

# ***CAD-R. Chronic pain coping questionnaire: confirmatory factor analysis. Are there individual differences in gender, age and type of pain?***

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## **ABSTRACT**

**Introduction:** A review of the CAD-R (Cuestionario de afrontamiento al dolor reducido) (1) is presented in a sample of 4.389 patients diagnosed with chronic pain derived from a spanish multicenter study (2).

**Material and method:** The factorial structure is analyzed by exploratory factor analysis (EFA) and confirmatory (CFA), as well as reliability (internal consistency and test-retest at three months, the latter of which is 2.825 patients). Four models are tested proving that correlated first-order strategies are those that provide better adjustment indices.

**Results:** Both internal consistency and test-retest indices are acceptable.

**Conclusion:** CAD-R appears as an instrument that presents good reliability and a factorial structure of six first-order strategies.

**Key words:** CAD-R, coping, pain, assessment, CFA, individual differences.

## **RESUMEN**

**Introducción:** Se presenta una revisión del CAD-R (Cuestionario de afrontamiento al dolor reducido) (1) en una muestra de

4.389 pacientes diagnosticados con dolor crónico derivada de un estudio multicéntrico de toda España (2).

**Material y método:** Se analiza la estructura factorial mediante análisis factorial exploratorio (AFE) y confirmatorio (AFC), así como la fiabilidad (consistencia interna y test retest a los tres meses, esta última sobre 2.825 pacientes). Se ponen a prueba cuatro modelos constatando que las estrategias de primer orden correlacionadas son las que aportan mejores índices de ajuste.

**Resultados:** Tanto los índices de consistencia interna como los test-retest resultan aceptables.

**Conclusiones:** El CAD-R aparece como un instrumento que presenta una buena fiabilidad y una estructura factorial de seis estrategias de primer orden.

**Palabras clave:** CAD-R, afrontamiento, dolor, evaluación, AFC, diferencias individuales.

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## **INTRODUCTION**

The chronic nature of certain illnesses makes them a complex phenomenon with an uncertain prognosis, occasionally leading treatment to being essentially palliative in its objectives. In the case of chronic pain, sufferers must learn how to overcome and co-exist with the personal problems that pain can cause in their daily routine, which means taking into account the importance of cognitive and behavioral factors in adapting to the illness (3), considering that lack of adaptation does not depend exclusively on the sensory dimension of pain, but on the individual's cognitive-behavioral and emotional environment (4,5).

In psychological terms, there are two basic points where intervention is very useful: how sufferers assess the pain and the coping strategies they use. In this second aspect, psychologists can train or teach the sufferer the strategies they find most adaptive (6).

From a theoretical point of view, coping refers to changing strategies according to circumstances, which depend to a large extent on the assessment that each individual makes and which are not part of the individual's resources (7). Accordingly, they are not considered stable, fixed traits, and may be modified and molded. In general terms, coping has been considered to have a two-fold functionality: attempting to change or to alter the problem, and seeking to alter the repercussions that it has on the individual without modifying the problem as such. This second set of strategies is probably the one used most often, especially when a problem does not depend on the individual, as may be the case of chronic illness. This does not imply that the two types exclude each other. On the contrary, the strategies usually support each other in such a way that the individual can best adapt to the problem (8).

There is some controversy regarding the differential variables that affect strategies for coping with pain, such as gender, age or pain type.

Chronic pain affects more women than men (9), bearing in mind that women use more emotion-based strategies and men use more problem-based strategies (10); but it is also acknowledged that they use more adaptive strategies, considering they exert greater control over the illness (11), which would come into conflict with the basic model of Lazarus and Folkman (1984), establishing that lower perception of control is related to a lower secondary assessment (fewer options to act) and greater use of emotion-based strategies. Some studies also report that men use more emotion-based strategies to cope with pain than women (12), while there are studies that report the opposite, finding that women tend more to distraction, positive reassessment or religion (13), which are included among the emotion-based strategies.

As regards age, from a neuroscientific perspective, the "emotional brain" is predominant during adolescence. This changes in adulthood towards greater dominance of the prefrontal cortex, more related to decision-making and self-regulation (14). This in turn corresponds to an increase in adaptive coping strategies in the early stages of adulthood (15,16). Although some results usually coincide with previous studies, others obtain the opposite results, suggesting that adults usually exhibit greater interference, perceiving less control over their lives (5).

In terms of different coping strategies according to pain type, the literature has recently suggested they are not especially significant, which implies that psychological intervention in this respect depends on the coping strategies used and not on pain type (17).

There exist a number of questionnaires to evaluate coping strategies for illnesses with chronic pain, although the most used is the Coping Strategies Questionnaire (CSQ) (18), which is not free of criticism due to its factor structure and to the theoretical justification of some scales (see the review by Soriano and Monsalve, 1999) (19). This gave rise to the development of a questionnaire administered exclusively with Spanish samples in order to overcome some of these criticisms. The Pain Coping Questionnaire (CAD) (20) was developed initially to overcome some of these limitations, later proposing a reduced version (CAD-R) which also put forward two general second-order strategies and addressed construct validity (1).

This study's objective is to carry out a review of the CAD-R questionnaire with a broad sample taken from a multicenter study all over Spain, especially addressing its structure and reliability (internal consistency and test-retest), to identify the existence of differential variables and to provide data that may be used as guideline standards generated from a broad sample of Spanish patients diagnosed with chronic pain.

## MATERIALS AND METHODS

### Sample and procedure

The evaluation comprised a sample of 4,389 patients diagnosed with chronic pain taken from a prospective study of 150 Pain Units all over Spain (2). All sample subjects were consecutively evaluated in a first visit after signing their informed consent, and at this visit their demographic data was obtained, diagnosis of type of pain was carried out, differentiating neuropathic, nociceptive and mixed pain, following the criteria of the International Association for the Study of Pain (IASP) (21). At this first visit, a baseline psychometric evaluation was also carried out with the measurement tools described below. A subsequent psychometric evaluation was carried out three months after the first visit. Inclusion criteria were: diagnosis with chronic pain, adult age and informed consent. Patients with serious active psychopathology were excluded. The study from which data was derived was approved by the Investigation Committee of the Consorcio Hospital General Universitario in Valencia.

### Measurement tools

- *Coping*: CAD-R, the reduced pain coping questionnaire (1), was developed on the basis of the original CAD questionnaire (20) which consisted of six scales distributed into 31 items. The CAD-R kept the 6 original scales, reducing its length to 24 items

and adding two general, second-order scales. It is answered on a Likert-type, 5-point scale (never=1, always=5). First-order scales are religion (use of religious beliefs), catharsis (search for social emotional support), distraction (avoiding attention to pain), self-assertion (not faltering, keeping up a good mood), mental self-control (mental control of the pain) and search for information (advice, consultation on what to do). Second-order scales are classified into active strategies (distraction, mental self-control, self-assertion and search for information) and passive strategies (religion and catharsis).

- *Pain intensity*: the Visual Analogue Scale (VAS) (22) is a validated measurement tool to assess pain intensity (23). It consists of a 10-cm line, where subjects must indicate their pain intensity on a scale from 0 to 10, with zero representing “no pain” and 10 representing “pain as bad as you can imagine”.

### Statistical analysis

In order to determine the questionnaire’s structure, an exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were carried out. To avoid redundancy bias, the total study sample was randomized, divided into two parts for cross-validation. The first cohort was used to carry out the EFA and was made up of 2,159 patients, and the second cohort was used for the CFA and was made up of 2,230 patients.

The EFA was obtained by the main components analysis method following three factor selection criteria: Kaiser (24), scree test (25) and parallel analysis (26). The six-factor structure initially proposed by the questionnaire’s authors (1) was expected to be replicated. Oblique rotation was used (oblimin, delta=0). Based on the factor correlation matrix, a second main components analysis was obtained using the last three selection criteria indicated in the first-order analysis. In this case rotation was orthogonal (varimax).

A number of CFA (maximum likelihood estimation) were carried out in order to verify four models: interaction of all first-order factors, six independent first-order factors, two second-order factors as indicated by the EFA and two second-order factors as proposed in the original work (1). Although a large number of goodness-of-fit indices exist for the models, the most common is Chi square ( $\chi^2$ ), although it is greatly affected by sample size, especially if the sample surpasses 200 observations. In general, more than focusing on the level of significance, it is more important to examine magnitude, with smaller values indicating a better fit. The NFI (Normed Fit Index) is used to compare the theoretical model with the independent one. An adequate value must exceed 0.90 (27). It is usually used together with the RMSEA (Root Mean Square Error

of Approximation) which indicates the level of variance not explained by the model, taking into account degrees of freedom, together with the confidence interval (CI), which must lie between 0 and 0.05. A value of 0.01 indicates an excellent fit (28). The TLI (Tucker-Lewis Index) incorporates degrees of freedom into the theoretical and independent models. A suitable value must be  $\geq 0.95$  (29). The parsimonious fit indices (30) include the AIC (Akaike Information Criterion), which takes into account both goodness of fit and the number of parameters to estimate, which must be as low as possible and lower than the value of the independent model used for comparison.

Reliability was obtained by applying two procedures: internal consistency (Cronbach’s  $\alpha$ ) over the whole sample and test-retest after three months to determine temporal stability over part of the patient sample (n =2,825).

Comparison between genders was obtained using the student t test, and ANOVA (Bonferroni) was used for comparison of the three types of pain and categorization by ages (17-39, 40-49, 50-59, 60-64 and 65 or above).

Measures of central tendency and percentiles are provided for the total sample, with gender differences, with different types of pain and with the five age groups separately.

Analyses were carried out with the statistics packages SPSS 21 and AMOS 21.

## RESULTS

### Descriptors

The sample is made up of 4,389 patients diagnosed with chronic pain. Mean age is 56.9 years old (s.d. 14.6), with 34.6% men (n=1.518), with an education level of 13.6% without schooling (n=596), 49.2% with primary education (n=2.169), 27% intermediate education (n=1.184) and 10.2% with higher education (n=449). Distribution of pain type was of 39.5% (n=1.734) nociceptive, 18.8% (n=824) neuropathic and 41.7% (n=1.831) of mixed type. Mean scores, standard deviations and 10-point scales are shown in Table I.

### Exploratory factor analysis (EFA)

The sample used to obtain the EFA was made up of 2,159 patients (cohort 1), with a mean age of 57.24 (s.d. =14.57), with 66.6% women (n =1,438), with a mean pain intensity VAS=6.8, 61.9% with primary education (n =1,337) 39.7% presenting nociceptive pain (n =858), 18.7% neuropathic pain (n =404) and 41.5% mixed pain (n =897).

The EFA obtained a clearly satisfactory KMO index of 0.861 (24,31,32), as with Bartlett’s sphericity test

**TABLE I**  
CENTRAL AND 10-POINT-SCALE MEASURES OF TENDENCY. N=4389

	<i>Distraction</i>	<i>Search info.</i>	<i>Religion</i>	<i>Catharsis</i>	<i>Mental S.C.</i>	<i>Self-ass.</i>
Mean	10,35	12,65	9,97	11,25	10,32	14,90
St. dev.	3,69	3,82	5,45	3,87	4,08	3,57
10	5	7	4	6	4	10
20	7	9	4	8	6	12
25	8	10	4	8	7	13
30	8	11	4	9	8	13
40	9	12	7	10	9	15
50	10	13	9	11	10	16
60	11	14	12	12	12	16
70	12	15	14	14	13	17
75	13	16	15	14	13	17
80	14	16	16	15	14	18
90	15	17	18	16	16	20

( $\chi^2=26367,928$ ;  $gl= 276$ ;  $p= 0,000$ ). This data indicates good sample suitability and an adequate variable correlation matrix.

Parallel analysis indicated the retention of six factors working with 95% over random eigenvalues. The two other criteria followed for factor retention also coincide in selecting six factors that explain 68.37% of the variance.

Following the recommendations proposed by Hair et al. (31), the only item that would present problems as regards commonality is No.13, although it would be close to the value of 0.5 that the authors consider acceptable (Table II).

Factor 1 includes the items comprised in “search for information” ( $\alpha= 0.79$ ), factor 2 includes the items in “religion” ( $\alpha= 0.95$ ), factor 3 items in “self-assertion” ( $\alpha= 0.83$ ), factor 4 items corresponding to “mental self-control” ( $\alpha= 0.83$ ), factor 5 items corresponding to “catharsis” ( $\alpha= 0.83$ ) and factor 6 items corresponding to “distraction” ( $\alpha= 0.72$ ). All the scales (factors) show moderate to high internal consistency indices.

Based on the factor correlation matrix, a new, second-order analysis was carried out, following the same criteria as in the previous analysis, using orthogonal rotation (varimax). The three criteria coincided in retaining two factors. The results are shown in Table III.

Among the sample suitability indices,  $KMO = 0.640$  is considered medium and Bartlett’s ( $\chi^2=1129.891$ ;  $gl= 15$ ;  $p= 0.000$ ) continues to indicate that the correlation matrix is adequate.  $h^2$  levels are no longer so satisfactory, although they are not far off what would be desirable and with the two retained factors 51.63% of the variance is explained.

### Confirmatory factor analysis (CFA)

The second part of the sample used for carrying out the CFA was made up of 2,230 patients (cohort 2), with a mean of age of 56.57 (s.d.=14.64), 64.3% women (n =1,433), with mean pain intensity VAS 6.9, 63.6% with primary education (n =1,419) and 39.3% presenting nociceptive pain (n =876), 18.8% neuropathic pain (n =420) and 41.9% mixed pain (n =934).

There were no significant differences between the two cohorts (EFA and CFA) in age, gender, VAS, education level and pain type (t tests and  $\chi^2$ ), so they were considered equivalent for comparing the two types of analysis.

Four models were tested: 1) total model with the six first-order factors interacting; 2) model with the six independent first-order factors; 3) second-order model as indicated by the EFA carried out in this study, and 4) second-order model proposed in the initial study (1) (see Table IV).

### Reliability

Internal consistency indices, calculated with respect to the total sample, were satisfactory: search for information ( $\alpha= 0.79$ ), religion ( $\alpha= 0.95$ ), self-assertion ( $\alpha= 0.83$ ), mental self-control ( $\alpha= 0.83$ ), catharsis ( $\alpha= 0.83$ ) and distraction ( $\alpha= 0.72$ ). All the scales showed moderate to high internal consistency indices.

Temporary stability after three months was calculated regarding a total of 2,825 patients corresponding to the total study sample: distraction ( $r = 0.630$ ;  $p = 0.000$ ), search

TABLE II  
EFA. OBLIMIN (DELTA=0). CONFIGURATION MATRIX. FACTOR CORRELATION.  
(CFA. STANDARDIZED LOADS MODEL 1).

	<i>I</i> <i>Search info.</i>	<i>II</i> <i>Religion</i>	<i>III</i> <i>Self-ass.</i>	<i>IV</i> <i>Mental S.C.</i>	<i>V</i> <i>Catharsis</i>	<i>VI</i> <i>Distraction</i>	<i>h2</i>
2	0,834 (0,648)						0,630
8	0,792 (0,849)						0,694
14	0,723 (0,533)						0,573
20	0,700 (0,914)						0,663
21		-0,949 (0,933)					0,902
9		-0,946 (0,930)					0,893
3		-0,940 (0,924)					0,869
15		-0,905 (0,874)					0,840
24			0,857 (0,672)				0,728
18			0,855 (0,685)				0,723
12			0,775 (0,853)				0,646
6			0,624 (0,746)				0,573
23				-0,836 (0,846)			0,743
17				-0,829 (0,823)			0,708
11				-0,765 (0,709)			0,670
5				-0,764 (0,589)			0,560
16					-0,864 (0,812)		0,754
10					-0,854 (0,605)		0,703
22					-0,818 (0,823)		0,697
4					-0,637 (0,688)		0,540
1						0,780 (0,534)	0,608
7						0,723 (0,650)	0,646
19						0,722 (0,610)	0,593
13						0,611 (0,436)	0,454
<i>Eigen</i>	5,58	3,45	2,67	1,95	1,45	1,31	% 68,37
<i>Relig.</i>	-0,042						
<i>Self-ass</i>	-0,037	0,242					
<i>Self-con.</i>	-0,197	0,133	0,243				
<i>Cathar.</i>	0,174	-0,082	-0,329	-0,210			
<i>Distr.</i>	0,335	-0,079	-0,069	-0,305	0,183		

Values lower than 0.3 have been eliminated. I: search for information. II: religion. III: self-assertion. IV: mental self-control. V: catharsis. VI: distraction.

for information ( $r = 0.597$ ;  $p = 0.000$ ), religion ( $r = 0.790$ ;  $p = 0.000$ ), catharsis ( $r = 0.637$ ;  $p = 0.000$ ), mental self-control ( $r = 0.597$ ;  $p = 0.000$ ) and self-assertion ( $r = 0.653$ ;  $p = 0.000$ ). They all indicate correct temporary stability.

### Mean differences

Differences in baseline scores were calculated both between men and women and among the three general types of pain: nociceptive, neuropathic and mixed, and among the different age intervals: 17-39; 40-49, 50-59, 60-64, 65 and above.

- *Differences between men and women:* the group of men was made up of 1,518 patients with a mean age of 56.4 years old (s.d.14.09). Women numbered 2,871 patients with a mean age of 57.56 years old (s.d. 14.84). Of the six strategies, differences appeared in

three, and in the three cases women scored higher: distraction ( $M=11.44$ ;  $t=-2.882$ ;  $p = 0.004$ ;  $d=-0.09$ ); religion ( $M=10.8$ ;  $t=-14.133$ ;  $p = 0.000$ ;  $d=-0.45$ ) and catharsis ( $M=11.44$ ;  $t = -4.389$ ;  $p = 0.000$ ;  $d=-0.13$ ). It should be noted, however, that the effect size of the differences is small except in religion, where it is intermediate.

- *Mean differences regarding type of pain:* as indicated, the sample was divided into three types of pain: nociceptive ( $n=1,734$ ; 39.5%), neuropathic ( $n=824$ ; 18.8%) and mixed ( $n=1,831$ ; 41.7%). Comparisons among the three types of pain were carried out using an analysis of variance (Bonferroni). In the distraction strategy, differences appeared between the neuropathic and mixed types ( $F=59891.234$ ;  $p = 0.019$ ; neuropathic  $M=10.07$ , s.d.=3.64, mixed  $M=10.51$ , s.d.=3.58;  $p = 0.016$ ;  $d=-0.12$ ). The search for information strategy showed differences between nociceptive and mixed pain types and between neuropathic and mixed ( $F= 64141.355$ ;  $p.= 0.000$ ; nociceptive  $M=12.34$ , s.d.=3.98, mixed  $M=13.18$ , s.d.=3.62;  $p= 0.000$ ;  $d=-0.22$ ; neuropathic  $M=12.15$ , s.d.=3.8, mixed  $M=13.18$ , s.d.=3.62;  $p= 0.000$ ;  $d=-0.27$ ). The religion strategy showed differences between nociceptive and neuropathic pain and between nociceptive and mixed pain ( $F=130341.536$ ,  $p= 0.013$ ; nociceptive  $M=9.68$ ,  $p= 0.039$ ;  $d.t=5.51$ ; neuropathic  $M=10.13$ , s.d.=5.55;  $d=-0.10$ ; mixed  $M=10.13$ , s.d.=5.33;  $p= 0.044$ ;  $d=-0.08$ ). In catharsis, there were differences between nociceptive and mixed pain and neuropathic and mixed pain ( $F=65683.741$ ;  $p= 0.000$ ; nociceptive  $M=9.68$ , s.d.=5.51; mixed  $M=9.13$ , s.d.=5.34;  $p= 0.000$ ;  $d=-0.08$ ; neuropathic  $M=10.25$ , s.d.=5.55;  $p= 0.20$ ;  $d= 0.20$ ). The mental

**TABLE III**  
SECOND-ORDER FACTORANALYSIS,  
VARIMAX

	I	II	$h^2$
<i>Distraction</i>	0,784		0,617
<i>Search for Info.</i>	0,761		0,583
<i>Self-control</i>	-0,530	0,401	0,442
<i>Self-assertion</i>		0,819	0,672
<i>Religion</i>		0,611	0,376
<i>Catharsis</i>	0,320	-0,554	0,409
<i>Eigen</i>	1,58	1,52	
<i>% variance</i>	26,33	25,29	51,63

Values lower than 0.3 have been eliminated

**TABLE IV**  
CFA. FOUR MODELS

	<i>Mod. 1: Interaction among all factors</i>	<i>Mod. 2: Six independent factors</i>	<i>Mod. 3: second-order EFA: 1. search. info., distract., self-control. 2. religion, catharsis, self-ass.</i>	<i>Mod. 4: second-order original: 1. religion, catharsis 2. search info., self-control, distract., self-ass .</i>
$\chi^2$ ; $p$ ( $df$ )	970,456; $p = 0,000$ (225)	2770,976; $p = 0,000$ (245)	1489,979; $p = 0,000$ (234)	1504,813; $p = 0,000$ (233)
<i>CFI</i>	0,972	0,907	0,954	0,953
<i>TLI</i>	0,966	0,895	0,945	0,944
<i>AGFI</i>	0,953	0,875	0,931	0,930
<i>RMSEA (90 % CI)</i>	0,039 (0,036, 0,041)	0,068 (0,066, 0,070)	0,049 (0,0347, 0,051)	0,049 (0,047, 0,052)
<i>AIC (Indep. Model)</i>	1120,456 (27428,824)	2880,976 (27428,824)	1621,979 (27428,824)	1638,813 (27428,824)

self-control strategy presented differences between nociceptive and mixed pain and between neuropathic and mixed pain ( $F=73269.546$ ;  $p=0.000$ ; nociceptive  $M=10.97$ ,  $s.d.=4.26$ ; mixed  $M=10.73$ ,  $s.d.=3.81$ ;  $p=0.000$ ;  $d=0.05$ ; neuropathic  $M=10.00$ ,  $s.d.=4.22$ ;  $p=0.000$ ;  $d=-0.18$ ). Finally, the self-assertion strategy differentiates between nociceptive and mixed pain ( $F=55943.700$ ;  $p=0.001$ ; nociceptive  $M=15.14$ ,  $s.d.=3.59$ ; mixed  $M=14.71$ ,  $s.d.=3.53$ ;  $p=0.001$ ;  $d=0.12$ ). It may be seen that, despite significant differences existing among the three types of pain, the effect size is very small.

- Age differences were established for five groups 17 to 39 years old ( $n=574$ ; 13.1%), 40 to 49 years old ( $n=860$ , 19.6%), 50 to 59 years old ( $n=1,061$ ; 24.2%), 60 to 64 years old ( $n=464$ ; 10.6%) and 65 years old or above ( $n=1,430$ , 32.6%). After carrying out the ANOVA, the results show that differences exist in the six coping strategies, taking into account the five age groups. Distraction ( $F=9.583$ ;  $p=0.000$ ), search for information ( $F=9.361$ ;  $p=0.000$ ), religion ( $F=84.538$ ;  $p=0.000$ ), catharsis ( $F=16.248$ ;  $p=0.000$ ), mental self-control ( $F=2.439$ ;  $p=0.045$ ) and self-assertion ( $F=20.124$ ;  $p=0.000$ ). In general, the distraction strategy is most used by the age group 40 to 49 years old ( $M=10.85$ ), the self-assertion and search for information strategies were more used by the younger group, and the strategies of religion, catharsis and mental self-control more used by the older group. The Bonferroni correction shows numerous differences among the age ranges, not included as they are excessively lengthy, as almost the whole sample showed significant differences among the groups and throughout the six scales ( $p<0.01$ ), but with small effect sizes. Nevertheless, we should note that the most significant differences appeared in the use of the religion strategy, the youngest group being the one to make least use of it ( $M=7.66$ ), increasing in use up to the older group ( $M=11.83$ ), with effect sizes that grow from  $d=-0.24$  to  $d=-0.82$ . Among the rest of strategies, the greatest difference lies in the self-assertion strategy among the age group 40 to 49 years old ( $M=15.41$ ) and the group aged 65 or above ( $M=14.24$ ) with  $d=0.33$ . The rest of differences among the various groups and strategies used fall below these values, considering them small and/or insignificant.

## DISCUSSION

In the decade of the eighties, especially as from the classic work by Lazarus and Folkman 1984 (7), there was great interest in the study of coping, which in turn gave rise to

the appearance of measuring tools intended to determine core coping strategies. This implied an approach based on an interindividual perspective which, though unable to establish the “why”, did to some extent represent an attempt to determine the “which” and to a lesser extent the “how many”, applying transactional approaches. Classic questionnaires such as the WCS (33), the COPE (34) or the CSI (35), among others, took positions on whether coping consisted of 8, 16 or 3 strategies, a debate that is reflected in the problematic classic dimensions of personality (or temperament, depending on author). When general questionnaires were applied to specific problems, especially to chronic illnesses such as pain, among others, the results were not as satisfactory as might have been expected (36), thus giving way to the development of tools that better approached patients’ problems according to their illnesses.

Specifically considering the illness of chronic pain, previous studies analyzed the exploratory factor structure and the construct validity of the CAD-R (1), but this structure had not been confirmed with a broad sample.

From an exploratory perspective, this study has replicated the six factors proposed in the initial work (20,1), explaining slightly more than 68% of the variance, and showing structural stability. Without a doubt, the poorest item is No. 13 (“I try to recreate a landscape in my mind”), corresponding to the distraction scale. This item’s mistake probably lies in scoring something like landscape, because it negates the patient’s preferences regarding alternative forms of cognitive distraction (pleasant situations, music, reading, TV, etc.). However, we should point out that the item loads satisfactorily in the scale and discriminates perfectly with respect to the rest, but its common variance is lower than the others ( $h^2 = 0.454$ ), an aspect considered problematic by some authors (31).

The sample was divided into two random parts and with no differences between either in terms of gender, education level or type of pain, giving the results reliability and consistency (cross-validation), especially to avoid tautologies arising from the use of the same sample for two types of analysis: EFA and CFA. In this respect, the CFA has allowed confirmation of the results obtained in the EFA, using the second cohort. It is important to point out that four models have been tested: the first, obtained from the results of the EFA (six related factors); the second model proposing independence of the six factors; the third, taken from the second order of the EFA, consisting of two factors (the first containing the search for information, distraction and self-control strategies and the second containing the catharsis, religion and self-assertion strategies) and the fourth model consisting of the second-order factors proposed in the original work (20) which described active strategies (search for information, distraction, mental self-control and self-assertion) and passive strategies (religion and catharsis). The results obtained indicate that, though with small

differences, the model relating first-order factors is the one that fits best, the poorest being the independent factor model and the two second-order models considered intermediate. The differences between the two second-order models compared are not very large as regards goodness of fit, though they are in relation to content, making it clear that these second-order factors vary between samples and, in particular, those obtained in this study may not be clearly interpreted from a theoretical point of view. Therefore, it is clear that the first-order factors are more parsimonious than when second-order factors are considered.

In the classic controversies of personality psychology, common sense suggested it was unlikely that individuals act cognitively without other thoughts interacting (evaluations, tendencies, situational circumstances, etc.). Furthermore, this relationship (correlation) or interdependence of constructs does not seem to unequivocally support a hierarchical, higher-order structure of factors or dimensions. Obviously, this result is strictly limited to this questionnaire and does not mean that coping must necessarily be considered linearly or contained within a single stratum, in the sense that Carrol differentiated between factor strata and levels (37).

Accordingly, and on the basis of the results obtained, we consider it more appropriate to work with the related first-order factors, which have provided clearly satisfactory indices of reliability, both in terms of internal consistency and stability level after three months, some better and some worse than those obtained in the original work, but all acceptable (1).

Many authors required scales that, according to the theoretical model applied, did not make a great deal of sense. If it was a transactional theoretical approach, that is, not fixed and more process-focused, it made no sense to speak of (stable) scales of coping strategies. In fact, and going against theory, if we obtain the mean values of trans-situational actions (which suggest a trait measurement), the individual differences that appeared between gender or type of pain were small and with little variance in play, which indicated the situational or interactive nature of the theoretical position on which the questionnaire was developed.

Nevertheless, this study has repeated the analysis of these differences using a broad sample obtained from 150 centers all over Spain, with the objective of contributing data that could be generalized and not limited exclusively to a more local environment. The results regarding patients' gender indicate that despite significant differences appearing, the effect size of these differences is small, except with the religion strategy, where women score higher than men, as is the case in other investigations (13) and unlike what is reported in other studies, where women use more problem-based strategies (12). Although the results may seem contradictory, these are cultural differences where certain mediating variables very probably underlie the explanation for the apparent contradictions. One possible explanation is

that the result may be due to the number of elderly individuals in the sample compared to younger patients, as studies more focused on adolescence and more focused on gender differences found somewhat different results (38). In our case, we did not analyze this age interval.

One aspect we would like to highlight is that many studies only report on statistical significance, without referring to effect size. Bearing in mind that significance is very often related to sample size, the differences - though reliable - are minimal; that is, statistically significant but with very little importance (39).

When we addressed the differences among the different types of pain, the results were similar; that is, differences with statistical significance appeared but these differences' magnitude is small. We may summarize by saying that patients diagnosed with a mixed pain type make more use of distraction and search for information strategies, those diagnosed with neuropathic pain make more use of religion, catharsis and mental self-control strategies and patients with nociceptive pain score higher in mental self-control and self-assertion strategies. Nevertheless, these differences do not appear among the three types of pain across the six strategies (only in some of them) as mentioned in the results. We should reiterate that the effect size of these differences is very small, which suggests doubt as to whether or not it should be taken into account, especially from a diagnosis and intervention point of view.

Something similar occurs when we compare the use of coping strategies through age where the religion strategy only deserves consideration as the strategy that shows the greatest difference when comparing the youngest group with the oldest, the latter of these scoring higher. Chan et al. report that as age increases, both emotion-based and problem-based coping strategies decrease (3), though not in our case. We should also highlight the scant influence of differences such as patient gender and type of pain suffered, aspects that have already appeared in previous studies with smaller samples (40).

In conclusion, and for all the above, the CAD-R has proven itself to be a coping assessment questionnaire with a stable structure of six first-order strategies that interact with each other and which are coherent with the theoretical model followed since its initial design, also confirming this structure's reliability. We should stress that the differential variables of age, gender and pain type were not significant in the use of coping strategies .

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## CONFLICT OF INTEREST

The authors declare they have no conflicts of interest.



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