

## Spanish adaptation of the Creative Potential and Practised Creativity scale (CPPC-17) in the workplace and inside the organization

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### Abstract

**Background:** This study follows the theoretical framework put forward by Hinton on creative potential and practised creativity. The objective was to adapt the 17-item Creative Potential and Practised Creativity scale into Spanish and examine its psychometric properties. **Method:** The study sample was made up of 975 Spanish employees (48.5% men and 51.5% women). **Results:** After performing a confirmatory factor analysis, the findings revealed a three-factor structure: Creative potential, Practised creativity and Perception of organizational support. Furthermore, appropriate reliability was found for all three factors as well as initial evidence of construct validity in relation to certain external correlates and a series of scales measuring workaholism, irritation, burnout and personality. **Conclusions:** The present scale may prove ideal for adequately identifying Creative potential, Practised creativity and Perceived organizational support.

**Keywords:** Creativity, creative potential, practised creativity, scale, Spanish adaptation.

### Resumen

**Adaptación española de la escala de Potencial Creativo y de la Creatividad Practicada (CPPC-17) en el trabajo y en la organización.**

**Antecedentes:** este estudio se enmarca dentro de la propuesta de Hinton sobre el potencial creativo y la creatividad practicada. El objetivo fue realizar la adaptación al español de la escala Creative Potential and Practised de 17 ítems y analizar sus propiedades psicométricas. **Método:** los participantes de la presente investigación son 975 empleados españoles (48,5% hombres y 51,5% mujeres). **Resultados:** los resultados obtenidos demuestran, después de realizar análisis confirmatorio, una estructura constituida por tres factores: potencial creativo, creatividad practicada y percepción de apoyo organizacional. Además, los tres factores obtenidos tienen una fiabilidad adecuada e igualmente se constatan evidencias de validez si se toman como referencia algunos correlatos externos y algunas escalas que hacen referencia a la adicción al trabajo, la irritación, el burnout y la personalidad. **Conclusiones:** la presente escala puede resultar idónea para identificar de manera apropiada el potencial creativo, la creatividad practicada y el apoyo organizacional percibido.

**Palabras clave:** creatividad, potencial creativo, creatividad practicada, escala, adaptación español.

Individual creativity constitutes the cornerstone of organizational innovation (Amabile, 1988) when the latter is required in the workplace (Amabile, 2004). In this respect, innovative behaviour at work entails coming up with new ideas (creativity) and putting them into practice (innovation) although this may be affected by stress in the workplace (Byron, Khazanchi, & Nazarian, 2010) and time pressure (Hsu & Fan, 2010). Hence, there is scientific agreement that innovation is rooted both in the contributions of individuals who are flexible and open minded (Yukl, 2002) as well as in social beliefs and ideologies (Niu, 2013). Highly creative people redefine problems, analyse ideas, convince others and take reasonable risks to generate ideas (Sternberg, 2001).

An employee's creative potential can be defined as a series of factors that include personality, creativity competencies and

skills and expertise concerning specific knowhow (Hinton, 1968, 1970; Shalley, 2008). Tierney and Farmer (2002) have named this construct creative self-efficacy, knowing and perceiving oneself as good at being creative, but it also incorporates other aspects of creative potential, such as possessing the necessary knowledge for good performance at work and the perception of one's capacity to take risks when trying out new creative ideas.

According to Houghton and DiLiello (2010), the more creative self-efficacy people have, the more likely they are to perceive opportunities where they can effectively apply their creative potential in the form of practised creativity. In fact, the relationship between creative potential and practised creativity can be smoothed or improved by factors that influence an individual's motivation, in addition to the contextual factors outlined by Amabile (1998), such as organizational support, supervision style, freedom, resources, support from work teams, work load and organizational challenges and obstacles.

Hinton (1968, 1970) puts forward a clear distinction between practised creativity, what actually exists, and creative potential, in other words, what could have been but did not materialise due to various inhibiting factors of a personal, group or organizational

nature. Hence, creative potential is what a person can do, and practised creativity is what the person is going to do in terms of generating new and useful ideas; practised creativity can be defined as the perceived opportunity to use these skills and creative competencies (DiLiello & Houghton, 2008).

Having said this, in many workplaces and in many organizations, putting creative potential into practice can be very risky, and besides that, it may require a lot of time and effort on the part of workers (Tesluk, Farr, & Klein, 1997). Therefore, organizational support is needed in order to develop creative potential and carry out practised creativity. This minimises threats (Amabile, 1996) because organizational support entails encouraging risk taking and generating ideas (Cummings, 1965; Delbecq & Mills, 1985), promotes the evaluation of new ideas of employees who perceive that their ideas are not being appreciated (Kanter, 1983), involves team work initiatives that stimulate the flow of novel ideas (Monge, Cozzens, & Contractor, 1992), and rewards and recognises creative efforts (Abbey & Dickson, 1983).

In keeping with the above, organizational obstacles such as infighting, conservatism, rigid and formal structures inside organizations will inhibit practised creativity (Kimberley, 1981; Kimberley & Evanisko, 1981; Amabile, 1996). Practised creativity and creative potential are influenced by restrictive organizational practices, in that the latter stifle the intrinsic motivation needed to generate creative ideas (Amabile, 1988; Deci & Ryan, 1985).

The objective of this study is to analyse the internal structure (Confirmatory factor analysis), the reliability and evidence of convergent validity of the scale under study.

## Method

### Participants

The sample was made up of 975 Spanish employees from the Autonomous Communities of Castilla-León and Catalonia, 48.5% men and 51.5 % women. Their mean age was 42.49 years ( $SD = 11.25$ ). Their marital status was: Married (60.8%), civil union (6.9%), single (23.8%), divorced / separated (7.5%) and widowed (1.1%). Their academic qualifications were as follows: 1.4% had no academic certificate or degree, 22.6% had finished primary education, 39.1% had finished secondary education, 18.4% had taken a 3-year university degree, 12.6% had a 5-year university degree as a higher engineer or architect, and 6% had completed a master / doctorate.

### Instruments

The *Creative Potential and Practised Creativity* scale (CPPC; DiLiello & Houghton, 2008) in its original version in English consists of 17 items. It was translated into Spanish using the back-translation method (Hambleton, 1994; Hambleton, Merenda, & Spielberger, 2005; Muñiz & Bartram, 2007; Muñiz, Elosua, & Hambleton, 2013) and also following the method outlined by Balluerka, Gorostiaga, Alonso and Haranburu (2007). In the English version, the items are distributed into three subscales: Creative Potential has 6 items ( $\alpha = .84$ ; e.g., for example, “1.-I think I am good at generating innovative ideas”), Practised Creativity is made up of 5 items ( $\alpha = .84$ ; e.g., “7.-In my workplace, I have the opportunity to use my creative skills and abilities”) and Perceived Organizational Support” consists of 6 items ( $\alpha = .94$ ; e.g., “12.-

Creative work is recognised in my organization”). The response format was a five-point scale ranging from 1 (*Totally disagree*) to 5 (*Totally agree*).

The *Creative Environment Perceptions* scale (CEP; Mayfield & Mayfield, 2010) is made up of 9 items. The Spanish adaptation, drawn up by Boada-Grau, Sánchez-García, Prizmic-Kuzmica and Vigil-Colet (2012), also has 9 items structured into three subscales, which have 3 items each. The subscales are: Support for Creativity (e.g., “1.-My superior encourages me to be creative”), Work Characteristics (e.g., “4.-I have the resources I need to carry out my work”), and Blocks to Creativity (e.g., “7.-My organization’s policy”). The reliabilities were .85, .71 and .81 respectively. The Likert response scale was a five-point scale, ranging from 1 (*Completely disagree*) to 5 (*Completely agree*).

The *Workaholism Scale* (WorkBAT; Burke, 1999, 2000; Burke, Richardsen, & Martinussen, 2002; McMillan, Brady, O’Driscoll, & Marsh, 2002; Spence & Robbins, 1992), in its Spanish version, drawn up by Boada-Grau, Prizmic-Kuzmica, Serrano-Fernández, & Vigil-Colet (2013), has 19 items and 2 subscales. The first subscale is called D (*Driven*)” and is made up of 12 items (e.g., “2.-I feel guilty when I am absent from work”), the second is called J (*Work Enjoyment*) and is made up of 7 items (e.g., “3.-My work is more fun than work”). The reliabilities were .82 and .83 respectively. The response format was a five-point scale, ranging from 1 (*Don’t agree at all*) to 5 (*Totally agree*).

The *Dutch Work Addiction Scale* (DUWAS; Schaufeli, Shimazu, & Taris, 2009), in the Spanish version (Del-Líbano, Llorens, Salanova, & Schaufeli, 2010) has a two-factor structure and 10 items. Each of these two factors has five items. The first factor is Work Excessive ( $\alpha = .75$ ; e.g., “4.- I often stay behind and work after my colleagues have left”) and the second factor is Working Compulsive ( $\alpha = .81$ ; e.g., “11.- I often feel there is something inside me that drives me to work hard”). The responses were anchored on a five-point scale ranging from 1 (*Almost never*) to 5 (*Almost always*).

The *Irritation Scale* (IS; Mohr, 1986; Mohr, Müller, Rigotti, Aycan, & Tschan, 2006) has a Spanish version (Merino, Carbonero, Moreno, & Morante, 2006). The present scale has 8 items and 2 subscales. The first subscale is called Emotional Irritation ( $\alpha = .86$ ) and is made up of 5 items (e.g., “3.-When other people talk to me, it irritates me”); the second is called Cognitive Irritation ( $\alpha = .87$ ) and is made up of 3 items (e.g., “1.-I find it hard to switch off after work”). The Likert responses were gathered on a 7-point scale, ranging from 1 (*Very much disagree*) to 6 (*Very much agree*).

The *Maslach Burnout Inventory* (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996), in the Spanish version (Salanova, Schaufeli, Llorens, Peiró, & Grau, 2000), assesses burnout and is made up of 15 items (3 subscales). The Exhaustion ( $\alpha = .87$ ) subscale is made up of 5 items (e.g., “6.-I am burnt out by the job”), the Cynicism ( $\alpha = .85$ ) subscale is made up of 5 items (e.g., “9.-I have lost enthusiasm for my job”) and the Professional Efficacy ( $\alpha = .78$ ) subscale has 6 items (e.g., “12.-I have accomplished many worthwhile things in this job”). The responses were anchored using a 6-point scale, ranging from 1 (*never*) to 6 (*every day*).

The *Personality Inventory* (OPERAS; Vigil-Colet, Morales-Vives, Camps, Tous, & Lorenzo-Seva, 2013) is based on a model of the five key personality factors. The scale consists of a total of 40 items which are rated on a 5-point scale. As far as its psychometric properties are concerned, the findings show that the test fits the 5-factor structure well. The traits are: Extraversion ( $\alpha = 0.86$ ; e.g.,

“2.-I’m the life of the party”), Emotional Stability ( $\alpha = 0.86$ ; e.g., “32.-I often change moods”), Responsibility ( $\alpha = 0.77$ ; e.g., “5.-I always keep my word”), Agreeability ( $\alpha = 0.71$ ; e.g., “12.-I respect others”) and Openness to Experience ( $\alpha = 0.81$ ; e.g., “24.-I like trying out new things”). Furthermore, the resulting scores were corrected for social desirability and acquiescence bias by applying different specific psychometric procedures (Ferrando, Lorenzo-Seva, & Chico, 2009; Lorenzo-Seva & Ferrando, 2009).

Finally, in order to assess evidence of convergent validity we also used a series of correlates, known as external indicators (Boada-Grau, Sánchez-García, Prizmic-Kuzmica, & Vigil-Colet, 2012; Boada et al., 2013), in the form of questions that the respondents had to answer.

*Procedure*

Non-probabilistic sampling was used (Hernández, Fernández, & Baptista, 2000), also known as random accidental sampling

(Kerlinger, 2001), to obtain the sample. With the prior consent from the respective company managers and after contacting with employees to take part in the study, they were administered the scales on an individual basis during their work time. Participants were given instructions on how to answer the scales and were also assured that their replies would be treated as strictly confidential and anonymous.

*Data analysis*

Taking into account that we adapted the CPPC test, whose factorial structure was stated in the original English version, we performed a confirmatory factor analysis using the three-factor structure proposed by DiLiello and Houghton (2008). We performed this analysis with MPlus 6.12, by means of maximum likelihood estimation.

Evidence of convergent validity was calculated by means of Pearson’s correlations between the scores of the three subscales

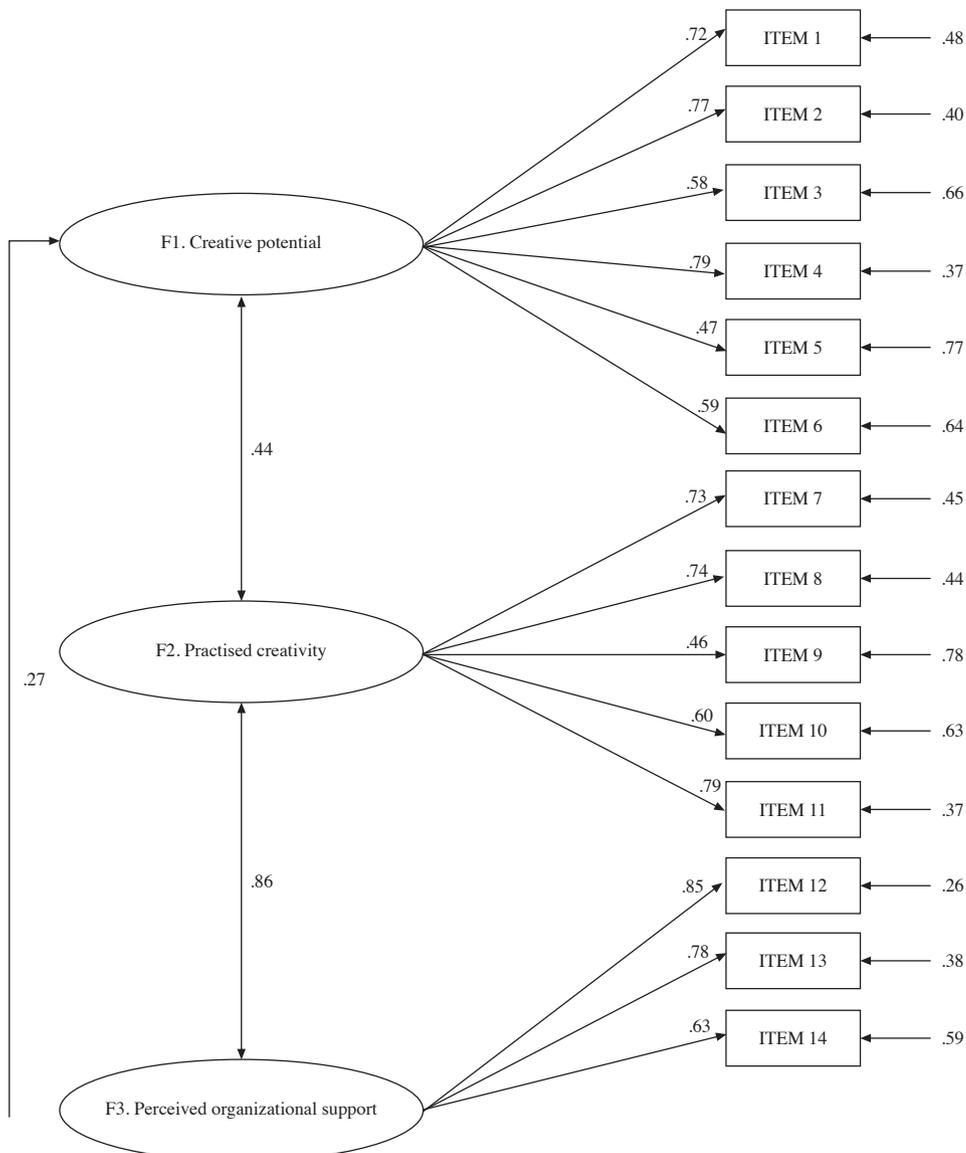


Figure 1. Confirmatory factor analysis of the CPPC-17 scale (Chi-square = 599.818; df = 116; P-value= .0000; RMSEA = .06; CFI =.92 and TLI = .93)

that make up the CPPC-17 and other measures such as creativity (CEP), workaholism (WorkBAT y DUWAS), irritation, burnout (MBI-GS), personality (OPERAS) and various external correlates. We made use of the SPSS 19.0 to calculate reliabilities and evidence of convergent validity.

Results

We carried out a confirmatory factor analysis (CFA) based on structural equations in order to verify the appropriateness

of the 3-factor structure of the original in English. We made use of the following goodness-of-fit indicators: Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA). Despite the lack of unanimity concerning the optimal cut-off points of the structural model fit indexes, values above .90 in the TLI and the CFI are generally considered acceptable, and excellent if they are above .95 (Lévy-Mangin & Varela-Mallou, 2006). Furthermore, values below .08 are considered acceptable for the RMSEA and excellent if equal to or below .05 (Bentler, 1990; Hu & Bentler, 1999; Fan & Sivo, 2007). Figure 1 displays the following

*Table 1*  
Factors of the CPPC-17 scale: Descriptive statistics, reliability, confidence intervals and correlations between social-demographic variables and the factors of the (CEP-9, WorkBAT, DUWAS, Irritation, MBI-GS, OPERAS) scales, plus the correlations matrix between the three factors of the analysed scale

		M	SD	Score range	F1	F2	F3
Mean					22.72	17.49	17.89
SD					3.43	4.25	5.61
Reliability					.82	.80	.90
Confidence interval					.80-.83	.77-.81	.89-.90
Score range					9-30	5-25	6-30
External correlates	Do you feel healthy on the whole?	4.26	.93	1-5	.15**	.12**	.09**
	As far as happiness is concerned how happy are you with your life?	4	.96	1-6	.12**	.06*	.04
	How often do you take work home?				.11**	.26**	.19**
	How many nights have you woken up thinking of job matters?	13.06	42.48	0-365	.02	.11*	.02
	How many hours of overtime do you do a year?	96.70	232.25	0-693	.10*	.08	.06
	Are you obliged/pressured in your organization to give the knowledge you have to it?	2.53	1.38	1-5	.08*	.11**	.09**
	Are you obliged/pressured in your organization to come up with innovative proposals for improvement?	2.14	2.14	1-5	.15**	.33**	.30**
CEP-9:	Support for creativity	9.65	2.89	3-15	.28**	.68**	.75**
	Work characteristics	11.28	2.14	3-15	.25**	.47**	.50**
	Blocks to creativity	9.5	2.91	3-15	.10**	.34**	.45**
WorkBAT	D-Driven	31.18	9.01	13-60	.22**	.11*	.14**
	J-Work enjoyment	15.37	5.37	7-32	.30**	.41**	.40**
DUWAS	Work excessive	20.11	7.72	10-25	.19**	.12*	.13**
	Work compulsive	17.27	6.30	7-25	.14**	.07	.11*
Irritation	Emotional	13.66	6.69	5-30	-.04	-.10*	-.05
	Cognitive	8.83	4.81	3-18	.09	.05	.09*
MBI-GS	Exhaustion	10.68	6.54	5-30	-.02	-.19**	-.15**
	Cynicism	5.88	5.38	5-24	-.10*	-.30**	-.28**
	Personal efficacy	27.88	5.59	12-36	.31**	.30**	.27**
OPERAS	Extraversion	47.36	9.95	21-69	.09*	.02	.03
	Emotional stability	49.26	9.11	8-71	.09*	.12**	.12**
	Responsibility	49.31	9.22	17-71	.08	.02	.05
	Agreeableness	48.62	8.9	20-77	.07	.03	.04
	Openness to experience	48.52	9.8	4-68	.06	.02	.03
F1				-	-	-	
F2				.36	-	-	
F3				.24	.71	-	

(F1) Creative Potential, (F2) Practised Creativity, (F3) Perceived Organizational Support  
\*\*  $p < .01$  ; \*  $p < .05$

indicators (TLI= .923; CFI= .934; RMSEA= .066). They indicate an acceptable fit of the model whereby all the indicators are close to values that are considered acceptable. In addition, all the saturations range between .46 and .85.

Table 1 shows the mean, standard deviation, reliability, confidence intervals, external correlates and correlations between the three factors of the CPPC-17 scale and the factors of the CEP-9, WorkBAT, DUWAS, Irritation, MBI-GS and OPERAS scales. Table 2 lists the items and the 5-point Likert scale.

We performed Kolmogorov-Smirnov's normality test on the three scales, rejecting in all cases the null hypotheses ( $z$  statistics ranged between  $z = 2.766$  and  $z = 3.087$ ,  $p < 0.001$ ). Nevertheless, when we computed the equivalent effect sizes associated with these departures from normality we found that these were small, ranging from  $d = .089$  to  $d = .01$ , so these deviations from normality may be considered negligible.

As far as proof of validity is concerned, we should point out that DiLiello and Houghton (2008) did not carry out a study in this respect. However, we have included some contrast scales and external criteria. In general terms, we found significant correlations between the three factors of the scale we analysed both with external correlates as well as with the other scales (CEP-9, WorkBAT, DUWAS, Irritation, MBI-GS and OPERAS).

Alpha coefficients ranged from .80 to .90 which indicates that reliability for all three factors is satisfactory and may even be regarded as excellent if we take into account the small number of items that make up each factor. The correlations between factors are also featured and range from .24 to .71.

## Discussion

The present study examined the factor structure and other psychometric properties of the CPPC-17 scale. According to the findings, the scale under study has a three-factor internal structure, appropriate reliability as well as evidence of appropriate validity. The CPPC-17 scale is an instrument that enables us to evaluate creative potential, practised creativity and support from the organization for developing new ideas, using three factors. This is the first time that the scale has been presented to a Spanish sample.

The results of the confirmatory factor analysis (CFA) of the CPPC-17, with a heterogeneous Spanish sample validate DiLiello and Houghton's (2008) three-factor model with a sample of employees working for the United States Department of Defense. This was corroborated by the indexes that showed the goodness of fit of the model (TLI = .923, CFI = .934, RMSEA = .066). The first factor consists of six items and is called F1.-Creative Potential. This refers to one's ability to generate innovative ideas, to the ability to solve problems creatively and to feel comfortable experimenting with new ideas. The second is called F2.-Practised Creativity and has to do with the possibility of having the opportunity to use one's own creative capacities, of putting forward ideas for improvement and of taking full advantage of one's creative competencies; this factor is made up of five items. And the last factor is F3.-Perceived Organizational Support, made up of six items, which have to do with the degree of recognition the organization gives to its employees' creativity, how it rewards

Table 2  
Spanish version of the CPPC-17 scale

**Instrucciones:** A continuación encontrarás algunas afirmaciones sobre TU TRABAJO Y/O TU ORGANIZACIÓN. No hay respuestas correctas ni incorrectas, ni tampoco respuestas buenas o malas. Lee atentamente cada frase e indica por favor el grado de desacuerdo o acuerdo con respecto a las mismas.

1 Completamente en desacuerdo	2 En desacuerdo	3 Neutral	4 De acuerdo	5 Completamente de acuerdo
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1. Creo que soy bueno/a generando ideas innovadoras (I feel that I am good at generating novel ideas)
2. Tengo confianza en mi capacidad para solucionar problemas de forma creativa (I have confidence in my ability to solve problems creatively)
3. Tengo la habilidad de desarrollar más a fondo las ideas de los demás (I have a knack for further developing the ideas of others)
4. Soy bueno/a a la hora de encontrar maneras creativas de resolver problemas (I am good at finding creative ways to solve problems)
5. Cuento con talento y habilidades para hacer bien mi trabajo (I have the talent and skills to do my work well)
6. Me siento cómodo/a probando ideas nuevas (I feel comfortable trying out new ideas)
7. En el trabajo tengo oportunidad de usar mis habilidades y capacidades creativas (I have opportunities to use my creative skills and abilities at work)
8. En el trabajo me invitan a que presente ideas de mejora (I am invited to submit ideas for improvements in the workplace)
9. Tengo la oportunidad de participar en equipos (I have the opportunity to participate on team(s))
10. Tengo libertad para decidir cómo llevar a cabo mis tareas (I have the freedom to decide how my job tasks get done)
11. En el trabajo mis capacidades creativas se aprovechan al máximo (My creative abilities are used to my full potential at work)
12. En mi organización se reconoce el trabajo creativo (People are recognized for creative work in this organization)
13. Mi organización juzga las ideas de un modo justo (Ideas are judged fairly in this organization)
14. En mi organización se anima a la gente a resolver los problemas de forma creativa (People are encouraged to solve problems creatively in this organization)
15. Mi organización cuenta con buenos mecanismos para fomentar y desarrollar las ideas creativas (This organization has a good mechanism for encouraging and developing creative ideas)
16. En mi organización se anima a la gente a asumir riesgos (People are encouraged to take risks in this organization)
17. Las ideas innovadoras y creativas se recompensan (Rewards are given for innovative and creative ideas)

creative ideas and takes on risks. The reliability obtained for the English version by DiLiello and Houghton (2008) was acceptable for all three factors and ranged between .84 and .94. In the version we drew up for the present study, reliability was similar to that of the original version and ranged between .80 and .90.

The correlations of the instrument we are presenting with the previous scales and a series of external criteria revealed some evidence of validity. Hence, some significant correlations were observed. In general, the three factors of the scale we have presented correlate positively with the correlates that were used (feeling healthy, happiness, work at home, nights that one has woken up thinking about work, overtime, giving knowledge and innovative proposals). We also found that creative potential, practised creativity and perceived organizational support correlate positively with support for creativity, workplace characteristics, blocks to creativity, workaholism, cognitive irritation, personal efficacy, extraversion and emotional stability. However, some factors present negative correlations with emotional irritation, cynicism and exhaustion.

By way of conclusion, the different analyses carried out point to the existence of a three-factor structure, and reveal appropriate statistical indexes (Tabachnick & Fidell, 2007). The CPPC-17 has proved to be a brief instrument that can be quickly applied and interpreted and is easy to understand. In fact, the three subscales that make it up can each be evaluated independently of the others.

As regards its applicability, given that the scale shows good psychometric properties, the information obtained from the evaluation performed using the CPPC-17 will enable us to implement creativity development programmes (Leenders, van

Engelen, & Kratzer, 2007) inside organizations with the aim of narrowing the gap between creative potential and practised creativity. This can be achieved by designing work environments that support creativity. Modern organizations must be able to reap the latent creative potential of their employees in order to address the wide range of challenges (DiLiello & Houghton, 2006) they are faced with in today's market environment.

The research studies we intend to carry out in the future will follow on from the limitations of the present study. We shall comment on these now: First of all, we need to analyse evidence of discriminant validity (Blanch & Aluja, 2009; Campbell & Fiske, 1959; Messick, 1995) by looking into both the type of work and professional categories. Another aspect that calls for further attention is that of determining in which ways different types of leadership such as servant leadership (Liden, Wayne, Zhao, & Henderson, 2008), ethical leadership (Kalshoven, Den Hartog, & De Hoogh, 2011), transformational leadership (Molero, Cuadrado, Navas, & Morales, 2007), authentic leadership (Morian, Molero, & Lévy Mangin, 2011), transcendental leadership (Crossan, Vera, & Nanjad, 2008) and charismatic leadership (Conger & Kanungo, 1994) influence the development of creativity in employees. Thirdly, it needs to be demonstrated whether individuals with strong creative yet untapped potential are more likely to develop creativity when they perceive strong support from the organization (DiLiello & Houghton, 2006). And finally, we need to investigate with a multilevel methodology (Browne & Rasbash, 2004; Raudenbush, 2004; Snijders, 2005) in what way the climate of innovation teams (Boada-Grau, De-Diego, & De-Llanos, 2009; Boada-Grau, De-Diego, De-Llanos-Serra, & Vigil-Colet, 2011) fosters both creative potential and practised creativity.

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