

Title: *Development, measurement and validation of a managerial competency model in Spain: the PUMAC Questionnaire*

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Abstract:

Modernization of Public Administration (PA), with a view to providing a high-quality service, requires improvements in managerial personnel assessment processes. For this purpose, we developed and validated a management competency model that would enable Spanish PA to enhance organizational achievements and prevent corrupt practices. Relations between managers' competencies and their performance would be perceived as a fairer assessment in human resources processes and ultimately lead to the promotion of ethical behaviour within the organization.

We followed a mixed-method approach. Study 1 began with a content analysis of articles referring to managerial competencies, followed by Focus Groups and a Delphi panel procedure with subject matter experts, which resulted in a model of eight competencies. Based on this model, in Study 2, we developed a reliable and invariant-across-gender questionnaire (PUMAC), which was validated with composite performance criteria (task, contextual and unethical pro-organizational behaviour), by means of a quantitative cross-sectional design survey on public managers from around Spain ($N = 439$), using structural equation analyses.

Our main results show significant relationships between job performance and the competencies of leadership, communication, engagement with PA, innovation orientation and ethics.

Finally, we discuss the practical applications of the results in the public context.

Keywords: Public management competencies, fairness, unethical pro-organizational behaviours, job performance, factor structure invariance.

Introduction

Attempts to develop high-quality processes and services in Spanish Public Administration (SPA) have failed to adequately adapt to the current socio-economic context, which has contributed to the undermining of public confidence. SPA must therefore ensure continuous improvement of processes to provide an efficient, high-quality and transparent service. This has taken on even greater importance in the light of growing demands for efficiency and austerity in the wake of the financial crisis of 2008, and the emergence of public management trends such as Open Government and Digital Management. While SPA unquestionably counts on a capable workforce, employees are immersed in operational rules that hinder the development of quality management (e.g., Ramió & Salvador, 2018). Urgent and intensive transformation and modernization is required to reverse this situation. Managers play a crucial role in this reorganization, as they are the primary agents of change and have a determinant impact on subordinates and society (e.g., Darioly & Schmid, 2011). In light of the above, this study will principally focus on competencies. We pose the following questions: Which competencies does a good manager require to facilitate the transformation and modernization of SPA? What is the relationship between these required manager competencies and job performance? How can all this be measured and evaluated? We will now move on to address these questions.

The concept of competencies can be summarized as those individual and measurable behavioural repertoires and characteristics related to effective job performance. Competency-based models can be used to improve performance assessment management processes (e.g., Abraham et al., 2001). It is worth noting that Public Administration (PA) literature (e.g., Ogonek et al., 2020) points to the important role that competencies play in sustainably addressing the rapid and complex transformations

required in this case. Indeed, the European Public Administration Network –EUPAN– (Nunes et al., 2007) proposes that reforms in human resource strategies for career development should be based on effective performance and fairness through competency-based management systems. We can assert that competency models would facilitate the promotion of fair and ethical managerial job performance assessment in public bureaucratic structures, due to greater job performance relatedness and lower bias influence (e.g., Castaño et al., 2019). In addition, competency models would provide an opportunity to: (i) reinforce the organization’s decision-making legitimacy by linking manager legitimacy with performance-related competencies (e.g., Arenilla & Delgado, 2019); (ii) encourage public managers to engage in ethical behaviour, given the versatility of a model with sufficient flexibility to include performance predictors related to ethical issues (e.g., Castaño & García-Izquierdo, 2019). Indeed, several attempts to develop competency models have already been made in both public and private organizations worldwide (see the Supplementary Material; Castaño et al., 2023). Most of these competency models include not only *hard* competencies, (e.g., *planning*), but also *soft* competencies (e.g., *ethics*), which are taking on greater importance as key predictors of successful core and contextual job performance (Kaplan & Sorensen, 2007), and the prevention of counterproductive performance such as unethical pro-organizational behaviour (UPOB, Bowman et al., 2010; Greenbaum et al., 2013). We therefore propose a model of competencies for updating public manager assessment as the theoretical framework for this research (Figure 1).

(INSERT FIGURE 1 HERE)

Above all, there is a need for career assessment practices based on just criteria that enable the mitigation of all-too-widespread corrupt practices (Haque, 2014). Principal factors contributing to the undermining of confidence in SPA include certain types of

unethical behaviour, such as fraudulent mismanagement. An example of the latter is UPOB (Umphress et al., 2010), which is often carried out in the mistaken belief that it benefits the organization. However, such unethical work behaviour can be considered counterproductive, and tends to occur to a greater extent when employees perceive that corruption is the norm (e.g., Ashforth & Anand, 2003). The higher the ethical level of public employees, the lower the likelihood that corruption can hide behind seemingly legal and ethical practices (Villoria & Izquierdo, 2016). Ethical management is therefore a key factor in combatting corruption, both in terms of achieving ethical assessment practices and encouraging ethical behaviour.

Taking all of the above into consideration, and in the light of new research trends focusing on ethics and fairness in public sector management, we believe that public management assessment must ensure the inclusion of variables that facilitate increased validity and reduce assessment bias, in order to demonstrate and encourage ethical behaviour within organizations (e.g., Stouten et al., 2012).

Regarding measurement, analysis of the literature (e.g., Castaño, 2021) suggests several shortcomings in standard evaluation processes for Spanish public managers, and considerable room for improvement given that Spanish public career assessment is mainly based on knowledge, merit ratings and seniority criteria (i.e., Royal Legislative Decree 5/2015 of October 30). We should acknowledge that other European countries like France, Germany and the United Kingdom, which represent three different models of public human resource management and labour relations, have developed models aimed at increasing organizational effectiveness by moving beyond a reliance on knowledge tests, seniority and merit assessments (Areses et al., 2017). Our study aims to contribute along similar lines, shifting emphasis towards a system based on the degree of expertise acquired during a working life.

The present study

Based on the model shown in Figure 1, and following previous studies (e.g., García-Izquierdo, et al., 2020), we began by carrying out a qualitative study aimed at identifying the competencies considered most relevant for managerial performance, and then developed a related measurement instrument, which we named the *Public Manager Competencies Questionnaire -PUMACQ-* (Study 1), using Subject Matter Experts (SME) and a Focus Group approach. We subsequently analysed the psychometric properties and job performance relatedness of the PUMACQ, by means of a quantitative cross-sectional survey conducted on a large sample of Spanish public manager incumbents drawn from the entire country (Study 2).

Study 1

While globally validated competency models do exist, successfully extrapolating such models to other environments involves several difficulties. This is certainly the case with SPA, where distinct cultural values and labour relations practices necessitate the development of a competency model tailored to meet specific requirements (Chong, 2013). To respond to this need, we conducted a five-step process to detect soft and hard managerial competencies related to job performance (e.g., Czabanowska et al., 2013) in SPA. This five-step process follows recommendations extracted from pioneer models developed in the USA and the UK (Guerrero et al., 2013), and the contribution of SME.

Method

In the first stage, we carried out a content analysis of the literature on competencies to assist in the creation of a preliminary model. In this respect, it should be

noted that the public sectors of the member countries of the Organization for Economic Cooperation and Development (OECD) have many features in common (Crespo, 2015). These include the mixed and non-homogeneous nature of public service models, the incorporation of market-based management techniques, the implementation and promotion of information and communication technologies, and the requirement for greater coordination between the departments responsible for public employment. Nevertheless, there are also notable differences between two main public systems, that is, the European Continental Model and the Anglo-Saxon Model. A case in point is the USA, where public service regulation differs markedly from the Continental European Model and is broadly similar to regulation governing private companies. In terms of employment, applicants are offered access to specific job positions rather than hierarchical career paths. In common with the Continental Model, selection is based on the principle of merit, but Senior Executive Service Officials are subject to a more elaborate selection process.

Anglo-Saxon public systems can be characterized by less responsibility of PA when comparing with the European Continental by placing more accountability on the individual public sector employee. Indeed, the UK employment system for public service workers is similar to the system applied in the private sector. However, this is not the case with a historically important European administrative model such as France, nor in Spain, where the system is largely based on the French model (Parada & Fuentetajada, 2017). Something similar occurs in Germany, where professional promotion of public employees operates in a similar way to internal promotion in Spain. More on this, the European Union has had a strong and reciprocal unifying influence on Anglo-Saxon and European models, which has led to increasing uniformity of PA legal procedure in many areas.

We therefore decided to focus our research on Anglo-Saxon contributions, as we consider this Model more agile and flexible, so more capable of inspiring new ways to improve SPA. We began by reviewing the case of Spain, and then focused on scientific literature from the UK and the USA. Consequently, we conducted three searches for literature published between 2000 and 2015 in WOS and specific journals related to SPA, following Ruiz's (1996) recommendations to improve the quality and value of the information retrieved (see SM for further details). As a result, 35 articles referring specifically to public manager competencies - Spain ($n = 12$), the UK ($n = 10$) and the USA ($n = 13$) - were included in the content analysis. We had to reject 320 articles because they did not properly fulfil the search criteria (i.e., competencies were from other countries or articles did not provide specific information on managerial competencies). Units of content analysis were those terms referring to public manager competencies (i.e., *leadership*) and related behaviours (i.e., *capacity to cope with constantly changing demands of the work environment*). The content analysis allowed us to obtain a code system and a preliminary model of public managerial competencies. Over two meetings, four researchers used the collaborative nominal group technique to review this preliminary model until complete group consensus was reached.

In the second stage, we held six SME focus group sessions to refine the competency model. We contacted 74 experts by phone, 36 of whom (48.65%) were adequate for study purposes and available to take part in five initial focus group sessions. These SME were selected on the basis of their experience as managers (i.e., mainly heads of service with people under their charge) within SPA ($n = 20$) and their knowledge and expertise as managers and/or working experience in HR management departments in the private sector ($n = 16$). In both cases, SME required at least six months of experience in their latest management position. During these sessions, participants were given the

preliminary competency model and asked to think about the following questions for each competency: (a) Do you agree with the inclusion of the competency? (b) What do you think about the definition and behaviours that each competency describes? (c) Would you add or eliminate something from each competency definition? (d) Do you consider that some parts of the competency definitions could also refer to another competency? If so, which? (e) Do you think it is a necessary competency for the performance of public managers? Why? (f) Would you add another competency? If so, which one?

HyperResearch software, version 2.8.3, was used to transcribe all the sessions. The SME were then given questionnaires in which they prioritized and ranked the managerial competencies according to their importance for effective public manager job performance, differentiating between present and future (in the next three and five years). The questionnaire was completed and returned by 22 (61.11%) of the experts. The importance of the competencies for the performance of public managers was calculated using the weight percentages of the competencies, following the method suggested by Pereda et al. (2012). In accordance with this method, the weight of each competency was calculated by multiplying three variables: (i) Relevance (percentage of participants that prioritized the competency within the top five most important competencies); (ii) Key (percentage of participants that gave the competency the maximum value of importance in the ranking); (iii) Importance (the sum of the values of importance assigned to the competency in the ranking). Finally, six SME that were not present in the previous sessions took part in a sixth session to discuss the model, the definition of each competency, and their corresponding behavioural descriptors.

In the third stage, we carried out a manual search of research/empirical validated and/or proposed competency models to achieve a refinement of the competency model and enhance its comprehensiveness (see SM for further details).

In the fourth stage, a Delphi panel procedure was carried out, through a four-round panel via email, with seven new SME meeting the same requirements established for the second stage. In the first round, participants gave 15 points to the most important competency (relating to public managerial performance), 14 to the second, and so on, to obtain a preliminary list of ordered competencies. In the second round, experts were given the reordered competency list, and asked to indicate their degree of agreement with the order, from 1 (*totally disagree*) to 7 (*totally agree*). In the third round, we reordered the competencies on the basis of the previous comments, and the experts were again asked to express their degree of agreement. The criteria used to assess the consensus was the reduction of the quartile coefficient of dispersion between the second and the third round for every competency. In the fourth round, the SME provided final suggestions on the importance of the competencies and their related behavioural descriptors, in order to eliminate ambiguity (e.g., Podsakoff et al., 2012).

Finally, in the fifth stage, the behavioural descriptors were reviewed by two researchers in order to: (i) detect problems related to double-barreled items (MacKenzie & Podsakoff, 2012); (ii) enhance the construct validity of every competency; (iii) avoid a lengthy questionnaire that could have an adverse effect on the quality of the responses (e.g. García-Izquierdo & Castaño, 2022).

Results

The first stage identified and analysed 1,668 units (Spain: 653, the UK: 508, and the USA: 507). As a result of the content analysis, the units were coded in a preliminary competency framework with 22 competencies. Competencies were grouped (for practical purposes) into the following (i) personal: *information management, planning and organization, strategic thinking, specific knowledge, quality management, ethics, result orientation, initiative, taking risk and difficult decisions, flexibility, organization*

identification, self-confidence and self-assurance, resilience, self-motivation; and (ii) interpersonal competencies: communication, leadership, external awareness, civil servant orientation, teamwork, negotiation, networking, and interpersonal skills.

With regards to the results of the second stage, the weight percentages of the competencies ranged between 0.00% and 36.10% ($SD = 6.56$). We then selected the competencies with the highest weight percentages (over 5% cut off score), which resulted in the selection of 12 out of 22 competencies corresponding to both current and future time importance: *ethics, results orientation, planning and organization, organization identification, strategic thinking, quality management, civil servant orientation, negotiation, leadership, teamwork, interpersonal skills, and communication.*

As a result of the third stage, the preliminary competency model was further refined to a 15 competency model consisting of the following competencies and their behavioural descriptors: *ethics, civil service orientation, knowledge, identification and engagement with PA, leadership, teamwork building and management, managing diversity, planning, organization, quality management, innovation orientation, technical and professional knowledge, taking risks and difficult decisions, recognition and regulation of one's own and other's emotions, communication, and negotiation.*

In the fourth stage (see SM for further details), dispersion indexes of the competencies decreased, in general, in the third round. Participants also suggested combining various similar and closely related competencies, and the exclusion of the competency *technical and professional knowledge*. As a result, the 15 competency model became the 8 competency model, along with its related questionnaire (*PUMACQ*), comprised of 86 behavioural descriptor items. In the fourth round, the suggested 8 competency model was given to the experts for final suggestions and agreement with

regard to the competencies and their related behavioural descriptors. This resulted in the deletion of 13 items.

Finally, the fifth stage resulted in the identification of 33 items that were potentially problematic because they were double-barrelled and/or failed to adequately represent the construct. These items were eliminated to refine the instrument, leaving the PUMACQ with 40 items (see SM for further details) grouped into hard and soft key competencies. Hard competencies were *Leadership, Planning, Civil Service Orientation, and Innovation Orientation*. Soft competencies were *Ethics, Recognition and Regulation of Emotions, Engagement with PA, and Communication*.

Study 2

The PUMACQ still required an analysis of its psychometric properties and criterion-oriented validation in terms of job performance. Research on competencies has evidenced their relationship with task and contextual performance (e.g., Bartram, 2005). It is worth highlighting that this relationship has also been specifically proven: (i) with managers as incumbents (e.g., Levenson et al., 2006); (ii) in the public sector (e.g., Salgado & Cabal, 2011); (iii) with both hard and soft competencies (e.g., Jansen et al., 2012); and (iv) not only with core and contextual tasks, but also with the reduction of deviant behaviours (e.g., Stouten et al., 2012). Based on the aforementioned evidence, it was expected that:

H₁: All PUMACQ competencies will be significantly related to job performance; and specifically:

H1a: Positively associated with task and contextual performance.

H1b: Negatively associated with UPOB.

However, as hard competencies are more strongly linked with core job tasks, and soft competencies more strongly linked with contextual tasks (Kaplan & Sorensen, 2007), it seems plausible to hypothesize that hard competencies will be more strongly linked with task performance, while soft competencies will be more strongly linked with contextual performance. In addition, given the previously mentioned strong link between ethics and UPOB, it seems that this ethical competency will be more strongly linked with the prevention of UPOB. Given the above, we propose the following hypotheses with regards to the PUMACQ competencies and the model shown in Figure 1:

H₂: Hard competencies will be more strongly associated (than soft) with task performance.

H₃: Soft competencies will be more strongly associated (than hard) with contextual performance.

H₄: Ethics competency will be more strongly associated (than the other hard and soft competencies) with UPOB.

These issues are analysed below, with a wider sample of public managers.

Materials and Method

Procedure

Participants were contacted and asked to complete the PUMACQ and a series of sociodemographic data and other instruments (described in the Materials section) via an online platform, following a non-probabilistic snowball sampling procedure through the research project website, as well as through *INAP Social* (a social network for Spanish public employees), and *LinkedIn*.

In addition, all of the Spanish Public Administration Institutes and Civil Service Institutions were asked to distribute the questionnaire among their public managers. Public managers were also contacted directly when phone numbers and emails were

publicly available. We also contacted public universities and Spanish city councils with a resident population over 150,000.

It should be noted that three procedural remedies were performed to reduce common method biases (e.g., Podsakoff et al., 2012): (i) the anonymity of respondents and the research purpose of the questionnaire were emphasized, both at the contact stage and at the beginning of the questionnaire on the online platform, in order to avoid social desirability effects and to reduce evaluation apprehension (the study was also conducted in accordance with the guidelines of the Declaration of Helsinki); (ii) the questionnaire used a proximal distance technique to generate physical and psychological distance, separating the items belonging to competencies from those belonging to job performance; (iii) items were randomly presented to respondents.

Participants

The study participants consisted of 439 managers with employees under their responsibility. Average seniority was 18.72 years ($SD = 10.69$). Average years of experience in their current job position was 7.03 ($SD = 7.32$). Regarding gender, 56% were men. Mean age was 52.88 years old ($SD = 6.91$). Participants were in charge of an average 41.22 people ($SD = 165.29$).

This entire sample was used to analyse the PUMACQ's psychometric properties. However, in the case of the criterion-oriented analysis, participants who held political positions or who did not provide any information on their rank or job position were also excluded. These participants may have accessed the position through free assignment based on political discretionary criteria rather than promotion from low-ranking positions, and this could have led to biased results in the analysis of performance for the purpose of obtaining an instrument that is useful for the assessment of career development. As a result, 27 participants were discarded, leaving a final subsample of 412 participants. The

average seniority of the participants in the subsample for the criterion-oriented analyses was 18.52 years ($SD = 10.61$). Average years of experience in their current job position was 7.22 years ($SD = 7.43$). Regarding gender, 56.8% were men. Mean age was 52.88 years old ($SD = 6.84$). Participants were in charge of an average 38.52 people ($SD = 168.93$).

Materials

Participants completed a questionnaire composed of items relating to sociodemographic data and the instruments detailed below (see SM for further details).

Managerial competencies were measured by means of the PUMACQ (40 items), including the following (i) hard and (ii) soft competencies: (i) *Leadership* (seven items), *Planning* (six items), *Civil Service Orientation* (seven items), and *Innovation Orientation* (four items); (ii) *Ethics* (five items), *Recognition and Regulation of Emotions* (three items), *Engagement with PA* (four items), and *Communication* (four items). Participants responded via a seven-point Likert scale from 1 (*never*) to 7 (*always*).

Job performance was measured, differentiating *Task*, *Contextual* and *UPOB* as part of counterproductive performance. *Task performance* was measured by means of the Spanish six-item scale by Latorre (2011), developed on the basis of Abramis (1994). Responses were delivered via a seven-point Likert scale from 1 (*very badly*) to 7 (*very well*). *Contextual performance* was measured by means of a translated version of the nine-item scale by Morgeson et al. (2005). *UPOB* was measured by means of an adapted and translated version of the six-item scale of unethical behaviour on behalf of the company by Umphress et al. (2010). Responses for *Contextual* and *UPOB* were delivered via a seven-point Likert scale from 1 (*totally disagree*) to 7 (*totally agree*).

Data analysis

Firstly, we conducted exploratory and confirmatory factor analyses (EFA and CFA) of the PUMACQ using *Mplus* software (version 8.1), and the original sample of 439 participants was split into two random subsamples for cross validation purposes - $n_1 = 210$, $n_2 = 229$ - (e.g., Flora & Flake, 2017). Since data normality could not be confirmed (Kolmogorov-Smirnov test with Lilliefors correction resulted significant), and we were dealing with Likert-type polytomous responses, we used categorical weighted least squares robust (i.e., WLSMV), and oblique rotation (e.g., Castaño & García-Izquierdo, 2018; Lloret-Segura, et al., 2014). In addition, we employed comparative and adjustment indexes to test for goodness of fit (e.g., Browne & Cudeck, 1993): (i) comparative fit index (CFI) and Tucker-Lewis index (TLI), (ii) the root mean square error of approximation (RMSEA); and (iii) the χ^2 /degree of freedom ratio (see SM for specific details about EFA process). We then obtained composite reliability and average variance extracted (AVE) for validity analyses.

Secondly, the invariance of the PUMACQ was analysed across gender. For this purpose, a sequential analysis was performed on the basis of a configural invariance model (where the same items belong to the same factor, and the factor loadings and thresholds vary freely), imposing progressive constraints towards a metric (where the factor loadings are set as equal between the groups) and scalar (where the item thresholds are set as equal) invariance model (e.g., Li et al., 2016). To carry out this sequential analysis, we analysed whether the seven response categories (i.e., 1 to 7) for the items had been chosen by both groups, in order to produce the models for WLSMV (according to *Mplus* guidelines). As some of the lower end response categories (i.e., 1, 2, 3 and 4) were not chosen, it was decided to collapse them into a single response category named 1. Consequently, response category 5 was renamed category 2, category 6 was renamed

3, and category 7 was renamed 4, thus resulting in four response categories for the measurement invariance analysis. With respect to indicators of invariance, it was established that incremental changes in CFI should not exceed |0.01| (e.g., Cheung & Rensvold, 2002), |0.01| in TLI (e.g., Lee et al., 2017; Ramis et al. 2015) and |0.015| in RMSEA (e.g., Chen, 2007).

Thirdly, the subsample of 412 public managers was used for the Pearson's correlations and structural equation modelling (SEM) analyses using the WLSMV estimator and the oblique rotation option. Following Byrne (2012), we used items (indicator-observed) of the latent variables (i.e., competencies and performance dimensions). To compare the strength of the relationships among the variables, we also imposed equality constraints to the proposed regression model and performed comparative model-testing and delta-chi square tests (e.g., Reifman & Windle, 1995) using the DIFFTEST option in Mplus software.

Finally, descriptive statistics and Cronbach's reliability index were carried out by means of SPSS software (version 24). In addition, G*Power software version 3.1.9.2 by Faul et al. (2009) was used to determine $r = |.144|$ as the Pearson's minimum correlation coefficient with 412 participants, which is sensitive to effects to 90% power ($\alpha = .05$, one-tailed).

Results

As shown in Table 1 and Figure 2, it was found that the 8 factor structure of the PUMACQ provided a good adjustment in the cross validation process (see SM for further details on EFA results). Gender invariance analyses evidenced that the scalar invariance model could be accepted. Descriptive statistics, reliability and AVE coefficients are shown in Table 2. AVE was above 0.5 or very close to 0.5. However, the composite reliability coefficients (above 0.7) and construct validity were adequate, in accordance

with Borsboom et al. (2004) criteria. Regarding discriminant validity, AVE was generally higher than the correlations among the latent variables, in accordance with the Fornell–Larcker criterion (Fornell & Larcker, 1981).

(INSERT TABLES 1-2 AND FIGURE 2 HERE)

Table 3 summarizes the main findings in relation to our four hypotheses, and detailed results.

(INSERT TABLE 3 HERE)

Regarding the bivariate Pearson correlations (Table 4), we found the following statistically significant results (supporting H_1): (i) Correlations between the managerial competencies and *Task performance* were between .316 and .479. (ii) Correlations between the managerial competencies and *Contextual performance* were between .320 and .444. (iii) Correlations coefficients were between -.174 to -.207 in the case of the relationship between most of the managerial soft competencies (i.e., *Ethics, Recognition and Regulation of Emotions* and *Communication*) and *UPOB*; whereas hard competencies and *Engagement with PA* were also significantly correlated to *UPOB*, although coefficients did not reach the $|.144|$ criterion.

(INSERT TABLE 4 HERE)

Finally, the results of the SEM (Table 5) provided adequate fit indexes when testing the free model of performance regressed on the PUMACQ competencies (RMSEA = 0.029, 90% CI [0.026, 0.032], $\chi^2 = 2295.334$, $df = 1708$, $\chi^2/df = 1.344$, TLI = 0.964, CFI = 0.967). When we compared this free model with an initial constrained model (to test whether hard and soft competencies were more strongly associated with task or contextual performance), the latter did not add significant misfit ($\chi^2 = 26.401$, $df = 20$, $p = .153$), indicating that both hard and soft were equally associated with performance (rejecting H_2 and H_3). However, given that these constraints did not rule out

possible differences in the strength of the relationship for each competency, we compared the free model with a second constrained model, which did add a significant misfit ($\chi^2 = 32.458$, $df = 15$, $p = .006$). This led us to retain the free model, which shows the following relationships (Table 5): (i) *Task performance* was significantly regressed on *Leadership, Innovation Orientation, Ethics* and *Communication*, and their explained variance was 47%; (ii) *Contextual performance* was significantly regressed on *Leadership, Innovation Orientation, Engagement with PA* and *Communication*, and their explained variance was 42%; (iii) *UPOB* was significantly and negatively regressed on *Ethics* and *Communication*, and its explained variance was 21% (partially supporting H_4).

(INSERT TABLE 5 HERE)

General discussion

Firstly, the PUMACQ finally included eight hard and soft competencies, as expected from the model proposed in Figure 1. This study has also demonstrated that our competency model would prove useful when predicting job performance. In this sense, the SEM analyses show that there are five core competencies: *Leadership, Innovation Orientation, Engagement with PA, Communication*, and *Ethics*. These competencies are in line with models such as Bowman et al. (2010), which are better suited for providing public service. Moreover it could be said that, in terms of performance, assessment practices based on a comprehensive competency model would offer more opportunity for managers to deploy their full potential, than those based solely on knowledge and hard competencies.

Secondly, with respect to the validation of the competency model, the statistically significant correlations between the eight competencies and job performance and the adequate results for the CFA analyses, provided sufficient evidence of the criterion-oriented and construct validity of the PUMACQ. However, it should be noted that,

contrary to expectations, we did not find an unequivocal association of hard competencies with *Task performance*, nor of soft competencies with *Contextual performance*, which suggests that it is not possible to speak of a hard and soft differentiation of PUMACQ competencies in relation to the job performance dimension, beyond a simple descriptive denomination.

Factorial invariance analyses suggest that the PUMACQ can be used in a manner that guarantees its formal and substantive equivalence, regardless of the gender of the respondent. This result provides guarantees for the use of the PUMACQ in line with the provisions established in SPA regulations (e.g., Spanish Royal Decree-Law 6/2019) aimed at preventing gender-blind public management practices. However, we believe there is a need for a more detailed gender impact assessment of public manager competency profiles.

Thirdly, we have found that soft competencies could play an important role in preventing unethical behaviour. Our findings show that *Ethics* and *Communication* were the competencies with the highest predictive scores on *UPOB*. These results may be explained by the fact that communication could be particularly advantageous for enhancing transparency as part of the ethical management expected from SPA. In this regard, SPA should promote the presence of ethical employees to combat unethical behaviour that may be hidden behind apparently ethical administrative procedures. Management policies should foster the development of these soft competencies to prevent unethical behaviour, especially in the case of public managers, given their crucial roles in setting an example of behaviour for subordinates and their typically long-term careers in the public sector. In this sense, the PUMACQ could assist SPA career assessment practices.

More on this, future research should examine whether high scores in soft competencies effectively buffer counterproductive behaviours. The root cause of these behaviours is complex. As well as appearing to be related to personality and moving up the organizational ladder (e.g., Kholin et al., 2020), they may also be the result of a process of adaptation to the organizational culture. This could be explained by the need to comply with objectives within established time frames, which may involve circumventing rules to overcome the bureaucratic burden often associated with this type of management. However, we have found that *Contextual performance* is significantly and negatively associated with *UPOB*. This is particularly interesting, as we can infer that extra-role behaviours may buffer unethical practices. It is particularly striking that *Contextual performance* was significantly regressed on the *Innovation Orientation* competency. It would therefore seem likely that public managers who display this competency could contribute to improving SPA practices by promoting contextual performance and thus reduce unethical practices. Nonetheless, more research is needed to shed light on this issue, given that this study lacks objective data that would confirm the obtained results, such as complaints, legal cases and criminal corruption proceedings. There is also a need for a longitudinal analysis of the professional career of public managers that takes into account the role of personality traits in promoting counterproductive behaviour.

Implications and recommendations for public career assessment

Given the need for SPA to address the prevention of corruption and discriminatory practices (e.g., Craft, 2013), and our study results confirming *Ethical* competency as a negative predictor of *UPOB*, we believe that management career assessment practices should prioritize ethical and fairness behaviours as relevant criteria (e.g., Brugman et al.,

2021; Mitropoulou et al., 2019). Taken together, our competency model and PUMACQ instrument represents a good starting point from which to establish a fair performance-related assessment model that would prevent an environment from being perceived as tolerating corruption (e.g., de Vries et al., 2017), while also stimulating ethical management approaches, along with, for instance, 360° feedback assessment. In this sense, we believe that PUMACQ contributes to the fulfilment of sustainable goals regarding corruption and the understanding of weakened institutions from the psychological assessment field (e.g., Gallardo-Pujol et al., 2022).

The competency model and PUMACQ would prove useful for public manager training programmes within SPA career development (Castaño & García-Izquierdo, 2019), and especially the prevention of unethical behaviour. The PUMACQ would assist in identifying those competencies negatively related to *UPOB* in which public managers need training, and to assess the success of this training.

Updating career assessment practices in line with our competency model would help SPA to regain public confidence in the effectiveness and exemplary nature of public human resource management processes.

Limitations and future research

One of the limitations of this research is that, besides Spain, only the US and the UK cases were included for the content analysis in Study 1, because they were the more parsimonious models. However, content analysis was complemented with SME in the subsequent stages.

Another limitation of this study is that competencies and job performance were self-assessed. Respondents may have been especially susceptible to being influenced by social desirability biases. This could exacerbate the common method variance, given monomethod bias (Podsakoff et al., 2003) and the fact that this is a cross-sectional study.

In terms of future research, it would be useful to focus on conducting 360° assessments and longitudinal studies and obtaining objective information on the number and types of unethical behaviours.

The unequal number of items that make up the dimensions of the PUMACQ should also be taken into consideration, although this research did attempt to balance the number of items in each competency to guarantee its psychometric properties (Cupani, et al., 2019). Future studies would also benefit from deeper analysis of respondents' understanding of the PUMACQ items, in order to improve their wording.

Regarding the invariance of the PUMACQ, recent studies (e.g., Somaraju et al., 2021) point to $\Delta CFI > .002$ as a more appropriate cut-off for non-equivalence instead of the usual ($|0.01|$) criteria (e.g., Cheung & Rensvold, 2002). Our data slightly exceeds this recently recommended cut-off. However, it should be noted that this updated criterion for detecting non-equivalence is considered appropriate for continuous data and may not apply to the categorical data contained in our study. Regarding the latter, the narrowing down of categories because their number was not the same in all groups may lead to an artifactual fit improvement (e.g., Stevina et al., 2020). All of the above suggests that it would be advisable to study the measurement equivalence of the PUMACQ with larger and more heterogeneous samples in future research.

It is also worth mentioning that the AVE of six of the eight dimensions of the PUMACQ was slightly below 0.5. Although composite reliabilities were adequate, low AVE should be taken into account when interpreting the results of this research and resolved in future studies on this newly developed instrument.

Finally, further research is required to clarify the role that *UPOB* plays in promotion to higher positions, as well as other potential relevant variables for public

service, such as prosocial behaviours and gender. Further information on the professional careers of public managers is therefore necessary.

PREPRINT

References

- Abraham, S. E., Karns, L. A., Shaw, K., & Mena, M. A. (2001). Managerial competencies and the managerial performance appraisal process. *Journal of Management Development, 20*(10), 842-852. <http://dx.doi.org/10.1108/0262171011041084>
- Abramis, D. J. (1994). Relationship of job stressors to job performance: linear or inverted-u? *Psychological Reports, 75*(1), 547-558. <https://doi.org/10.2466/pr0.1994.75.1.547>
- Arenilla, M., & Delgado, D. (2019). A new civil service to strengthen confidence in public institutions. *Revista Vasca de Gestión de Personas y Organizaciones Públicas, 16*, 36-53.
- Areses, X., Blanco, C., Colmenares, P., Fernández, E., Gallego, A., Gómez, G., Íñiguez, S., Labrada, M. L., Mapelli, C., Pastor, I., & Souto, J. (2017). *Nuevos tiempos para la función pública: Propuestas para atraer y desarrollar el talento en la Administración General del Estado* [New times for the public function: Proposals to attract and develop talent in the General State Administration]. INAP.
- Ashforth, B. E. & Anand, V. (2003). The normalization of corruption in organizations. *Research in Organizational Behavior, 25*, 1-52. [https://doi.org/10.1016/S0191-3085\(03\)25001-2](https://doi.org/10.1016/S0191-3085(03)25001-2)
- Bartram, D. (2005). The Great Eight Competencies: A criterion-centric approach to validation. *Journal of Applied Psychology, 90*(6), 1185-1203. <http://doi.org/10.1037/0021-9010.90.6.1185>
- Borsboom, D., Mellenbergh, G. J., & van Heerden, J. (2004). The concept of validity. *Psychological Review, 111*(4), 1061–1071. <https://doi.org/10.1037/0033-295X.111.4.1061>

- Bowman, J. S., West, J. P., & Beck, M. A. (2010). *Achieving competencies in public service. The professional edge*. M. E. Sharpe.
- Browne, M., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen, & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Sage.
- Brugman, D., Beerthuisen, M. G. C. J., Helmond, P., Basinger, K. S., & Gibbs, J. C. (2021). Assessing moral judgment maturity using the Sociomoral Reflection Measure–Short Form Objective. *European Journal of Psychological Assessment*, 39(2), 85–95. <https://doi.org/10.1027/1015-5759/a000680>
- Byrne, B. M. (2012). *Structural equation modeling with Mplus: Basic concepts, applications, and programming*. Routledge.
- Castaño, A. M. (2021). *Desarrollo de un catálogo de competencias para el personal directivo público español* [Development of a competency catalogue for Spanish public managers]. INAP.
- Castaño, A. M., Fontanil, Y., & García-Izquierdo, A. L. (2019). “Why can’t I become a manager?”—A systematic review of gender stereotypes and organizational discrimination. *International Journal of Environmental Research and Public Health*, 16(10), Article 1813. <https://doi.org/10.3390/ijerph16101813>
- Castaño, A. M. & García-Izquierdo, A. L. (2018). Validity evidence of the Organizational Justice Scale in Spain. *Psicothema*, 30(3), 344-350. <http://dx.doi.org/10.7334/psicothema2017.415>
- Castaño, A. M., & García-Izquierdo, A. (2019). Competency vocational training as a strategy for improving public management. *Aula Abierta*, 48(4), 393-406. <https://www.unioviado.es/reunido/index.php/AA/article/view/14506>

- Castaño, A. M., Zuazua, M., & García-Izquierdo, A. L. (2023). Supplementary Material: Development, measurement and validation of a managerial competency model in Spain: the PUMAC Questionnaire. [Data set]. <http://hdl.handle.net/10651/66875>
- Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, 14(3), 464-504. <https://doi.org/10.1080/10705510701301834>
- Cheung, G. W., & Rensvold, R. B. (2002). Evaluating goodness-of-fit indexes for testing measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal*, 9(2), 233-255. https://doi.org/10.1207/S15328007SEM0902_5
- Chong, E. (2013). Managerial competencies and career advancement: A comparative study of managers in two countries. *Journal in Business Research*, 66(3), 345-353. <http://doi.org/10.1016/j.jbusres.2011.08.015>
- Craft, J. L. (2013). A review of the empirical ethical decision-making literature: 2004-2011. *Journal of Business Ethics*, 117(2), 221-259. <https://doi.org/10.1007/s10551-012-1518-9>
- Crespo, J. (2015). La función pública ante un escenario de gobernanza multinivel: crisis y reinención [The civil service in a multilevel governance scenario: crisis and reinvention]. In J. Crespo (Dir.), *Crisis y reinención de la función pública en un escenario de gobernanza multinivel* (pp. 39-62). INAP.
- Cupani, M., Lorenzo-Seva, U., Korzeniowski, C. G., & Azpilicueta, A. E. (2019). Development of a brief version of the Personality Inventory IPIP-Revised: Control of the acquiescence response bias. *Acta Colombiana de Psicología*, 22(1), 248-272. <https://doi.org/10.14718/ACP.2019.22.1.12>
- Czabanowska, K., Smith, T., Könings, K. D., Sumskas, L., Otok, R., Bjegovic-Mikanovic, V., & Brand, H. (2013). In search for a public health leadership

- competency framework to support leadership curriculum—a consensus study. *The European Journal of Public Health*, 24(5), 850-856.
<http://doi.org/10.1093/eurpub/ckt158>
- Darioly, A., & Schmid, M. (2011). Facing an incompetent leader: The effects of a nonexpert leader on subordinates' perception and behaviour. *European Journal of Work and Organizational Psychology*, 20(2), 239-265.
<http://dx.doi.org/10.1080/13594320903429576>
- de Vries, R. E., Pathak, R. D., van Gelder, J.-L., & Singh, G. (2017). Explaining unethical business decisions: The role of personality, environment, and states. *Personality and Individual Differences*, 117, 188-197.
<https://doi.org/10.1016/j.paid.2017.06.007>
- Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, 41(4), 1149-1160. <https://doi.org/10.3758/BRM.41.4.1149>
- Flora, D. B., & Flake, J. K. (2017). The purpose and practice of exploratory and confirmatory factor analysis in psychological research: Decisions for scale development and validation. *Canadian Journal of Behavioural Science/Revue Canadienne Des Sciences Du Comportement*, 49, 78-88.
<https://doi.org/10.1037/cbs0000069>
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. <https://doi.org/10.2307/3151312>
- Gallardo-Pujol, D., Ziegler, M., & Iliescu, D. (2022). Can psychological assessment contribute to a better world? *European Journal of Psychological Assessment*, 38(5), 347-355. <https://doi.org/10.1027/1015-5759/a000739>

- García-Izquierdo, A. L., & Castaño, A. M. (2022). Work characteristics and occupational health: Validation and proposal of a shortened version of the Work Design Questionnaire. *Anales de Psicología/Annals of Psychology*, 38(1), 149–162. <https://doi.org/10.6018/analesps.480481>
- García-Izquierdo, A. L., Ramos-Villagrasa, P. J., & Lubiano, M. A. (2020). Developing biodata for public manager selection purposes: A comparison between fuzzy logic and traditional methods. *Journal of Work and Organizational Psychology*, 36(3), 231-242. <https://doi.org/10.5093/jwop2020a22>
- Greenbaum, R. L., Mawritz, M. B., Mayer, D. M., & Priesemuth, M. (2013). To act out, to withdraw, or to constructively resist? Employee reactions to supervisor abuse of customers and the moderating role of employee moral identity. *Human Relations*, 66(7), 925-950. <http://doi.org/10.1177/0018726713482992>
- Guerrero, C., Valverde, M., & Gorjup, M. T. (2013). An analysis of the management competency in Spanish companies. From theory to practice. *Contaduría y Administración*, 58(1), 251-288. [http://doi.org/10.1016/S0186-1042\(13\)71205-1](http://doi.org/10.1016/S0186-1042(13)71205-1)
- Haque, M. S. (2014). Contemporary trends and dilemmas of administrative ethics in the developing world. In M. S., de Vries, & P. Kim (Eds.), *Value and virtue in public administration. A comparative perspective* (pp. 169-185). Palgrave Macmillan.
- Jansen, A., Melchers, K. G., & Kleinmann, M. (2012). Der beitrag sozialer kompetenz zur vorhersage beruflicher leistung: Inkrementelle Validität sozialer kompetenz gegenüber der leistung im assessment center und im interview [The contribution of social competence to the prediction of job performance: Incremental validity of social competence beyond assessment center and interview performance]. *Zeitschrift Für Arbeits- Und OrganisationspsychologieA&O*, 56(2), 87-97. <https://doi.org/10.1026/0932-4089/a000077>

- Kaplan, S., & Sorensen, M. (2007, December 13). In leadership, “hard” skills trump “soft” skills. *Harvard Business Review*. <https://hbr.org/2007/12/in-leadership-hard-skills-trump>
- Kholin, M., Kückelhaus, B., & Blickle, G. (2020). Why dark personalities can get ahead: Extending the toxic career model. *Personality and Individual Differences*, 156, Article 109792. <https://doi.org/10.1016/j.paid.2019.109792>
- Latorre, M. F. (2011). *La gestión de recursos humanos y el desempeño laboral* [Ph.D. Thesis, Universitat de València]. In *TDX (Tesis Doctorals en Xarxa)*. <http://www.tdx.cat/handle/10803/81889>
- Lee, S. M., Terada, M., Shimizu, K., Lee, M.-H., & Lee, D. H. (2017). Comparative analysis of work values across four nations. *Journal of Employment Counseling*, 54(3), 132-144. <https://doi.org/10.1002/joec.12061>
- Levenson, A. R., Van der Stede, W. A., & Cohen, S. G. (2006). Measuring the relationship between managerial competencies and performance. *Journal of Management*, 32(3), 360-380. <http://dx.doi.org/10.1177/0149206305280789>
- Li, Z., Gooden, C. J., & Toland, M. D. (2016, December 6). *Measurement invariance with categorical indicators* [Conference session]. Applied Psychometric Strategies Lab - Applied Quantitative and Psychometric Series, University of Kentucky, Lexington, Kentucky. <https://education.uky.edu/edp/apslab/events/#MeasurementInvariance>
- Lloret-Segura, S., Ferreres-Traver, A., Hernández-Baeza, A., & Tomás-Marco, I. (2014). Exploratory item factor analysis: A practical guide revised and up-dated. *Anales de Psicología*, 30(3), 1151-1169. <http://dx.doi.org/10.6018/analesps.30.3.199361>

- MacKenzie, S. B., & Podsakoff, P. M. (2012). Common method bias in marketing: Causes, mechanisms, and procedural remedies, *Journal of Retailing*, 88(4), 542-555. <http://dx.doi.org/10.1016/j.jretai.2012.08.001>
- Mitropoulou, E. M., Tsaousis, I., Xanthopoulou, D., & Petrides, K. V. (2019). Development and psychometric evaluation of the Questionnaire of Ethical Leadership (QueL). *European Journal of Psychological Assessment*, 36(4), 635-645. <https://econtent.hogrefe.com/doi/abs/10.1027/1015-5759/a000533>
- Morgeson, F. P., Reider, M. H., & Campion, M. A. (2005). Selecting individuals in team settings: The importance of social skills, personality characteristics, and teamwork knowledge. *Personnel Psychology*, 58(3), 583-611. <https://doi.org/10.1111/j.1744-6570.2005.655.x>
- Nunes, F., Martins, L., & Duarte, H. (2007). *Competency management in EU public administrations –EUPAN Human Resources Working Group–*. https://www.eupan.eu/wp-content/uploads/2019/05/2007_2_PT_Competency_Management_in_EU_Public_Administrations.pdf
- Ogonek, N., Räckers, M., Gilge, S., & Hofmann, S. (2020). E-kompetenzen [E-competences]. In T. Klenk, F. Nullmeier, & G. Wewer (Eds.), *Handbuch digitalisierung in staat und verwaltung* (pp. 611-622). Springer Fachmedien. https://doi.org/10.1007/978-3-658-23668-7_57
- Parada, R., & Fuentejada, J. (2017). *Derecho de la función pública* [Civil service law]. Civitas, Thomson Reuters.
- Pereda, S., Berrocal, F., & Alonso, M. (2012). *Técnicas de gestión de recursos humanos por competencias* [Human resources management techniques by competencies]. Centro de Estudios Ramón Areces.

- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879-903. <http://dx.doi.org/10.1037/0021-9010.88.5.879>
- Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology, 63*(1), 539-569. <https://doi.org/10.1146/annurev-psych-120710-100452>
- Ramió, C., & Salvador, M. (2018). *La nueva gestión del empleo público. Recursos Humanos e Innovación de la Administración* [The new management of public employment. human resources and administration innovation]. Tibidabo Ediciones, S. A.
- Ramis, Y., Viladrich, C., Sousa, C., & Jannes, C. (2015). Exploring the factorial structure of the Sport Anxiety Scale-2: Invariance across language, gender, age and type of sport. *Psicothema, 27*(2), 174-181. <https://doi.org/10.7334/psicothema2014.263>
- Reifman, A., & Windle, M. (1995). Adolescent suicidal behaviors as a function of depression, hopelessness, alcohol use, and social support: A longitudinal investigation. *American Journal of Community Psychology, 23*(3), 329-354. <https://doi.org/10.1007/BF02506948>
- Ruiz, J. I. (1996). *Metodología de la investigación cualitativa* [Methodology of qualitative research]. Universidad de Deusto.
- Salgado, J. F., & Cabal, A. L. (2011). Performance appraisal in the public administration of the Principality of Asturias: An analysis of psychometric properties. *Journal of Work and Organizational Psychology, 27*(2), 75-91. <http://dx.doi.org/10.5093/tr2011v27n2a1>

- Somaraju, A. V., Nye, C. D., & Olenick, J. (2021). A review of measurement equivalence in organizational research: What's old, what's new, what's next? *Organizational Research Methods*, 25(4), 741–785. <https://doi.org/10.1177/10944281211056524>
- Svetina, D., Rutkowski, L., & Rutkowski, D. (2020). Multiple-group invariance with categorical outcomes using updated guidelines: An illustration using Mplus and the lavaan/semTools Packages. *Structural Equation Modeling: A Multidisciplinary Journal*, 27(1), 111–130. <https://doi.org/10.1080/10705511.2019.1602776>
- Stouten, J., van Dijke, M., & De Cremer, D. (2012). Ethical leadership: An overview and future perspectives. *Journal of Personnel Psychology*, 11(1), 1-6. <http://dx.doi.org/10.1027/1866-5888/a000059>
- Umphress, E. E., Bingham, J. B., & Mitchell, M. S. (2010). Unethical behavior in the name of the company: The moderating effect of organizational identification and positive reciprocity beliefs on unethical pro-organizational behavior. *Journal of Applied Psychology*, 95(4), 769-780. <https://doi.org/10.1037/a0019214>
- Villoria, M., & Izquierdo, A. (2016). *Ética pública y buen gobierno* [Public ethics and good governance]. Tecnos.

Open Science

We report how we determined our sample size, all data exclusions, all data inclusion/exclusion criteria, whether inclusion/exclusion criteria were established prior to data analysis, all measures in the study, and all analyses including all tested models. If we use inferential tests, we report exact p values, effect sizes, and 95% confidence or credible intervals.

Open Data: The information needed to reproduce all of the reported results are not openly accessible. The data is available on request from the authors.

Open Materials: Supplementary materials are available on <http://hdl.handle.net/10651/66875> (Castaño et al., 2023).

Preregistration of Studies and Analysis Plans: This study was not preregistered.

Table 1*Cross validation and gender invariance analysis for the eight-factor PUMACQ structure*

Fit indexes	<i>Cross validation</i>				
	EFA Random Subsample 1 ($n_1 = 210$)		CFA Random Subsample 2 ($n_2 = 229$)		
	RMSEA	0.032			0.043
90% CI	[0.022, 0.041]			[0.036, 0.049]	
χ^2	594.598			1008.413	
<i>df</i>	488			712	
χ^2/df	1.218			1.416	
TLI	0.974			0.943	
CFI	0.984			0.948	
<i>Gender invariance analysis[†]</i>					
Sequential models					
	Configural	Metric	Differences with configural	Scalar	Differences with metric
RMSEA	0.029	0.026	.003	0.026	.000
90% CI	[0.023, 0.034]	[0.019, 0.032]	-	[0.020, 0.032]	-
χ^2	1779.802	1763.035	-	1804.094	-
<i>df</i>	1504	1536	-	1568	-
χ^2/df	1.183	1.148	-	1.151	-
TLI	0.972	0.977	.005	0.977	.000
CFI	0.973	0.978	.005	0.977	.001

Note. $N = 439$.

[†]Women: $n = 193$. Men: $n = 246$. Categorical response alternatives were collapsed to enable the software to produce the models.

Table 2*Descriptive statistics*

Variable	Range		N° of items	<i>M</i>	<i>SD</i>	Reliability and AVE [†]	
	Min.	Max.				Composite reliability	AVE
<i>PUMACQ dimensions</i>							
Ethics	2.60	7.00	5	6.22	0.71	.767	.404
Recognition and regulation of emotions	2.67	7.00	3	5.43	0.87	.719	.462
Engagement with Public Administration	3.00	7.00	4	6.04	0.78	.785	.481
Communication	2.50	7.00	4	5.60	0.86	.834	.558
Leadership	2.86	7.00	7	5.14	0.96	.873	.496
Planning	1.67	7.00	6	4.91	1.02	.865	.518
Civil service orientation	1.57	7.00	7	5.17	1.04	.871	.491
Innovation orientation	1.75	7.00	4	5.23	1.00	.759	.442
<i>Performance dimensions</i>							
Task performance	3.83	7.00	6	5.99	0.57	.818	α
Contextual performance	4.78	7.00	9	6.20	0.49	.844	
Unethical pro-organizational behaviour (UPOB)	1.00	5.50	6	2.28	1.01	.781	

Note. *N* = 439. Average score provided.

[†]The Fornell–Larcker criterion was adequate, as AVE was only slightly exceeded (between |0.004| and |0.063|) by the correlations among the latent variables in five cases for the whole sample.

Table 3*Hypotheses and main results*

Hypotheses	Results
H_{1a}, H_{1b}	- PUMACQ competencies were positively associated with task and contextual performance; while negatively associated with UPOB. → SUPPORTED.
H_2, H_3	- Hard and soft PUMACQ competencies were equally associated with task and contextual performance. → NOT SUPPORTED.
H_4	- <i>Ethics</i> and <i>Communication</i> were the competencies with significant predictive scores on UPOB. → PARTIALLY SUPPORTED.

Table 4*Bivariate Pearson correlations*

Variables	1	2	3	4	5	6	7	8	9	10
1. Ethics	-									
2. Recognition and regulation of emotions	.368**	-								
3. Engagement with Public Administration	.392**	.382**	-							
4. Communication	.412**	.531**	.390**	-						
5. Leadership	.364**	.406**	.350**	.524**	-					
6. Planning	.421**	.366**	.378**	.522**	.614**	-				
7. Civil service orientation	.395**	.392**	.445**	.451**	.504**	.470**	-			
8. Innovation orientation	.417**	.412**	.398**	.459**	.530**	.539**	.471**	-		
9. Task performance	.329**	.387**	.316**	.479**	.436**	.392**	.387**	.417**	-	
10. Contextual performance	.320**	.355**	.331**	.444**	.425**	.372**	.322**	.415**	.464**	-
11. Unethical pro-organizational behaviour	-.207**	-.174**	-.134**	-.188**	-.092*	-.092*	-.140**	-.115**	-.134**	-.197**

Note. $N = 412$. Highlighted in italics those significant correlations (one tail) but inferior to $|.144|$. * $p < .05$; ** $p < .01$.

Table 5*SEM[†] standardized parameters of performance regressed on the PUMACQ competencies*

Competency	Task performance $R^2 = 0.47$		Contextual performance $R^2 = 0.42$		Unethical pro- organizational behaviour (UPOB) $R^2 = 0.21$	
	Estimate	<i>p</i>	Estimate	<i>p</i>	Estimate	<i>p</i>
Ethics	0.137	0.046*	0.126	0.065	-0.459	0.000**
Recognition and regulation of emotions	0.016	0.432	0.005	0.478	0.016	0.441
Engagement with Public Administration	0.006	0.471	0.153	0.034*	0.066	0.257
Communication	0.329	0.000**	0.264	0.005**	-0.247	0.016*
Leadership	0.167	0.016*	0.180	0.023*	0.072	0.256
Planning	-0.076	0.208	-0.083	0.213	0.185	0.060
Civil service orientation	0.045	0.254	-0.083	0.129	-0.048	0.291
Innovation orientation	0.179	0.031*	0.196	0.027*	0.024	0.420

Note. $N = 412$. One tail * $p < .05$; ** $p < .01$.

†The three performance dimensions and competencies were allowed to correlate among themselves.

Figure 1

Theoretical framework for research on public management career assessment

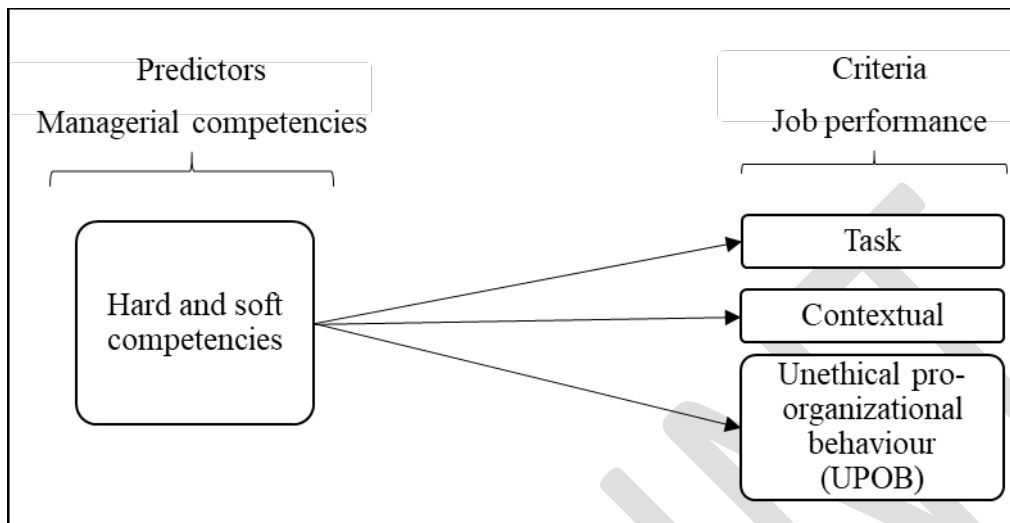
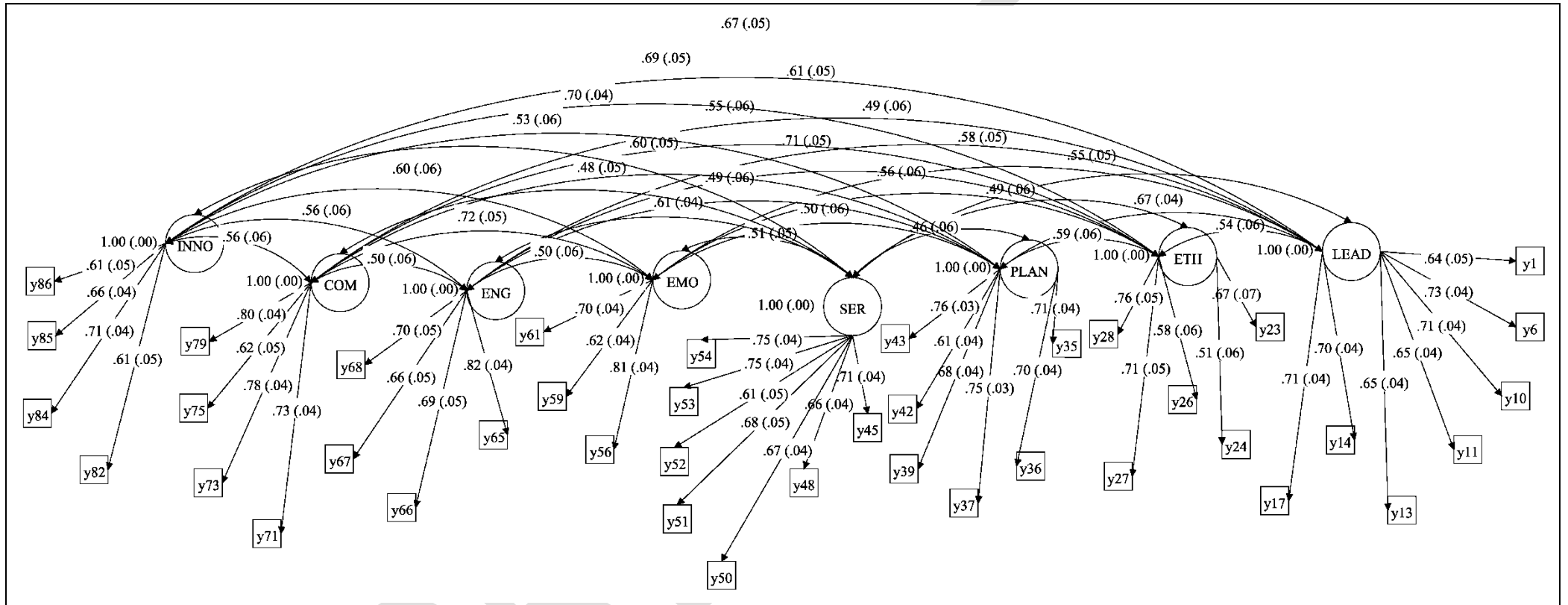


Figure 2

CFA of the eight-factor PUMACQ structure (standardized results)



Note. $n_2 = 229$.

All p values for the factor loadings were statistically significant at $p < .001$.

ETH: ethics, EMO: recognition and regulation of emotions, ENG: engagement with Public Administration, COM: communication, LEAD: leadership, PLAN: planning, SER: civil service orientation, INNO: innovation orientation.