) identified in their study of public bodies, bonds do not remain inert, but function as a relationship that builds or weakens over time. Thus, we defined the first hypothesis (H1): the ABI dimension is the one with the least change in the levels of analysis over time. From there, we developed the second hypothesis (H2): changes in the ABI dimension influence profile stability over time.

Hence, APS (adjustments to social position) is a dimension that requires investments, by the individual and the organization, to achieve conditions and good adaptation for the proper performance of activities (Rodrigues & Bastos, 2012). Here we can talk about extrinsic factors, which are well linked to management interventions because they involve practices such as development opportunities, training, and recognition, which are constant measures of this dimension. However, Rodrigues et al. (2021) found a moderate influence of professional development practices on OE and lower

than commitment, as well as moderate correlations of human resource management practices with this dimension.

Balsan et al. (2020), in turn, found no relationship between support to training transfer and OE. According to the literature, the APS dimension includes practices that indicate professional appreciation, leading to the individual's involvement with the organization based on an exchange relationship. Due to their specific nature, they can also be experienced as limiting and non-transferable, affecting employability's perception negatively (Rodrigues et al., 2021). Considering this information, we defined the following hypotheses: (H3) the APS dimension is the one with the greatest variation in the levels of analysis over time; and (H4) changes in the APS dimension influence profile stability over time.

For Rodrigues and Bastos (2015), the LA (limitation of alternatives) dimension is the one that should be least encouraged, since it is basically limiting, reducing the perception of better opportunities outside that organization and low employability conditions. Some relationships found in Rodrigues et al. (2021) strengthen the relevance of this dimension, such as strong negative correlations between the behavioral intention of leaving the organization and the limitation of alternatives, as well as the positive correlation, although weak, between this same dimension and perceived employability. According to Rodrigues and Bastos (2012), this dimension is a direct determinant of staying for necessity. The literature helps considering the following hypotheses: the dimension with the highest influence on increasing entrenchment over time is LA (H5); and changes in the LA dimension affect profile stability over time (H6).

Given these relations, not well explained yet, studies that improve the construct are still necessary. In the next section, we address the method used in the research.

3. METHOD

This was a longitudinal, quantitative study that went through the following stages. First, we collected data over three periods – October to December 2018, July to September 2019, and April to June 2020 - with a minimum interval of six months between them, according to the literature (Diggle, 2002). Then, we delimited and organized the sample – civil servants from federal education institutions in the Northeast of Brazil. Finally, we chose the most appropriate method for processing and analyzing data – in this case, descriptive analyses, comparison of means, latent transition, as well as previous analyses necessary to develop a longitudinal study.

We contacted all federal education institutions in the Northeast, but only five gave their employees access to the survey, either by releasing the list of institutional e-mail addresses or by forwarding the e-mail through the people management sector. The type of sampling was non-probabilistic, by convenience. Participating civil servants signed a free and informed consent form, with information on the research. Each of the three surveys lasted three months, and respondents' e-mails allowed pairing databases according to time. At the end of the first period, 1,060 questionnaires were suitable for analysis. In the second, 385 of the 1,060 civil servants from the first collection participated. In the third, 175 of the 385 answered.

For data processing, we considered as reference sample the one of the first period. In order to use those data, we employed the Full Information Maximum Likelihood (FIML) estimator, widely used

in longitudinal research, as it enables robust analyses, which avoids attributing data. This estimator does not replace data but makes analysis by estimating the parameters of the statistical model being tested (Cham et al., 2017).

In general, FIML is capable of handling a large amount of data (Huyghebaert-Zouaghi et al., 2020; Spurk et al., 2020; Van Zalk et al., 2020). Huyghebaert-Zouaghi et al. (2020) dealt with 70% of missing data. Dong and Peng (2013) showed that FIML provided solutions with an acceptable bias in samples with 20%, 40%, and 60% of missing data. Since we had less than 50% of missing data, the original sample was a feasible option for data analysis.

We considered goodness-of-fit indicators. For the scale's psychometric questions, we used the root mean square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker-Lewis index (TLI). Confirmatory factor analysis (CFA) was carried out by the estimator weighted least squares means and variance adjusted (WLSMV) (Asparouhov & Muthén, 2012). The longitudinal invariance analysis was done by using the FIML estimator (Cham et al., 2017).

We used the Robust Maximum Likelihood estimator (RML) (L. K. Muthén & B. O. Muthén) to predict latent profiles, both in the separate data collection periods and in latent transition analysis (LTA) To assess the quality of the tested models, we employed the goodness-of-fit indicators Akaike information criterion (AIC), Bayesian information criterion (BIC), and sample-adjusted Bayesian information criterion (SABIC), as well as simulation tests to compare the models, such as the bootstrapped likelihood ratio test (BLRT) and the adjusted Lo-Mendell-Rubin (Adjusted LMR).

Participants were 40 years old on average (M = 40.20; SD = 9.60; Min. = 20 years old; Max. = 70), with women being the majority in the sample (55.57%), followed by married individuals (54.62%), with education ranging from Specialist (28.21%), Master (27.26%), and PhD (22.45%), with an average of 8.35 years working at the organization (SD = 8.25; Min. = 1, Max. = 45), and without a senior position (75.66%). In periods 2 and 3, the same characteristics of period 1 prevailed.

The instrument used was the organizational entrenchment scale (Rodrigues & Bastos, 2015), which has 18 items, organized in three factors, with six items each: APS, LA, and ABI, arranged on a 6-point Likert-type scale, ranging from "totally disagree" (1) to "totally agree" (6). Table 1 shows the frugal adjustment indices, while Figure 1 shows the graphical representation of the model's structure. Cronbach's alpha was above 0.70, in line with the literature (Hair et al., 2009).

TABLE 1 MAIN INDICES OF THE ORGANIZATIONAL ENTRENCHMENT SCALE AFTER ADJUSTMENTS

	Scale's psychometric índices	OE	Ideal
1	χ^2/G.L	619,91	>2
2	Root Mean Square Error of Aproximation (RMSEA)	0,06	<0,10
3	Comparative Fit Index (CFI)	0,92	>0,90
4	Tucker-Lewis Index (TLI)	0,91	>0,90

Note: OE = organizational entrenchment.
Source: Survey data.

FIGURE 1   STRUCTURE OF THE ORGANIZATIONAL ENTRENCHMENT SCALE (OES)
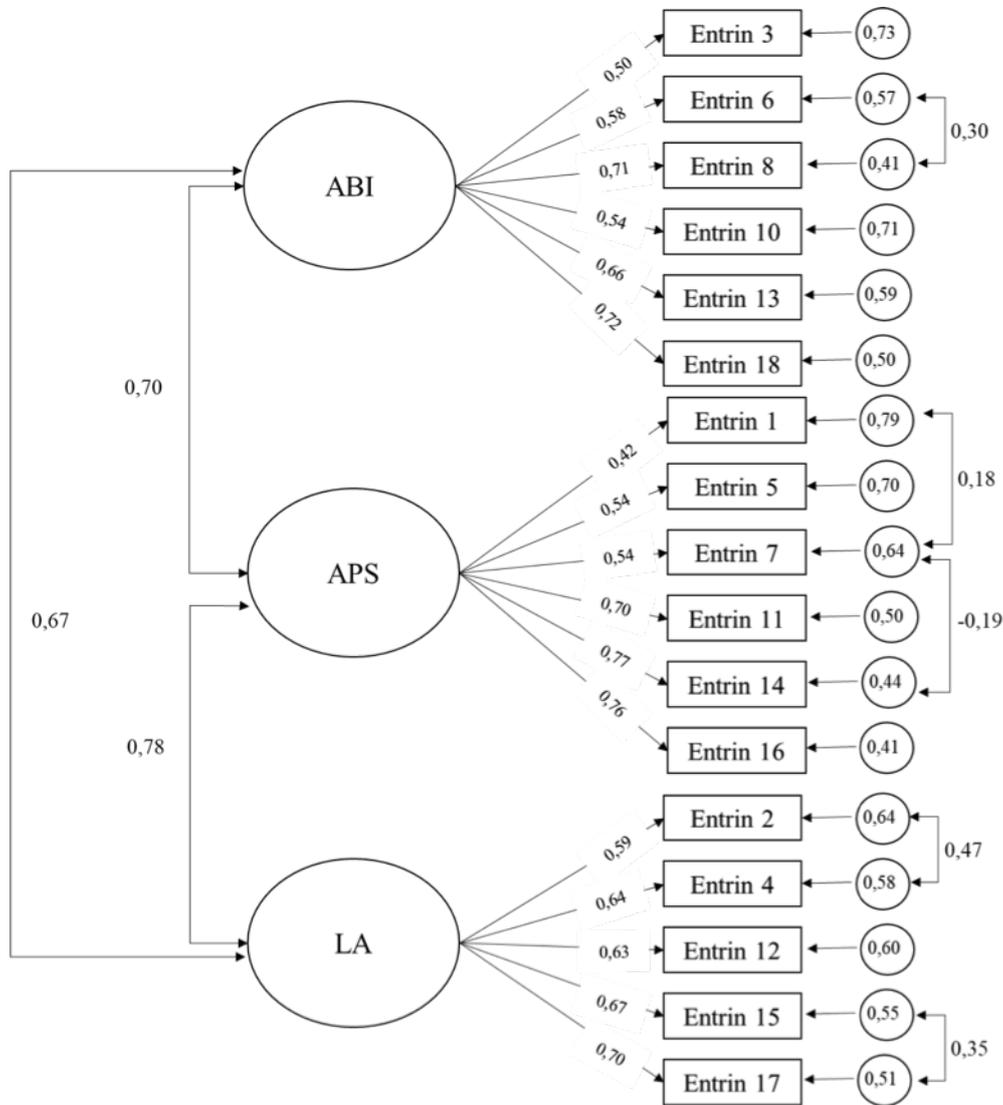
Note: ABI: impersonal bureaucratic arrangements; APS: social position adjustment; LA: limitation of alternatives; Entrin = organizational entrenchment.

Source: Survey data.

It was necessary to assess the invariance of the scale's structure to confirm that it stayed the same over time, and to estimate participants' scores at each period of analysis. This stage had four steps (Seddig & Leitgöb, 2018): (1) structure invariance was tested to assume that the scale kept its structure over time; (2) metric invariance was tested, to assess if factor loadings remained equivalent between periods; (3) scalar invariance was tested, assuming that the items had similar levels and scaling over

time; (4) finally, we carried out strict invariance, whose criteria ensured that the items were measured with the same amount of error between periods.

Each stage was compared to the previous one and, according to Chen (2007), the differences in the indicators should not vary above certain cut-off points: ΔCFI 0.010; ΔRMSEA 0. 015; Δ SRMR 0.030 (for step 2) and 0.010 (for step 4). The results are shown in Table 2.

TABLE 2   INDICATORS OF FITIN THE STAGES OF LONGITUDINAL FACTOR INVARIANCE ANALYSIS

Stage	χ2 (df)	CFI	Δ CFI	RMSEA (90% IC)	Δ RMSEA	TLI	Δ TLI	SRMR	Δ SRMR
Structure	2808,48 (1140)	0,85		0,037 (0,035 - 0,039)		0,83		0,07	
Metric	2840,12 (1167)	0,85	-0,001	0,037 (0,035 - 0,038)	0,000	0,84	0,004	0,07	0,003
Scalar	2884,77 (1196)	0,85	-0,001	0,036 (0,035 - 0,038)	-0,001	0,84	0,002	0,07	0,000
Strict	2906,11 (1227)	0,85	0,001	0,036 (0,034 - 0,038)	0,000	0,84	0,000	0,07	0,002

Source: Survey data.

Given the data, we can state that the scale was invariant over time. Data analysis was done according to the intended goal, and is presented in the next section, together with the description of the main results.

4. MAIN RESULTS AND DISCUSSION

We carried out three types of analysis. First, the descriptive data of the scale, through an analysis of dimension *versus* collection period. Then, how profiles were defined and characterized in the latent transition analysis itself, which also show the data for each profile *versus* each collection period. Finally, a new analysis presented the profiles *versus* period, considering the dimensions of the scale and the change of these profiles over time.

Since the sample size was different at each period, the number of participants included in the analysis changed, depending on the variable being compared. However, for all of them, we corrected for missing values through longitudinal invariance analysis. We did an ANOVA (one way) of repeated measures to compare the mean scores between periods, as shown in Table 3.

TABLE 3 ANOVA OF REPEATED MEASURES BETWEEN PERIODS

Variable	N	Period1	Period 2	Period 3	F
		Média (DP)	Média (DP)	Média (DP)	
(ABI) Impersonal bureaucratic arrangements	160	3,63 (0,09)	3,81 (0,09)	3,85 (0,10)	4,94*
(APS) Adjustment tosocial position	163	2,81 (0,08)	3,05 (0,08)	2,94 (0,08)	5,27*
(LA) Limitation of alternative	162	2,40 (0,08)	2,69 (0,09)	2,69 (0,09)	9,46**
Entrenchment (total score)	154	3,00 (0,07)	3,22 (0,08)	3,22 (0,08)	8,90**

Note: F – Anova; * $p < 0.05$; ** $p < 0.0001$.
Source: Survey data.

The midpoint (mean) of the analysis is 3.5, which means that, according to the total score, the levels of entrenchment are low in all three periods. The only dimension above the midpoint (3.5) in all three periods is ABI. There are statistically significant differences for the three dimensions. The ABI dimension [F (2. 318) = 4.94; p = 0.008] had the highest means at all periods, and LA [F (2. 322) = 9.46; p = 0] the lowest. ABI showed a difference between periods 1 and 3 (p = 0.01). APS [F (2. 324) = 5.27; p = 0.006] and between periods 1 and 2 (p = 0.007), as did LA, between periods 1 and 2 (p < 0.0001), and also between periods 1 and 3 (p = 0.002). Finally, the total scale score [F (2. 306) = 8.9; p < 0.0001] shows the difference between periods 1 and 2 (p = 0.001) and between periods 1 and 3 (p = 0.002). In all cases, period 1 showed the lowest average.

This analysis precedes profile definitions and brings an overview of the dimensions regarding the whole sample and as a function of time. The dimensions show increasing variation, both between periods 1 and 2 (APS and LA) and between periods 1 and 3 (ABI and LA). This indicates that the items that make up entrenchment become more consistent with the sample over time. Therefore, to begin the analysis, the first characteristics to notice were the slight increase of entrenchment over the three periods, and the relationship between the three dimensions at these periods, with LA standing out.

The ABI dimension, with high means, follows the literature in cross-sectional findings (Milhome et al., 2018). The more connected workers are to the benefits that make up these dimensions, the higher their chances of entrenchment (Vital & Paiva, 2019). This logic also applies to APS, while LA is a determining dimension of stay out of necessity (Rodrigues & Bastos, 2015). However, the low means found were not expected, although not an unprecedented result, according to Pereira and Lopes (2019).

Nevertheless, LA is the only dimension that showed increase in all three periods (1 to 2 and 1 to 3). In other words, at each period of analysis there was a perceptual increase in the notion of the

limitation of external factors that replace the organization's benefits. At each period, LA grew along with the other dimensions: ABI (periods 1 and 3) and APS (periods 1 and 2). We cannot say that the increase in LA was related to the increase in the dimension that followed it at each period, but it is a possibility. In periods 1 and 3, for example, ABI items were responsible for increasing entrenchment, which may have influenced civil servants' self-assessment of LA, which also affected OE increase at that time. However, we can think of this relationship, because, as individuals adapt to the organization's gains, they notice restrictions on their self-perception of employability and fewer job opportunities to replace the same conditions at the current organization (Rodrigues & Bastos, 2012).

The debate about the relevance of LA started from the construct proposal (Rodrigues & Bastos, 2012), as Balsan (2017) mentioned in his dissertation. However, statistical studies, in addition to the theoretical articulation itself, have strengthened the links between the three dimensions, and they consistently integrate the same latent construct - entrenchment (Pereira & Lopes, 2019). Our results reinforce that this articulated relationship works in an alternative way over time. What remains in the debate, since the content validation of the entrenchment scale, is the cyclical role of the LA concept, perceived both intrinsically and extrinsically (Rodrigues & Bastos, 2012).

All dimensions of OE can lead to an intrinsic limitation, since they affect the notion of employability (Rodrigues & Bastos, 2012). However, LA also brings a perception of extrinsic limitation, based on the analysis of external issues made by workers. Among the various attractive factors of public service, stability and security, absent in the private sector, are strong predictors of OE (Maia & Bastos, 2015; Nóbrega & Rowe, 2022). This could strengthen extrinsic limitations and highlight intrinsic ones. However, with the growing entrenchment between periods and considering the means, internal factors stood out, such as the importance assigned to the fear of losing benefits at the organization. The prominence found in the items evaluated in APS and ABI reinforces that the factors that attract civil servants to choose public service can favor entrenchment, but do not cancel the conditional importance of LA in OE's theoretical model, as noticing alternatives in the job market tends to reduce the need to stay at the organization (Rodrigues et al., 2021).

Based on this first scenario, the latent transition analysis identified, in that sample, how subgroups were organized with regard to levels of entrenchment. At first, we estimated profiles separately for the three periods. Next, we estimated the profile longitudinally, considering all participants, based on the scale scores produced with the FIML estimator. Profiles were defined from the dimensions. The AIC, BIC, and Sabic measures showed a decrease, as the number of profiles increased, a typical behavior in this type of analysis (Morin et al., 2011), which reaches a plateau stage around the three latent profiles. The model with three profiles was the most appropriate, as shown in Table 4.

TABLE 4   ADJUSTMENT INDICATORS FOR LATENT TRANSITION MODELS

N of Profiles	fp	LL	SCF	AIC	BIC	Sabic	Entropy
2	21	-12210,36	2,67	24462,72	24567,00	24500,30	0,93
3	38	-10687,33	2,09	21450,67	21639,38	21518,68	0,93
4	59	-10006,89	1,99	20131,79	20424,78	20237,39	0,91

Note: fp–free parameter; LL –log-likelihood; SCF – Scaling Correction Factor; AIC – Akaike Information Criterion; BIC – Bayesian Information Criterion; Sabic – Sample-Adjusted Bayesian Information Criterion.

Source: Survey data.

Once the model with three profiles had been established, we could see that, considering only the levels of entrenchment of the subgroups, profile 1 (medium entrenchment) had an average score in all factors of the OE scale, when compared to the others. Profile 2 (low entrenchment) showed the lowest mean scores for the entrenchment factors, while profile 3 (high entrenchment) had the highest levels. The ABI factor showed the highest means in all profiles, while LA was the factor with the lowest score, in line with the first analysis by dimension.

In an attempt to establish characteristics that would facilitate identifying each profile, we analyzed participants' sociodemographic information, but did not notice any potential associations, even in terms of mean age [F (2.872) = 2.65; p = 0.07], given that the subgroups formed in this sample had very similar sociodemographic attributes, as shown in Table 5. We found no differences between profiles, in terms of sociodemographic and occupational variables.

In Tables 5 and 6, information refers to individuals classified in the same profile at allperiods, without considering migration cases. Given these results, it is possible to infer that the difference between profiles is related to how civil servants observe the processes in the organizations they belong to, especially actions that can lead to situations that facilitate entrenchment processes.

TABLE 5   DISTRIBUTION OF THE SOCIODEMOGRAPHIC CHARACTERISTICS OF THE PROFILES

Variable	Levels	Profile 1	Profile 2	Profile 3	P. 2-1-1	χ^{2*}
	From 18 to 20 years old	1 (0.28%)	0 (0%)	0 (0%)	0 (0%)	
	From 21 to 25 years old	9 (2.49%)	3 (1.17%)	6 (2.31%)	2 (1.69%)	
	From 26 to 30 years old	36 (9.94%)	24 (9.34%)	35 (13.46%)	18 (15.25%)	
	From 31 to 35 years old	89 (24.59%)	60 (23.35%)	62 (23.85%)	25 (21.19%)	
	From 36 to 40 years old	76 (20.99%)	48 (18.68%)	66 (25.38%)	24 (20.34%)	
	From 41 to 45 years old	50 (13.81%)	44 (17.12%)	27 (10.38%)	15 (12.71%)	
Agegroup (5 years)	From 46 to 50 years old	38 (10.5%)	27 (10.51%)	26 (10%)	9 (7.63%)	17.45 (22)
	From 51 to 55 years old	30 (8.29%)	27 (10.51%)	20 (7.69%)	11 (9.32%)	
	From 56 to 60 years old	19 (5.25%)	13 (5.06%)	10 (3.85%)	9 (7.63%)	
	From 61 to 65 years old	9 (2.49%)	7 (2.72%)	3 (1.15%)	5 (4.24%)	
	From 66 to 70 years old	3 (0.83%)	2 (0.78%)	3 (1.15%)	0 (0%)	
	From 71 to 75 years old	1 (0.28%)	1 (0.39%)	0 (0%)	0 (0%)	
	Missing	1 (0.28%)	1 (0.39%)	2 (0.77%)	0 (0%)	

Variable	Levels	Profile 1	Profile 2	Profile 3	P. 2-1-1	χ^{2*}
Age group (10 years)	From 18 to 20 years old	1 (0.28%)	0 (0%)	0 (0%)	0 (0%)	11.79 (12)
	From 21 to 30 years old	45 (12.43%)	27 (10.51%)	41 (15.77%)	20 (16.95%)	
	From 31 to 40 years old	165 (45.58%)	108 (42.02%)	128 (49.23%)	49 (41.53%)	
	From 41 to 50 years old	88 (24.31%)	71 (27.63%)	53 (20.38%)	24 (20.34%)	
	From 51 to 60 years old	49 (13.54%)	40 (15.56%)	30 (11.54%)	20 (16.95%)	
	From 61 to 70 years old	12 (3.31%)	9 (3.5%)	6 (2.31%)	5 (4.24%)	
	From 71 to 80 years old	1 (0.28%)	1 (0.39%)	0 (0%)	0 (0%)	
	Missing	1 (0.28%)	1 (0.39%)	2 (0.77%)	0 (0%)	
Gender	Male	154 (42.54%)	106 (41.25%)	125 (48.08%)	51 (43.22%)	2.84 (2)
	Female	208 (57.46%)	151 (58.75%)	135 (51.92%)	67 (56.78%)	
Marital status	Single	125 (34.53%)	91 (35.41%)	96 (36.92%)	34 (28.81%)	7.93 (8)
	Married	207 (57.18%)	130 (50.58%)	138 (53.08%)	68 (57.63%)	
	Separated	5 (1.38%)	5 (1.95%)	5 (1.92%)	2 (1.69%)	
	Divorced	24 (6.63%)	29 (11.28%)	18 (6.92%)	12 (10.17%)	
	Widow(er)	0 (0%)	1 (0.39%)	1 (0.38%)	2 (1.69%)	
	Missing	1 (0.28%)	1 (0.39%)	2 (0.77%)	0 (0%)	

Continue

Variable	Levels	Profile 1	Profile 2	Profile 3	P. 2-1-1	χ²*
Education	Primary education incomplete	0 (0%)	1 (0.39%)	0 (0%)	0 (0%)	
	High School complete	16 (4.42%)	8 (3.11%)	8 (3.08%)	7 (5.93%)	
	Undergraduate	45 (12.43%)	27 (10.51%)	29 (11.15%)	14 (11.86%)	
	Specialization	104 (28.73%)	89 (34.63%)	61 (23.46%)	32 (27.12%)	
	Master degree	98 (27.07%)	57 (22.18%)	79 (30.38%)	34 (28.81%)	15.67 (12)
	PhD degree	79 (21.82%)	53 (20.62%)	63 (24.23%)	24 (20,.4%)	
	Post-doctorate	19 (5.25%)	21 (8.17%)	18 (6.92%)	7 (5.93%)	
	Missing	0 (0%)	1 (0.39%)	1 (0.38%)	2 (1.69%)	
Management position	No	265 (73.2%)	197 (76.65%)	204 (78.46%)	91 (77.12%)	
	Yes	96 (26.52%)	59 (22.96%)	54 (20.77%)	27 (22.88%)	2.79 (2)
	Missing	0 (0%)	1 (0.39%)	1 (0.38%)	2 (1.69%)	

Note: χ2 –Chi-square association test. Association tests were carried out between profiles 1, 2, and 3.

Source: Survey data.

Table 6 shows the distribution of the mean scores of these profiles on the scales. The analyses only refer to individuals classified as belonging to the same profile over the three periods (82.92% of participants). Cases of migration were not considered, showing profile stability over time.

TABLE 6   DISTRIBUTION OF MEAN* SCORES ON THE SCALES, ACCORDING TO PROFILES

	Scale	Dimensions	Profile 1	Profile 2	Profile 3	F#
			Mean (SD)	Mean (SD)	Mean (SD)	
Period 1	OES	ABI	3.71 (0,52)	2.52 (0,68)	4.59 (0.44)	928.32**
	OES	APS	2.89 (0.38)	1.89 (0.33)	3.97 (0.60)	1,416.36**
	OES	LA	2.38 (0.42)	1.45 (0.31)	3.49 (0.60)	1,296.29**
Period 2	OES	ABI	3.78 (0.38)	2.87 (0.55)	4.48 (0.39)	877.62**
	OES	APS	2.97 (0.28)	2.21 (0.31)	3.78 (0.50)	1,204.25**
	OES	LA	2.58 (0.34)	1.82 (0.33)	3.45 (0.53)	1,049.53**
Period 3	OES	ABI	3.84 (0.44)	2.91 (0.60)	4.54 (0.40)	745.39**
	OES	APS	2.96 (0.23)	2.07 (0.28)	3.87 (0.44)	2,060.48**
	OES	LA	2.62 (0.27)	1.77 (0.32)	3.49 (0.48)	1,491,58**

Note: SD – Standard. deviation; F – ANOVA (oneway); # comparisonbetweenProfiles 1, 2, and 3; *FIML estimated mean; ** $p < 0.0001$.
Source: Survey data.

To identify differences in the average configurations of the variables, we carried out ANOVA (oneway), considering profiles 1, 2, and 3 separately, for each period. Period 1 showed active differences in the three dimensions, with ABI [$F_{(2. 876)} = 928.31$; $p < 0.0001$], APS [$F_{(2. 876)} = 1,416.36$; $p = < 0.0001$], and LA [$F_{(2. 876)} = 1,296.28$; $p < 0.0001$] presenting the highest mean in profile 3, followed by 1. At period 2, the same pattern was repeated for the three dimensions, with ABI [$F_{(2. 876)} = 877.62$; $p < 0.0001$], APS [$F_{(2. 876)} = 1,204.25$; $p = < 0.0001$], and LA [$F_{(2. 876)} = 1,049.53$; $p < 0.0001$] showing the highest mean in profile 3, followed by 1. At period 3, we identified the same pattern, with ABI [$F_{(2. 876)} = 745.39$; $p < 0.0001$], APS [$F_{(2. 876)} = 2,060.48$; $p = < 0.0001$], and LA [$F_{(2. 876)} = 1,491.58$; $p < 0.0001$], with profile 3 showing the highest average, followed by profile 1.

The purpose of this analysis was to identify the profile with the greatest entrenchment for each period of analysis. In each dimension and at each collection period, a similar level of entrenchment

was kept for each profile. These results strengthen the previous one, where, within the public service, the loss of benefits, *status*, and relationships is a strong entrenchment factor. There is a high investment for belonging to federal organizations, and its results make civil servants feel entrenched within them (Nóbrega & Rowe, 2022; Rodrigues & Bastos, 2015).

The results regarding benefits and remuneration, together with the investments made throughout their staying in the organization, like investing in training, qualification, interpersonal relations, etc., are relevant in this group, which confirm other findings in the public service (Rodrigues & Alvares, 2020). The prominence of ABI and APS dimensions highlights the importance of people management actions for influencing this bond (Pinho et al., 2015), since it is in these aspects, so closely linked to the nature of the organization, that management can intervene more, and not in the external environment or in civil servants' subjective perception of it.

Further analysis was done to check who, among these profiles, had undergone the most statistically significant changes over time. Here, the analysis considered external issues that could affect the movement of these subgroups. Therefore, considering the latent profiles (period 1) and the periods of data collection in relation to the OE scale factors, we did an ANOVA with repeated measures.

The results indicated that there was no statistically significant difference for dimensions ABI $[F (4\ 3.93) = 1.96; p = 0.10]$ and LA $[F (4\ 3.91) = 0.24; p = 0.91]$, so that differences were only identified in the APS factor $[F (4\ 3.97) = 2.81; p = 0.02]$. Bonferroni's *post hoc* test showed statistically significant differences between the means of the first and second periods of data collection for profiles 1 ($p = 0.004$) and 2 ($p = 0.01$), with the means of the second collection higher than those of the first. In short, from a perspective of change over time, only the APS dimension showed a significant movement in profiles 1 and 2, increasing their OE, while profile 3 continued with high levels of entrenchment, as shown in Table 7.

TABLE 7   DISTRIBUTION OF FACTOR MEANS ACCORDING TO PROFILES AND PERIODS

Variable	Profile	Period 1	Period 2	Period 3
ABI	1	3.77	4.01	3.97
	2	2.69	3.00	3.09
	3	4.82	4.68	4.80
APS	1	2.82	3.23	3.05
	2	2.04	2.39	2.17
	3	3.94	3.76	3.89
LA	1	2.47	2.79	2.83
	2	1.53	1.84	1.82
	3	3.50	3.73	3.67

Source: Survey data.

The analyses that considered only latent profiles, comparing them at the same period, statically, showed statistically significant differences between the dimensions. However, when considering the interaction between period and latent profile, significant changes were only identified in the APS factor between periods 1 and 2, with no changes in profile 3. Therefore, in terms of interferences over time, APS stood out in terms of management interest.

ABI was not the dimension with the least variation in the levels of analysis over time, and its changes did not influence the stability of the profiles longitudinally; hence, hypotheses 1 and 2 were not confirmed. The APS dimension was the one with the highest variation in the levels of analysis over time, and its changes affected stability longitudinally, confirming hypotheses 3 and 4. Finally, hypotheses 5 and 6 were not confirmed, since the LA dimension was not the one with the greatest influence on increasing entrenchment, and its variations did not interfere in the stability of profiles over time, as was expected.

The APS dimension represents the individual's investment in courses, training, knowledge of organizational processes, and job duties, in addition to developing relationships and other aspects related to adaptation and recognition at the organization. These results are unprecedented in research and can be of great help to theory and practice in public management. This dimension gathers conditions that seem to have a major influence on the levels of entrenchment, or are more influenced by actions over time, favoring the organization's planning and adjustments in order to consider bonds for keeping, changing, or achieving results.

Hence, for public administration, internal actions that foster development and training through professional growth and engagement are measures that deserve management's attention. Furthermore, they must be aligned with the interests of civil servants, in order to make their participation in professional development more active, affective, and meaningful. This complements the findings of Nóbrega and Rowe (2022), who observed that these servants want very much to contribute and be listened.

In the case of public service, the items that make up this dimension are also those over which local management has more influence, considering that bureaucratic issues regarding benefits and remuneration, which make up ABI, are defined by the general policies of public administration, unrelated to local management. Similarly, LA refers to an assessment of conditions that also involve a subjective and objective look at social reality. It is worth reflecting on managers' understanding, both in the public service (Pinho et al., 2015) and elsewhere (Tomazzoni & Costa, 2020), that entrenchment is negative for the organization. By considering it as a bond that does not hinder productivity and the achievement of goals can help creating strategies. But, to do that, the affective bond also needs encouragement (Rodrigues & Bastos, 2013; Tomazzoni & Costa, 2020).

It is a fact that management practices influence entrenchment (Moscon & Mariano, 2018), but the upward movement only between the first and second collection periods leads us to reflect on social issues. These collections took place at times of great growing economic instability, which has affected the private market, in addition to internal changes made after the 2018 presidential election. There were position shifts, social security reform, debates on career moves, speculation, and signals that changed earnings, investment results, loss of positions and *status*, thus creating fear.

In the third collection period, another important external phenomenon emerged: the COVID-19 pandemic, which made the economic crisis more threatening. For Pinho et al. (2015), it is important for management to understand the interrelationship between organizational actions and practices

that can favor the development of different bonds, as well as to notice how this dynamic is linked to external, socioeconomic, and specific factors, which demand attention over time (Rodrigues et al., 2021). Hence, in the public service there is an intimate relationship between the benefits achieved and the position, which, under threat, can foster an entrenched and apparently stable permanence, shedding more light on public management debates.

5. CONCLUSION

The biggest challenge of this research was to carry out a longitudinal analysis to fill the gap regarding this type of studies on OE, despite the incentives found in the literature. The interactions created in multi-groups of civil servants on OE made up three profiles, with similar sociodemographic characteristics, that remained fairly stable over time. The analyses that checked the movement of these profiles between periods showed significant relevance only of the APS dimension, and just between periods 1 and 2 of collection. Therefore, we concluded that civil servants who already showed a higher level of entrenchment at the beginning of collection have remained so over time, with more frequent changes in the profiles with low or moderate level of entrenchment.

According to Wasti et al. (2016), although the intention of bond studies is to advance globally, they should consider the peculiarities of each culture or place. In public service, there is no way to control factors regarding national rules and laws, such as those that regulate the items of the ABI dimension, nor those present in the external market, which also affect the LA dimension. Therefore, the analysis that sought to understand changes between periods showed significant variations in the APS dimension, which is an important theoretical and practical contribution. For this reason, we suggest, for example, actions that interfere with the organizational climate, through practices that encourage motivation, engagement, and commitment, in order to rescue and strengthen the affective relationship.

Another practical contribution is to rethink management's negative perception of productivity and of keeping entrenched workers (Pinho et al., 2015; Tomazzoni & Costa, 2020);therefore, strategies are needed to ensure meeting targets. A civil servant can combine more than one bond to form an efficient profile, as Rodrigues and Bastos (2013)showed, by identifying different professional profiles in public service that combined levels of entrenchment and commitment, from higher to lower levels of identification and collaboration with the organization.

Although we found fairly stable profiles, there is the possibility of public managers interfering to minimize levels of entrenchment. Such managers must be guided and trained to understand that entrenchment coexists at different levels with other aspects (Balsan et al., 2019; Kim & Beehr, 2018), and is not necessarily an obstacle to productivity (Tomazzoni & Costa, 2020). One suggestion is to strengthen the role of leaders ,to build meaning and affection at work, together with the team. That is, encouraging more democratic and decentralized management actions.

Another issue that emerged from our study is that entrenchment has a strong relationship with different factors, including organizational culture. Rodrigues and Alvares (2020) found that in military institutions, consent, another organizational bond, goes hand in hand with obedience and discipline, essential conditions for this type of culture. Therefore, we suggest, for a future study, understanding entrenchment in relation to organizational culture. If we think of entrenchment in the civil service, finding an entrenched servant would necessarily be a deviation from the culture of this

type of organization, or would it threaten performance, as is expected from entrenched relationships? According to Rodrigues et al. (2019), the results should be analyzed in the light of cultural influences, considering that some peculiarities can change the measures considerably.

Another important new contribution to theory is the analysis of variance in the entrenchment scale, which added new data to its statistical efforts, showing good results in the analysis of invariance, being positively evaluated for future longitudinal studies.

Despite our contributions, there were some limitations that encourage further analysis. Longitudinal data collection, carried out virtually and over an extended period, may have generated influences that were difficult to control. Another limitation regards the sample, which we cannot guarantee of being random or representative of the workers, as it was non-probabilistic. In searching studies with generalizable results, we suggest those with larger and more diverse samples.

Finally, we recommend some paths for future studies. In addition to the afore mentioned interest in the relationship between OE and organizational culture, we propose a longitudinal assessment of employees or civil servants, from the moment they join the organization, in order to expand potential links between the three dimensions over time. In addition, we also suggest longitudinal qualitative and quantitative studies with focus on the nature and responsibility of positions and work obligations, and their relationship with organizational entrenchment. In this article, we faced this limitation, since we could not carry out these analyses. We also propose longitudinal studies of organizational entrenchment, covering other bonds such as organizational commitment and other constructs, like quality of life at work. An additional suggestion is a research on profiles of organizational bonds, including entrenchment.

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24

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DATA AVAILABILITY

The dataset supporting the results of this study is not publicly available.

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