# Validation of a Modified Version of the Psychological Capital Questionnaire (PCQ12) in Spain

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**Abstract**

Background: Previous studies have found some limitations and inconsistencies in the functioning of the short Psychological Capital Questionnaire (PCQ12), suggesting the need to improve it. The objective of the current study is to validate a modified version of the PCQ12 in Spain. Method: The sample consists of 792 employees from 42 Spanish organizations. A cross-validation was carried out to test the factorial validity of the modified scale. Reliability and convergent, discriminant, and criterion validity were also tested. Results: The modified PCQ12 showed good psychometric qualities. A four-factor structure showed a better fit to the data than the original second-order structure. Conclusions: Overall, our study supports the modified PCQ12 as an improved instrument for measuring Psychological Capital in the Spanish context.

***Keywords*:** Psychological Capital Questionnaire (PCQ12), Positive Psychology, factorial validity

# Validación de una versión modificada del cuestionario de capital psicológico (PCQ12) en España

Resumen

Antecedentes: Estudios previos han mostrado algunas limitaciones e inconsistencias en el funcionamiento del Cuestionario de Capital Psicológico (PCQ12), sugiriendo la necesidad de mejorarlo. El objetivo del presente estudio es validar una versión modificada del PCQ12 en España. Método: La muestra está compuesta por 792 empleados de 42 organizaciones españolas. Se realizó una validación cruzada para comprobar la validez factorial de la escala modificada. También se pusieron a prueba la fiabilidad, la validez convergente, discriminante y de criterio. Resultados: El PCQ12 modificado mostró buenas propiedades psicométricas. La estructura de cuatro factores resultó tener un mejor ajuste a los datos que la estructura original, de segundo orden, del Capital Psicológico.

Conclusiones: En general, nuestro estudio apoya el uso del PCQ12 modificado como un instrumento mejorado para medir el Capital Psicológico en el contexto español.

***Palabras claves:*** Cuestionario de capital psicológico (PCQ12), Psicología positiva, Validez factorial.

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## Introduction

Psychological Capital (PsyCap) emerges from the field of Positive Psychology, which emphasizes the importance of focusing on positive constructs in the workplace (Bakker, Rodríguez-Muñoz, & Derks, 2012). PsyCap consists of four of these positive constructs: self-efficacy, hope, resilience, and optimism. Self-efficacy is a belief in one's ability to carry out the necessary tasks to achieve a certain goal. Hope means having the will to persevere towards a goal and the agency to plan ways to achieve the goal. Optimism is defined as making a positive attribution about succeeding now and in the future, and resilience refers to being able to bounce back and even beyond after facing adversity (Youssef & Lu Bakker thans, 2007, p. 778).

The four PsyCap components are considered ''state- like'' constructs, which places them in the middle of the state- trait continuum (Luthans et al., 2007; Youssef & Luthans, 2007). This means that the four dimensions are not as easily changeable as pure states (for example moods), but at the same time they are more malleable than traits or trait- like concepts (e.g. core self-evaluations) (Luthans et al., 2007; Youssef & Luthans, 2007).

According to the PsyCap framework self-efficacy, hope, resilience, and optimism are combined in the latent multidimensional construct of PsyCap, defined as "a positive appraisal of circumstances and probability for success based on motivated effort and perseverance" (Luthans, Avolio, et al., 2007, p. 550). PsyCap as a latent factor represents the variance shared by the four sub-dimensions- it captures the communality among them. The synergy created by the four constructs is what gives PsyCap its main value (Youssef & Luthans, 2007).

PsyCap is linked to key organizational outcomes, such as financial and manager-rated performance (Avey, Nimnicht, & Graber Pigeon, 2010), increased engagement, and less burnout (Moreno-Jiménez, Garrosa, Corso, Boada & Rodríguez-Carvajal, 2012). These benefits of PsyCap are important, especially in the Spanish context, where organizations are experiencing socioeconomic uncertainty. To create evidence-based PsyCap interventions in Spanish organizations, it is vital to have reliable and valid measurement tools. This study focuses on the short version of the Psychological Capital Questionnaire (PCQ12) (Avey, Avolio, & Luthans, 2011)

A general literature review on the PCQ12 revealed some problems of the scale in terms of factor structure and item functioning. Simultaneously, we identified other aspects of the original PCQ12 that can be improved, such as the number of items per dimension. In addition, although there are previous validations in Spanish of the PCQ12 (León-Pérez, Antino, & León-Rubio, 2017, López-Núñez, de Jesús, Viseu & Santana-Cárdenas, 2017, Santana-Cárdenas, Viseu, Núñez & De Jesús, 2018)there is a lack of validated instruments in Spanish to map PsyCap and its consequences for individuals\ u2019 well-being. Consequently, the goal of this study is to adapt the 12-item short version of the Psychological Capital Questionnaire (PCQ-12, we identified some limitations which the present study aims to overcome. Thus, the objective of this study is to validate a modified version of the PCQ12 in Spain, testing it in a heterogeneous sample from different regions of Spain and all three economic sectors. We analyze the factorial, convergent, discriminant, and criterion validity, as well as the reliability, of the modified PCQ12.

PsyCap Measurement. The most common PsyCap measure is the 24-item PsyCap Questionnaire (PCQ24), where each dimension is represented by six items. The short version is composed of twelve items: three items for self-efficacy, 4 for hope, 3 for resilience, and 2 for optimism (Avey et al., 2011).

The process of choosing the items from the PCQ24 to be included in the PCQ12 was carried out in a single sample from a single study, mostly based on factor loading values (Avey et al., 2011). This approach is risky because the optimal set of items may differ across samples, and there is not enough evidence to support the existing short version as the best one (Widaman, Little, Preacher, & Sawalani, 2011). In fact, previous studies have revealed some inconsistencies in the functioning of the original PCQ12. We reviewed previous validations and studies that have used the PCQ12, and we identified two problematic areas: factor structure and item functioning.

**Factor structure.** The original factor structure of the PCQ consists of four factors (hope, self-efficacy, resilience, and optimism) and a second-order latent PsyCap factor (Luthans et al., 2007). To provide evidence of factorial validity, this original structure should be compared to alternative models, testing which one best fits the data. Most previous PCQ validations compare the second-order model to a one-factor model (all items load in a single PsyCap dimension) and to a four-factor model (four inter-correlated first-order factors).

Various studies have found support for the original second-order structure and reported no issues with item cross-loadings or error covariance (e.g. Avey et al., 2008; Fu, Sun, Wang, Yang, & Wang, 2013; Luthans, Avey, Avolio, & Peterson, 2010).

However, some of these studies did not compare the second-order model to alternative ones, or they omitted possible alternatives (e.g. Azanza, Domínguez, & Molero, 2014; Luthans, Avey, Avolio, & Peterson, 2010). A commonly omitted alternative is a four-factor model, for example, in the previous Spanish PCQ12 validation (León-Pérez et al., 2017)there is a lack of validated instruments in Spanish to map PsyCap and its consequences for individuals\u2019 well-being. Consequently, the goal of this study is to adapt the 12-item short version of the Psychological Capital Questionnaire (PCQ-12).

Furthermore, there are also some PCQ validations where alternative models fit the data better than the original model. For instance, one study revealed that a three-factor model, where self-efficacy and hope are combined in one dimension, fits the data best (Du Plessis & Barkhuizen, 2012)economic and political challenges facing South Africa since 1994, organisational managers/leaders should adopt a positive approach, based on sound organisational behaviour. This study administered the Psychological Capital Questionnaire (PCQ. Two studies from Portugal, a country similar to Spain in terms of linguistics and socio-economic context, found that a four-factor model is a better fit than the original model (Rego, Marques, Leal, Sousa, & Pina e Cunha, 2010; Viseu, Jesus, Rus, Nunes, & Lobo, 2012). What is more, two studies of the PCQ12 in Spanish also reveal that the four-factor, rather than the second-order model is the best fit for their data (López-Núñez, de Jesús, Viseu & Santana-Cárdenas, 2017, Santana-Cárdenas, Viseu, Núñez & De Jesús, 2018).

These findings highlight the need to more thoroughly analyze the factorial structure of the PCQ12 in Spain, as a review of the literature clearly shows inconsistencies in PsyCap´s structure according to context.

**Item analysis.** In addition to the factor structure, our review also identified items that appear to be problematic (with low factor loadings or cross-loadings) in more than one study. Most of the issues stemmed from item 4 from the Hope dimension and item 9 from Resilience.

Item 4 (If I should find myself in a jam at work, I could think of many ways to get out of it) was problematic in a psychometric analysis by Rus et al.(2012) because it cross-loaded on self-efficacy. In the previous Spanish validation, item 4 cross-loaded on resilience (León-Pérez et al., 2017), and in an international study of the PCQ scale, this item had to be eliminated to improve model

fit (Wernsing, 2014).

Item 9 (I usually take stressful things at work in stride) was also problematic: it had a higher loading on optimism than on resilience in the previous Spanish validation, and it had a low factor loading (.32) in the Portuguese validation by Viseu et al., (2012).

Cross-loadings indicate issues with discriminant validity (Rus et al., 2012) (Rus et al., 2012), but the discriminant validity of the PCQ12 in Spain has not been tested.

**Modifications of the PCQ12.** In addition to exploring the factorial validity and item functioning from previous studies, we considered it necessary to make certain modifications to the original scale, as mentioned in the introduction.

First, one problematic aspect of the original PCQ is that optimism only has two items. Kline (2005)this is the most widely used, complete, and accessible structural equation modeling (SEM recommends a minimum of three items per factor to avoid inflated factor loadings and overestimated inter-factor correlations. Therefore, we added another item to the optimism dimension. We chose item 19 from the PCQ24 ('When things are uncertain for me at work, I usually expect the best') because the other items either contained an idiomatic expression or were reversed (which can lower scale reliability). This item was added as item 13 in the present study. For the purpose of clarity, we maintained the numbering of the other items as they appear in the original PCQ12.

Second, the PsyCap authoring team emphasized the importance of having an equal number of items per dimension when creating the PCQ24 (Luthans et al., 2007, p.14), but this rule was not applied to the PCQ12. Therefore, we removed one item from Hope in order to obtain a more balanced measurement scale (i.e., with an equal number of items per dimension while maintaining the total number of items). Although item 4 had been problematic in previous studies, we decided not to remove it right away, but rather to analyze it along with the other Hope items and then remove the item least representative of Hope. Hence, we administered a questionnaire with a total of 13 items, even though our final aim was a 12-item version.

## Method

### Procedure and Participants

We applied the standard translation/back-translation procedure by Brislin (1970)and (2. The research team reached out to various companies to ask for their participation, and they organized meetings to clarify the logistics of the study. The data was gathered either with paper questionnaires administered at participants' workplaces, or online via a link. Participation in the study was voluntary and data confidentiality was guaranteed.

The sample consisted of 792 employees from 42 organizations in Barcelona, Almeria, Valencia, and Palma de Mallorca, predominantly from the service sector- 69.3%, and 30.7% from the secondary sector. The organizations carried out different activities: public administration, finance, chemistry, consultancies, leisure, logistics, personal image services, health, social and sports activities, hostelry, real estate development, cleanliness. Of these employees, 53.2% were women, 44.3% were men, and 20 did not identify their gender. In terms of age, 24% were younger than 35 years, 56.7% were between 35 and 50, and 13.6 were over 50. Regarding education, 63.6% had a University degree, 13.6 had vocational education, 10.1% had a high school diploma, 8.5% had a middle school diploma, and 3% had no studies.

**Data Analysis.** For factorial validity, we performed a cross-validation by randomly splitting the sample in half and applying exploratory factor analysis (EFA) to one sample and confirmatory factor analysis (CFA) to the other. For the EFA,

we used SPSS v.21, principal axis extraction, and Promax rotation (Jarvis, MacKenzie & Podsakoff, 2003), and considered factor loadings of over .40 (Hinkin, 1998). For the CFA, we used Mplus 6.12 and Robust Maximum Likelihood estimation.

We then compared the established second-order PsyCap structure to a one-factor model and a four-factor model. We assessed model fit with the fit indices as follows: RMSEA≤ .08; SRMR≤ .08; TLI and CFI ≥ 0.90 indicate acceptable fit; TLI and CFI ≥ 0.95 indicate good fit (Hu & Bentler, 1999)which includes using the maximum likelihood (ML. To compare the different models, we used the BIC index- the preferable model would have a lower BIC value (Raftery, 1995).

Afterwards, we tested internal consistency using Cronbach's α and the Composite Reliability coefficient (Rho). The minimum value indicating acceptable reliability for both coefficients is .70 (Bernstein & Nunnally, 1994).

We also tested convergent validity using the Average Variance Extracted (AVE) index, which requires a value higher than .50 (Bagozzi & Yi, 1988). For discriminant validity, we used the square root of the AVE: for each factor, it should have a greater value than the correlations between the factors (Alarcón, Sánchez, & Olavide, 2015).

Finally, we examined the criterion validity of the modified PCQ12. PsyCap has consistently been linked to positive employee attitudes, desirable employee behaviors, and performance (Avey, Reichard, Luthans & Mhatre, 2011). Therefore, we chose criteria representative of each of these categories: job satisfaction, organizational citizenship behavior (OCB), and performance (in-role and creative).

**Measurement**

Job satisfaction was measured with 10 items from the reduced version of the Job Satisfaction Scale (Warr, Cook, & Wall, 1979). Subjects rate the items on a Likert scale from 1 (*very dissatisfied*) to 7 (*very satisfied*). Cronbach's Alpha was .86.

In-role performance was measured with 3 items from Williams & Andersons scale (1991), rated from 1(*strongly agree*) to 7 (*strongly disagree*). Cronbach's Alpha for this scale was .85.

Organizational citizenship behavior was measured with 3 items based on Mackenzie, Podsakoff, & Podsakoff (2011)the process of scale development and validation continues to be a challenging activity. Undoubtedly, part of the problem is that many of the scale development procedures advocated in the literature are limited by the fact that they (1. Agreement with the items was rated on a scale ranging from 1 (*strongly agree*) to 7 (*strongly disagree*). Cronbach's Alpha for this scale was .72.

Creative performance was measured with 3 items from the measure by Oldham & Cummings (1996). Agreement with the items was rated on a scale ranging from 1 (*not at all*) to 7 (*to a very great extent*). Cronbach's Alpha was .81.

## Results

Table 1 shows the descriptive statistics and inter-item correlations for the total sample. All the items were significantly and positively correlated, ranging between .24 and .69.

**Table 1.** *Inter-item correlations*

| | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***SE*** | | | | | | | | | | | | |
| Item 1 | 4.5 | 1.0 | | | | | | | | | | |
| Item 2 | 4.7 | .81 | .65** | | | | | | | | | |
| Item 3 | 4.8 | .93 | .60** | .62** | | | | | | | | |
| ***HOPE*** | | | | | | | | | | | | |
| Item 4 | 4.7 | .81 | .44** | .54** | .47** | | | | | | | |
| Item 5 | 4.4 | .88 | .38** | .44** | .37** | .44** | | | | | | |
| Item 6 | 4.5 | .85 | .43** | .50** | .45** | .54** | .58** | | | | | |
| Item 7 | 4.6 | 1.0 | .36** | .42** | .36** | .34** | .57** | .62** | | | | |
| ***RES***. | | | | | | | | | | | | |
| Item 8 | 4.7 | 1.0 | .27** | .30** | .27** | .36** | .27** | .34** | .25** | | | |
| Item 9 | 4.5 | 1.1 | .25** | .30** | .33** | .36** | .36** | .38** | .30** | .43** | | |
| Item 10 | 4.8 | .93 | .34** | .35** | .40** | .45** | .37** | .41** | .32** | .55** | .69** | |
| ***OPT***. | | | | | | | | | | | | |
| Item 11 | 4.8 | .93 | .27** | .28** | .30** | .40** | .39** | .47** | .33** | .27** | .51** | .50** |
| Item 12 | 4.8 | 1.0 | .27** | .31** | .29** | .31** | .49** | .46** | .57** | .22** | .40** | .40** |
| Item 13 | 4.4 | .98 | .29** | .29** | .24** | .35** | .37** | .46** | .40** | .24** | .42** | .39** |

*Note.* ** The correlations are significant at the 0.01 level (2-tailed).

**EFA.** First, we carried out an EFA with the 13 items we included in the PCQ. All the items loaded on their respective factors, with the exception of item 4, which loaded on self-efficacy instead of hope (.41). This issue is consistent with findings from previous studies where item 4 was also found to be problematic; therefore, we decided to eliminate it and repeat the EFA without it. The results from both EFAs can be seen in Table 2.

In the second EFA, all the items loaded on their corresponding factors. Hope explained the most variance in the data, with 47%; self-efficacy explained 12%, resilience 10%, and optimism 7%. The four factors together explained 63% of the common variance.

**Tabla2.** *EFA Factor loadings*

| | *First EFA* | | | | *Second EFA* | | | |
|---|---|---|---|---|---|---|---|---|
| | **F 1** | **F2** | **F3** | **F4** | **F1** | **F2** | **F3** | **F4** |
| SELF-EFFICACY | | | | | | | | |
| 1. I feel confident in representing my work area in meetings with management | .87 | | | | | .87 | | |
| 2. I feel confident contributing to discussions about the company's strategy | .76 | | | | | .72 | | |
| 3. I feel confident presenting information to a group of colleagues | .77 | | | | | .72 | | |
| HOPE | | | | | | | | |
| *4. If I should find myself in a jam at work, I could think of many ways to get out of it* | *.41* | | | | | | | |
| 5. Right now I see myself as being pretty successful at work | | .70 | | | .68 | | | |
| 6. I can think of many ways to reach my current work goals | | .73 | | | .70 | | | |
| 7. At this time, I am meeting the work goals that I have set for myself | | .84 | | | .85 | | | |
| RESILIENCE | | | | | | | | |
| 8. I can be "on my own" so to speak at work if I have to | | | .61 | | | | .59 | |
| 9. I usually take stressful things at work in stride | | | .65 | | | | .64 | |
| 10. I can get through difficult times at work because I've experienced difficulty before | | | .92 | | | | .92 | |
| OPTIMISM | | | | | | | | |
| 11. I always look on the bright side of things regarding my job | | | | .84 | | | | .85 |
| 12. I'm optimistic about what will happen to me in the future as it pertains to work | | | | .62 | | | | .61 |
| 13. When things are uncertain for me at work, I usually expect the best | | | | .57 | | | | .58 |

**CFA.** We proceeded to test these results with CFA using the other half of the sample. First, we tested our modified version of the scale (with item 4 excluded and item 13 included) and obtained fit indices. Then, we decided to compare our modified version to the original PCQ by carrying out another CFA using the same items as in the original scale. Table 3 shows the factor loadings.

In our modified PCQ and the original PCQ, we compared three models: a second-order model, a one-factor model, and a four-factor model. Table 4 shows fit indices for all the models.

**Table 3.** *CFA factor loadings of the modified PCQ12*

| | Four-factor model | | Second-order model | |
|---|---|---|---|---|
| Factors | Items | λ | Items | λ |
| Self-efficacy | PsyCap1 | .80 | PsyCap1 | .80 |
| | PsyCap2 | .84 | PsyCap2 | .84 |
| | PsyCap3 | .76 | PsyCap3 | .76 |
| Hope | PsyCap5 | .69 | PsyCap5 | .69 |
| | PsyCap6 | .78 | PsyCap6 | .80 |
| | PsyCap7 | .74 | PsyCap7 | .74 |
| Resilience | PsyCap8 | .61 | PsyCap8 | .62 |
| | PsyCap9 | .80 | PsyCap9 | .79 |
| | PsyCap10 | .85 | PsyCap10 | .86 |
| Optimism | PsyCap11 | .76 | PsyCap11 | .75 |
| | PsyCap12 | .77 | PsyCap12 | .77 |
| | PsyCap13 | .76 | PsyCap13 | .77 |
| PsyCap | - | | Efficacy | .74 |
| | - | | Hope | .90 |
| | - | | Resilience | .70 |
| | - | | Optimism | .75 |

**Table 4.** *Model fit for the modified and original PCQ12*

| *Scale version* | *Model type* | *RMSEA (90% CI)* | *SRMR* | *TLI* | *CFI* | *BIC* |
|---|---|---|---|---|---|---|
| Original PCQ | Second-order | .08 (.07 - .09) | .06 | .88 | .91 | **10972** |
| | Four-factor | .07 (.06 - .09) | .05 | .90 | .93 | **10942** |
| | One-factor | .13 (.12 - .15) | .09 | .67 | .73 | **11313** |
| Modified PCQ | Second-order | .08 (.06 - .09) | .06 | .90 | .92 | **11043** |
| | Four-factor | .07 (.05 - .08) | .04 | .92 | .94 | **11011** |
| | One-factor | .15 (.14 - .16) | .10 | .62 | .69 | **11409** |

CFA results indicated a slightly better fit for our modified version than for the original. RMSEA confidence intervals contain lower values, and TLI and CFI are higher. In addition, the modified version does not contain the problematic item 4.

In terms of factor structure, the one-factor model demonstrated poor fit and was therefore rejected. Both the second-order and four-factor models showed good fit to our data. However, the BIC index demonstrated significant differences between the two models in favor of the four-factor model (Table 4).

**Internal consistency, convergent and discriminant validity.** Table 5 contains Cronbach's α, Rho, and AVE, as well as the mean of the factor loadings for each dimension of our modified scale.

**Table 5.** *Factor loadings (λ), AVE, Rho and Cronbach's α*

| | Mean λ | AVE | RhO | **α** |
|---|---|---|---|---|
| Self-efficacy | .80 | .64 | .84 | .83 |
| Hope | .74 | .55 | .78 | .78 |
| Resilience | .76 | .58 | .80 | .79 |
| Optimism | .76 | .58 | .81 | .81 |

*Note.* AVE- Average Variance Extracted. RhO- Composite Reliability Index.

Cronbach's alpha for the overall PsyCap scale was .89. For the self-efficacy subscale, it was .83, for hope .78, for resilience .79, and for optimism .81. Rho was also above the .70 threshold for all the PsyCap dimensions, indicating acceptable reliability.

Good convergent validity was indicated by factor loadings greater than .60 and the AVE, which was higher than .50 for all four subscales.

As for discriminant validity, Table 6 contains the correlations between the PsyCap factors and, diagonally, the square root of the AVE. The square root of the AVE has a greater value than the correlations for all the dimensions, indicating good discriminant validity.

**Table 6.** *Correlations between factors and √AVE*

| | *M* | *SD* | Range | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|---|
| 1. Self-efficacy | 4.69 | 0.79 | 1- 6 | **0.80** | | | |
| 2. Hope | 4.46 | 0.77 | 1- 6 | .57** | **0.74** | | |
| 3. Resilience | 4.65 | 0.87 | 1- 6 | .46** | .44** | **0.76** | |
| 4. Optimism | 4.67 | 0.83 | 1- 6 | .35** | .55** | .51** | **0.76** |

**Criterion validity.** We correlated the modified PCQ12 measure with the criterion measures- job satisfaction, performance, and organizational citizenship behavior, using Pearson's correlations to test the strength of the relationships (Table 7).

**Table 7.** *Correlations with criterion variables*

| | Hope | Self-efficacy | Res. | Opt. | PsyCap | Job Sat. | OCB | In-role Perf. |
|---|---|---|---|---|---|---|---|---|
| Hope | - | | | | | | | |
| Self-efficacy | .55** | | | | | | | |
| Resilience | .46** | .43** | | | | | | |
| Optimism | .60** | .38** | .52** | | | | | |
| PsyCap | .83** | .75** | .77** | .80** | | | | |
| Job Satisfaction | .56** | .32** | .24** | .49** | .51** | | | |
| OCB | .42** | .55** | .27** | .34** | .50** | .30** | | |
| In-role performance | .33** | .29** | .32** | .26** | .38** | .22** | .83** | |
| Creative performance | .50** | .52** | .36** | .37** | .54** | .33** | .41** | .26** |

*Note*. **p<.01

All the criterion variables correlated significantly with the composite PsyCap score. The highest correlation was with creative performance (.54), and the lowest with in-role performance. In terms of the separate dimensions, hope and optimism correlated the most with job satisfaction (respectively .56 and .49), self-efficacy with citizenship behavior (.55), and resilience with creative performance (.36).

## Discussion

The objective of the current study was to validate a modified version of the PCQ12 in Spain by testing its psychometric properties in a heterogeneous socioeconomic sample. We performed a cross-validation to test for factorial validity and refine our scale. We then tested the reliability and discriminant, convergent, and criterion validity of the modified PCQ12.

The results obtained from the EFA revealed that item 4 from hope (If I should find myself in a jam at work, I could think of many ways to get out of it) was a better indicator of self-efficacy than hope. This result is similar to those from previous validations, including the one in Spain, where item 4 also cross-loaded, but on resilience. Because the item contains the idiomatic expression 'in a jam', it is difficult to achieve idiomatic equivalence to transmit the underlying concept of hope accurately. Our decision to eliminate the item increases the validity of the modified scale.

Furthermore, the rest of the psychometric properties of the modified version were satisfactory: reliability and discriminant, convergent, and criterion validity obtained good results, providing evidence for the quality of the instrument. In addition, when compared to the original PCQ12, the results favored our modified version.

In the CFAs, we compared the original second-order PsyCap model to a four-factor model, and although both models fit our data well, the four-factor model demonstrated a better fit than the original one. As we saw in the introduction, this is a recurrent results with Spanish-translations of the PCQ and it is consistent with evidence from Portugal (Viseu et al., 2012), where the four-factor model for the PCQ12 also showed better fit. Our results contribute additional evidence supporting the notion that PsyCap´s structure fluctuates across countries and is likely to be influenced by language. The four PsyCap dimensions emerge as more independent from one another in Spanish samples, in comparison to American samples. This has been empirically shown in previous works as

well (e.g. Santana-Cárdenas, Viseu, Núñez & De Jesús, 2018). Future research should therefore asses the measurement equivalence of the PCQ as well as check for language differential item functioning (English versus Spanish). This could be done through Multiple-group confirmatory factor analysis (MGCFA) where increasingly restrictive models are tested to determine whether the fit is similar across groups.

Thus, the main implication of our results has to do with the structure of the scale. Although our data showed the four-factor model to be preferable, the second-order model also had good fit. Therefore, our results provide evidence that both PCQ12 structures can be used flexibly by researchers depending on their objectives and theoretical perspectives.

From a practical point of view, a multidimensional concept is more useful because it allows generalizability and simplifies empirical and practical work. In fact, as a second-order factor, PsyCap has been shown to be a better predictor of employees' work performance and wellbeing than its constitutive elements (Avey, Luthans, & Youssef, 2010). It may be more convenient to conceptualize the real world as shaped by multiple factors simultaneously; it may not be accurate to attribute cause to one or other dimension alone (Thelen, 2005). In other words, it is possible that PsyCap is a dynamic construct that arises out of a particular balance between the four elements it consists of. In this sense, more practical and prediction-oriented research should probably examine PsyCap as an overall construct, because it is more parsimonious to conceptualize it as a single state, and it also simplifies statistical analyses. For example, it is more parsimonious to study the link between PsyCap and wellbeing or PsyCap and performance than the links between each one of the four dimensions and these outcomes.

However, PsyCap elements can also operate somewhat independently from each other; individuals could score higher on some PsyCap dimensions and lower on others. Indeed, the results from the current study point more in this direction, showing empirically that there is less communality than expected between hope, self-efficacy, resilience and optimism within our sample, and our findings corroborate previous results from the Spanish context. Focusing on separate variables through statistical techniques is a key element of scientific analysis, especially when looking for practical conclusion which directly link one characteristic or variable to an outcome.

Researchers might want to analyze whether some of the four dimensions are more strongly related to certain outcomes than others. In this case, using the four-factor model is more appropriate because the overall PsyCap score does not reflect differences in scores across dimensions (it is possible that some people score higher on one or two PsyCap dimensions and lower on the others). In fact, to our knowledge very little empirical research has been done to analyze how PsyCap functions at a more detailed level and it is a proposal for future research for which we recommend using the four-factor model of the PsyCap scale.

In addition, future research should analyze PsyCap functioning in greater depth and detail and also explore the predictive validity of the modified PCQ12, using informants from different sources to prevent common-method variance, which is a limitation of this work. Nevertheless, this is a common practice in studies that analyze and validate these types of variables.

In sum, this study expands the existing evidence for the PCQ12 in Spain by testing a modified version in a heterogeneous sample and analyzing a four-factor structure as a possible alternative to the original second-order structure. Overall, our results support the modified PCQ12 as an improved context-relevant instrument that

adds value to further applications of PsyCap in Spanish-speaking countries.

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