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Development and validation of a Spanish version of the Athletic Coping Skills Inventory, ACSI-28

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This study involved the translation, cultural adaptation and validation of the Athletic Coping Skills Inventory (ACSI-28) for a Spanish-speaking sport environment. The sample was made up of 1,253 Spanish athletes, 967 males and 286 females. Confirmatory factor analysis (CFA) showed that the 7-factor structure found in the English version was replicated in the Spanish translation in both males and females. Likewise, the reliability coefficients were similar to those of the English version, with values exceeding .80 for the total score. Several of the subscales correlated positively with sports experience and performance level. The Spanish version of the ACSI-28 thus maintains the factor structure of the original and exhibits similar psychometric properties. Consequently, it can reliably be applied to Spanish-speaking athletes for research and evaluation purposes.

Desarrollo y validación de la versión española del Inventario de Habilidades Deportivas de Afrontamiento, ACSI-28. Se ha realizado la traducción, adaptación cultural y validación del Inventario de Habilidades Deportivas de Afrontamiento (ACSI-28) en el ámbito deportivo de habla hispana. Se ha contado con una muestra de 1.253 deportistas españoles, 967 hombres y 286 mujeres. Se ha comprobado mediante análisis factorial confirmatorio que la estructura de siete factores del test original presenta un buen ajuste en la muestra española, tanto en los hombres como en las mujeres. Los coeficientes de fiabilidad obtenidos fueron semejantes a los de la versión inglesa y superiores a .80 en la escala total del test. Varias de las escalas del test se relacionaron positivamente con la experiencia deportiva y el nivel de rendimiento. En conclusión, la versión española del ACSI-28 mantiene la estructura factorial del original y tiene unas propiedades psicométricas semejantes. Por lo tanto, puede resultar aplicable y útil para la evaluación de los deportistas del ámbito cultural de habla hispana.

Sports Psychology researchers have long tried to analyse the personality profile of athletes in order to accurately predict their future success, injury vulnerability or stress tolerance. The *Athletic Coping Skills Inventory*-28 (ACSI-28) by Smith, Schutz, Smoll and Ptacek (1995) is one of the tests developed for this purpose. This test has been the object of a number of studies aimed at assessing its psychometric characteristics, its discriminative and predictive capability of future sports performance, and its contribution to an accurate prediction of athletes' risk of injury (García-Coll, 2009). The test has also been used in some non-English-speaking countries, such as Greece (Karamousadilis, Bebetsos, & Laparidis, 2006), Hungary (Géczi, Bognár, Tóth, Sipos, & Fügedi, 2008) and Portugal (Rolo, Gaspar, & Teixera, 2004). However, the cross-cultural validity of the factorial model and items in the ACSI-28 has received limited empirical attention. At present, there is no empirically-supported Spanish version of the scale. The development of such a scale would enable research with Spanish-speaking athletes, who constitute a significant portion of the world's athletes.

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The ACSI-28 was originally developed as part of a research project on the role of vulnerability and protective psychosocial factors in athletic injuries (Andersen & Williams, 1988; Smith, 1987). Within the conceptual model, social support and psychological coping skills were considered protective factors for athletes who were high in life stress. Research based on a large sample of high school athletes strongly supported the model. High levels of either social support or coping skills sharply attenuated the stress-injury relation, indicating their role as protective factors (Johnson, Ekengren, & Andersen, 2005; Noh, Morris, & Andersen, 2007; Smith, Smoll, & Ptacek, 1990).

Confirmatory factor analyses (CFAs) of the ACSI-28 items revealed a multifaceted coping construct comprised of a 7-factors that underly a higher-level Personal Coping Resources construct defined by the total score on the 28 items (Smith et al., 1995). The specific coping skills are (1) Coping With Adversity, (2) Peaking Under Pressure, (3) Goal Setting/Mental Preparation, (4) Concentration, (5) Freedom From Worry, (6) Confidence and Achievement Motivation and (7) Coachability. Although independent CFAs revealed that the fit of the model with seven factors was reasonably well suited to both genders, Smith et al. (1995) did not formally assess the configural and metric invariance by means of a multiple-group CFA.

The reliability of the ACSI-28 has been dealt with in a number of studies (Crocker et al., 1998; Murphy & Tammen, 1998; Smith

et al., 1995). Broadly speaking, the test total scale yields high internal consistency Alpha and test-retest coefficients (above .80). In this respect, samples behave similarly for both male and female athletes. Most of the seven subscales involved exhibited satisfactory coefficients, close to or above .70, both for internal consistency and test-retest values. The subscale of Concentration produced the lowest alpha coefficient (.62) and the Coachability subscale the lowest test-retest coefficient (.47) (Smith et al., 1995).

Correlational analyses of the ACSI-28 with other psychological measures of the athletes have revealed acceptable convergent validity. Significant correlation coefficients have been recorded with different measures of self-control, self-efficacy, self-esteem, and sport performance anxiety (Christensen, 2000; Smith et al., 1995). Other studies have also found significant correlations with the more clearly cognitive features of the athletes' psychological profile, such as contextual intelligence, decisional competence and emotional intelligence (García-Coll, 2009). Correlations between ACSI-28 total score and physical skills ratings by coaches have been variable, with no relation found in two studies (Smith & Christensem, 1995; Smith et al., 1995) and in woman collegiate golfers, but a correlation of .29 being reported for male college golfers (Christensen, 2000). Thus, psychological skills as measured by the ACSI-28 are measuring something other than physical skills.

The ACSI-28 is able to discriminate between groups of different athletic level and exhibits a strong predictive capability for performance records. These issues have been extensively studied in recent years. A first group of studies has concentrated on the capacity to discriminate athletes' performance level. Significant predictive relations with performance measures have also been reported in studies involving professional baseball players (Smith & Christensen, 1995), college golfers (Christensen, 2000), American football players (Spieler, Czech, Joyner, & Munkay, 2007), and Olympic wrestlers and triathletes (Gould, Eklund, & Jackson, 1993). Other studies have found that some of the scales of the ACSI-28 are able to discriminate the athletic level of athletes to an acceptable degree in both multisport samples (e.g., Gould, Dieffenbach, & Moffett, 2002; Nieh & Lu, 2001; Smith et al., 1995), or within specific sports, such as basketball, wheel-chair basketball, handball, wrestling, gymnastics or ice hockey (Brigido, Gaspar, & Teixeira, 2004; Géczi, Bornár, Tóth, Sipos, & Fügedi, 2008; Karamousalidis et al., 2006; Perreault & Vallerand, 2007; Rolo et al., 2004; Waples, 2003). In addition, a positive correlation between years of sports experience and scores on the ACSI-28 subscales has also been reported (Goudas, 1998).

Although the English-language ACSI-28 has proven itself to be a useful tool for sport psychology researchers and consultants (Crocker, Kowalski, & Graham, 1998; García-Coll, 2009), its wider application requires that it be translated into other languages and that its psychometric characteristics be assessed in different cultural contexts (Gauvin & Russell, 1993; Marsh, 2007). At this point, the ACSI-28 lacks the support of cross-cultural research on the general applicability of the model and measure. In this article we provide a suitable translation, cultural adaptation, and validation of the ACSI-28 for a Spanish-speaking cultural environment. Our aim was to assess not only whether the dimensional structure of the original test remained unaltered in the Spanish version, but also whether the psychometric characteristics of the test justifies its valid application to Spanish athletes.

Method

Participants

The sample was extracted during the year 2008, by the method of not random intentional sampling. The sample was made up of 1,253 Spanish athletes, 967 males and 286 females, with ages ranging from 12 to 59 years (M= 21.18, SD= 5.71; interval distribution, 12-18: 476, 19-25: 477, 26-32: 238, >32: 62). The participants' average sport experience was 11.54 years (SD= 5.27). All of them played team sports, such as soccer (686), basketball (151), volleyball (106), handball (117), futsal or indoor soccer (86), and others (107), and took part in official competitions at regional (n= 470), national (n= 576) or international (n= 207) level.

Instrument

The test used was ACSI-28 developed to assess psychological coping skills in sport (Smith et al., 1995). The test contains 28 items related to the athlete's behaviour in training and competitions, were arranged into seven factors with four items each and their corresponding labels: (1) Coping with adversity; (2) Peaking under pressure; (3) Goal setting/Mental preparation; (4) Concentration; (5) Freedom from worry; (6) Confidence and achievement motivation and (7) Coachability. Questions are answered by means of a 4-points Likert scale (from 1= *almost never* to 4= *almost always*). Athletes also completed a personal data sheet stating their gender, age, years of sports experience, sport played and highest athletic level achieved.

Procedure

The original English version of the ACSI-28 was translated into Spanish by two sport psychology experts with a good command of both languages and experience in the construction and adaptation of psychological tests. Subsequently, a back-translation, from Spanish into English by an independent bilingual translator confirmed the consistency of the translated version as compared with the original text. Additionally, a pilot study with 122 athletes was conducted to discover any possible semantic problems.

Once the quality of the Spanish translation was verified, the test was implemented with the whole study sample. The athletes filled in the test and the personal data sheet at their usual sports training centre, in the presence of a researcher. The researcher explained the aim of the survey to the athletes and gave the pertinent instructions. To carry out the survey, the directors of the sports clubs authorized and the team coaches agreed to the use of the training premises. All participants gave their written informed consent. In the case of under-age athletes, the informed consent was signed either by their parents or legal guardians.

Data analysis

The CFA was implemented by means of the programme EQS 6.1, following the Maximum Likelihood Estimation Method with Satorra and Bentler's robust correction to calculate the goodness-of-fit statistics and standard errors. The rest of the statistical analyses were implemented by means of the SPSS 17.0 program. To estimate the reliability of the scales we used two complementary procedures: (a) internal consistency by means of Cronbach's α coefficient, and (b) test-retest. To analyse the effect of the sports

performance level on the ACSI-28 scales we conducted several ANCOVAs. To control the potential biasing effect, we included the years of sports experience as a covariable.

Results

Confirmatory Factor Analysis (CFA)

Analysis of the CFA conditions of application. We assumed that the Spanish version of ACSI-28 complied with the same theoretical 7-dimension configuration obtained by the authors of the test. Univariate skewness and kurtosis coefficients ranged between –1 and 1 in all the items (table 1). Consequently, their distributions were deemed to be within normal values (Pérez, 2004, p. 62). As for multivariate normality, Mardia's coefficient of kurtosis revealed a distribution that departed significantly from a multivariate normal distribution. In order to prevent any possible effect of the lack of multivariate normality, we utilized the Satorra-Bentler Robust Maximum Likelihood estimation method to estimate the factor model. This is the recommended *modus operandi* to deal with large sample distributions lacking multivariate normality (Byrne, 2006, p. 22). No signs of multicollinearity were observed, since the variance inflation factor was VIF_{max}= 1.83<10 and the condition index $\kappa(\mathbf{R})$= 1.63<30 (Hair, Anderson, Tatham, & Black, 1998; pp. 220-221). In fact, the correlations between the seven test subscales were moderate or low, with .49 being the highest observed (figure 1).

Estimation and goodness-of-fit of the metric model. The estimated factor loadings or regression coefficients were all significant (p<.001). Once standardized, most of them (19) were shown to be equal to or above .50. The rest (6) yielded coefficients above .40, except for the items 3, 9 and 25, with slightly lower values (.39, .34 and .38 respectively) (Figure 1).

The goodness-of-fit indexes are shown in table 2. These indexes were based on a re-scaled estimate of χ^2 (S-B $\chi^2(327)$= 741.79; p<.001). Following Marsh's recommendation (2007, p. 785), the selected fit indexes were as follows: Non-normed Fit Index (NNFI= .91), Comparative Fit Index (CFI= .92) and Root Mean Square Error of Approximation (RMSEA= .032).

Analysis of model invariance for males and females. As widely recommended, we first evaluated the configural invariance for females and males, and subsequently the measurement invariance (Byrne, 2006). This involved an independent CFA for each of the samples: females and males. All the factor loadings were significant (p<.001) for both genders. Most of them were equal to or above .50 (19 both in females and males) or .40 (5 in females and 7 in males). Items 3, 10 and 20 in females and 9 in males, and item 25 in both groups were the only exceptions, that is, with records below .40. These items with low factor loadings in either of the groups can be seen in different factors and mostly coincide with items which also exhibit low factor loadings in the general sample.

The goodness-of-fit indexes for the model in males and females were calculated with the same procedure as for the general sample and, consequently, they were based on a re-scaled estimate of χ^2 (in females: S-B $\chi^2(327)$= 500.29; p<.001; and in males: S-B $\chi^2(327)$= 655.40; p<.001). The NNFI index was .87 in females and .92 in males. The CFI index reached values of .89 in females and .93 in males. As for the RMSEA index, values of .043 and .032 were recorded respectively (table 2). In females the model fit was acceptable, since the RMSEA was below .05. However, the CFI index, a little below .90, only approached acceptability. In males the model fit was good in general (with a RMSEA well below .05 and a CFI index above .90).

Goodness-of-fit of multigroup CFA. Once it was verified that the fit of the hypothetical model of athletic coping skills was acceptable for both genders considered separately, we proceeded to analyze the configural invariance by means of a Multigroup CFA with no constraints. Fit indexes were calculated by means of the rescaled estimate of χ^2 (S-B $\chi^2(654)$= 1156.89; p<.001). The NNFI was .91, the CFI was .92 and the RMSEA was .025. Since the NNFI and CFI indexes were above .90 and the RMSEA was well below .05, the configuration fit was considered satisfactory (table 2). Once the configural invariance of the athletic coping skills model for both genders was confirmed, we proceeded to evaluate the metric

Table 1
Skewness and kurtosis coefficients of the items and Mardia's coefficient

Item	M	SD	Skewness	Kurtosis
1	2.81	.77	-.32	-.17
2	2.90	.62	-.26	.44
3	3.52	.60	-.91	.05
4	3.07	.76	-.40	-.40
5	3.15	.75	-.51	-.26
6	2.74	.84	-.16	-.62
7	2.37	.95	.18	-.89
8	2.70	.75	-.18	-.27
9	2.91	.73	-.37	.04
10	2.87	.92	-.39	-.71
11	2.77	.81	-.15	-.55
12	2.38	.91	.14	-.78
13	2.67	.80	-.12	-.47
14	3.03	.84	-.50	-.47
15	3.00	.83	-.49	-.37
16	2.84	.62	-.26	.35
17	2.77	.80	-.18	-.49
18	2.75	.85	-.17	-.63
19	2.38	.90	.19	-.72
20	2.66	.86	-.12	-.65
21	2.51	.80	.08	-.48
22	3.12	.75	-.54	-.05
23	2.78	.92	-.22	-.85
24	2.77	.75	-.25	-.17
25	2.78	.73	-.16	-.25
26	3.25	.68	-.50	-.21
27	3.14	.71	-.55	.20
28	2.79	.82	-.18	-.56
Multivariate kurtosis		Mardia coefficient		94.63
		Critical value		40.86
		p		<.001

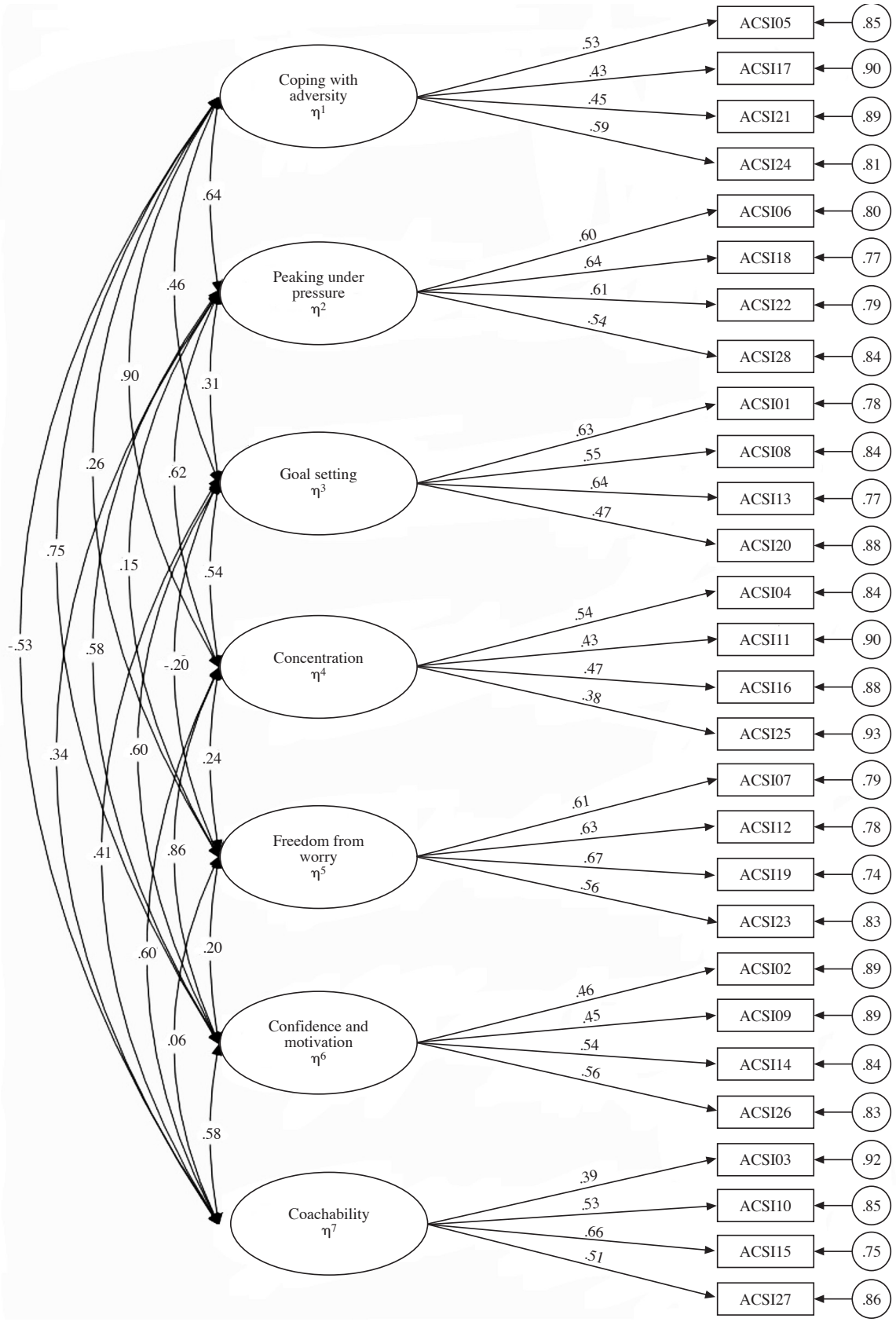

Figure 1. *Metric model of ACSI-28 in the total sample of athletes*
** All factor intercorrelations were significant, except $r_{5,7}$=.06; all factor loadings were significant (p<.001)*

invariance. For that purpose we implemented a Multigroup CFA (males and females) with the following constraints: (a) equality of regression coefficients (b) equality of regression coefficients and equality of factor covariances. The re-scaled estimates of χ^2 were: (a) S-B $\chi^2(675)= 1195.11$, and (b) S-B $\chi^2(696)= 1220.60$ ($p<.001$). The indices NNFI, CFI and RMSEA are presented in the table 2. Since the NNFI and CFI indexes were higher than .90 and the RMSEA was well below .05, the metric fit of the Multigroup CFA with constraints (a) and (b) was deemed satisfactory.

Reliability

The alpha coefficients of subscales calculated using the total sample were as follows: on the scale of Coping with adversity .57; on Peaking under pressure, .70; on Goal setting, .65; on Concentration, .52; on Freedom from worry, .71; on Confidence and motivation, .53; and on Coachability .70. On the Personal coping resources total score, the coefficient had a value of .82 (table 3).

Table 2
Goodness-of-fit indexes of the model

Goodnes-of-fit index	Total	Females	Males	Multigroup invariance		
				Configural (no constraints)	Constraints: loadings	Constraints: loadings and factor covariances
NNFI	.91	.87	.92	.91	.91	.91
CFI	.92	.89	.93	.92	.92	.92
RMSEA	.032	.043	.032	.025	.025	.025
IC (90%)	.033-.039	.035-.050	.029-.036	.022 - .027	.022 - .027	.022 - .027

Table 3
Reliability of the Spanish version of the ACSI-28

ACSI-28 scale	No. of items	Test-retest (n= 67)	α (N= 1253)	CI of α (95%)	
				Lower	Upper
Coping with adversity	4	.70	.57	.53	.61
Peaking under pressure	4	.86	.70	.67	.72
Goal setting/Preparation	4	.70	.65	.62	.68
Concentration	4	.70	.52	.47	.56
Freedom from worry	4	.84	.71	.68	.73
Confidence-Motivation	4	.72	.53	.49	.57
Coachability	4	.67	.70	.67	.73
Coping resources (total)	28	.83	.82	.80	.83

Table 4
Descriptive statistics of the ACSI-28 scales for the groups of sports performance level and ANCOVA results

ACSI-28 scale	Regional (n= 464)		National (n= 539)		International (n= 204)		ANCOVA*		
	M	SD	M	SD	M	SD	F (2, 1203)	p	η^2
Coping with adversity	7.17	2.12	7.14	2.00	7.43	2.02	2.09	.12	.003
Peaking under pressure	7.28	2.51	7.38	2.26	7.70	2.24	1.88	.15	.003
Goal setting/Preparation	6.68	2.19	6.87	2.32	7.15	2.03	**2.96**	**.05**	**.005**
Concentration	7.47	1.95	7.42	1.81	7.58	1.84	.81	.45	.001
Freedom from worry	5.75	2.79	5.93	2.64	6.17	2.57	1.10	.33	.002
Confidence-Motivation	7.98	1.98	8.04	1.81	8.48	1.68	**4.57**	**.01**	**.008**
Coachability	8.48	2.00	8.54	1.77	8.62	1.70	.55	.58	.001
Coping resources (total)	50.81	9.08	51.32	8.75	53.12	8.09	**4.18**	**.02**	**.007**

* Significant ANCOVA contrasts ($p \leq .05$) are given in bold type

We calculated test-retest reliability coefficients as indicators for the time stability of the scores on the different scales. In this case we used 67 athletes who completed the test again after 15 days. The coefficients obtained on the subscales were acceptable (between .67 and .86) and the value corresponding to the whole test was .83 (table 3).

Criterion-related validity

The people in the study sample had highly variable years of previous sport experience, ranging from 1 to 30 years (M= 11.54, SD= 5.27). The correlation coefficients between years of sport experience and the ACSI-28 scales were quite low. Positive correlations were found for Peaking under pressure (.13, p<.001), Freedom from worry (.06, p<.042), Confidence-Motivation (.11, p<.001), and on the total Personal coping resources score (.09, p<.001). On the rest of scales the coefficients obtained were lower than .05 and were not significant. Thus, the ACSI-28 was essentially unrelated to number of years of sport participation.

To analyse the effect of the sports performance level (Regional, National and International) on the ACSI-28 scales we conducted several ANCOVAs. Univariate contrasts revealed that the differences associated with the sports performance level were only significant on two subscales and on the total scale, and they were very slight in the three cases (table 4). Considering the effect size as expressed by the coefficient η^2, it can be said that the increment in the sport participation level accounted for only 0.5% of the variability on the scale of Goal setting/Mental preparation, for 0.8% on Confidence and Achievement motivation and for 0.7% on the total score of Personal coping resources.

Discussion

This study implements the cross-cultural validation of the ACSI-28 structural and metric model and confirms the model fit for a new cultural environment, that of Spanish-speaking athletes. Also, as an original and important contribution, it was the first time that gender cross-validation was also conducted and verified. Finally, some of the test's main psychometric properties, along with the test's reliability and validity were also analyzed, enabling us to compare it with previous studies carried out by other authors.

The translation resulted in a Spanish version of the ACSI-28 that has a factorial structure equivalent to that of the original test. This first conclusion permits us to interpret our subsequent results with confidence. The CFA conducted with the total sample of Spanish athletes yielded NNFI and CFI indexes higher than .90 and a RMSEA well below .05. Following Marsh's recommendation (2007), the fit with the 7-factors model is quite satisfactory. In addition, the CFAs carried out with separate male and female subsamples also produced a satisfactory fit in both cases, since the RMSEA was lower than .05. and the CFI was close to or higher than .90. These results are similar to those reported by Smith et al. (1995) with the standardization sample of the test's English version. Nevertheless, the goodness-of-fit indexes, particularly the RMSEA, are much more favorable for Spanish athletes. This is probably due to some aspects associated with the quality of the corresponding standardization samples. On the one hand, the Spanish standardization sample is considerably larger than that of Smith et al., (1995). On the other, our sample included generally older athletes with higher athletic levels and longer sports experience. Note that the original standardization sample included primarily high school athletes.

The larger size of our general sample and, therefore, of our gender subsamples made gender cross-validation of the ACSI-28 possible. This kind of cross-validation had up to now been impossible, because the size of the gender groups was not large enough (Smith et al., 1995). The implementation of robust analysis procedures in the CFAs facilitated this analysis. Since they correct for the effects of non-normality on large samples, their efficiency is considerably higher than that of other procedures, including that employed by Smith et al., (1995). The gender cross-validation implemented by means of a Multigroup CFA revealed that the ACSI-28 exhibits an equivalent structural model in male and female athletes. Since the CFA with no constraints yielded goodness-of-fit NNFI and CFI indexes higher than .90 and a RMSEA considerably lower than .05, we can conclude that the 7-factor structural model reveals configural invariance. These multigroup fit indexes are particularly satisfactory (Marsh, 2007). Secondly, the metric fit of the Multigroup CFA with constraints (equality of factor loadings and covariances) can also be deemed satisfactory, since, once again, the recorded NNFI and CFI indexes were above .90 and the RMSEA was well below .05. Finally, it can be concluded that the ACSI-28 model is invariant for the two genders. When the goodness-of-fit indexes obtained in the CFA with no constraints are compared with those obtained in the CFA with constraints, it can be observed that they are very similar and the model with constraints reveals no significant degradation. Consequently, the general conclusion of our gender cross-validation is that the structural model of the ACSI-28 reveals a very similar set of correlations (factor loadings and covariances) for the two genders.

As Smith et al., (1995) suggest, an overall measure of the Personal Coping Resources, obtained from the test total score can be sufficient for certain applications in the evaluation of athletes' psychological factors associated with sports performance and risk of injury. When suggesting the usefulness of the total score, these authors take into account the fact that the correlations between the seven subscales of ACSI-28 are quite low (between .10 and .55) and, consequently, they think that the subscales measure psychological skills that are distinct from one another. In other words, they presume that the general scale of Personal Coping Resources constitutes a multifaceted coping skills construct (Carver, 1989). In our research, the correlations between the subscales of the Spanish version of the ACSI-28 are also quite low (between .02 and .49), supporting the conclusion that the total score and the subscales reflect a multifaceted construct that can be used to assess the sport-specific coping skills of athletes, as well as changes in coping skills as a result of interventions and other factors.

Reliability of the ACSI-28 total score is consistently higher than .80, both for alpha coefficients and for test-retest coefficients, both in the original English version (.86 and .87 respectively) and in our Spanish translation (.82 and .83). These results are in line with those yielded by other studies carried out in different cultural environments (Geczi, Bognar, Toth, Sipos, & Frigedi, 2008; Karamousalidis, Bebetsos, & Laparidis, 2006; Perrault & Vallerand, 2007; Ridnour & Hammermeister, 2004). Consequently, the internal consistency and the temporal stability of the Personal coping resources score are above the minimum values recommended for a general application of the test to athletes (DeVellis, 2003, p. 96; Netemeyer, Bearden, & Sharma, 2003, pp. 58-59).

Since the seven subscales are much shorter (4 items each) than the general scale, not surprisingly the reliability coefficients are also smaller. As far as the time stability is concerned, the 15-day test-retest coefficients obtained in our study range from .67 to .86, with values equal to or higher than .70 on six subscales. The lowest coefficient (.67) was recorded on the subscale of Coachability. These coefficients, higher than .60, can be deemed satisfactory if we bear in mind that the following requisites are met: that the scales are very short and that the validity of the construct is satisfactory (Loewenthal, 2004, p. 60). The test-retest coefficients obtained in the validation of the original test (Smith et al., 1995) were similar to those of the Spanish standardization sample, ranging from .63 to .87. The only exception was the subscale of Coachability, on which a very small coefficient was recorded (.47). In our study, which uses a longer interval between test applications, this subscale poses no problem concerning stability.

As for the internal consistency of the subscales, the alpha coefficients obtained in our study were noticeably equal to or higher than .60 in five of the seven (see confidence intervals in table 3). As already mentioned, taking into account the study conditions, reliability can be deemed satisfactory in these cases (Loewenthal, 2004, p. 60). The alpha coefficients reported in the original standardization sample of the English version were similar to those of our study and moderately satisfactory too, between .62 and .78 (Smith et al., 1995). On two subscales, Concentration (.52) and Confidence and Achievement motivation (.53) coefficients were rather low in our sample, but they are close to the aforementioned limit of acceptability. The individual items within these scales likely reflect different facets of these skills, resulting in lower internal consistency. Nevertheless, we should note that test-retest coefficients of these two subscales are particularly high (equal to or higher than .70), indicating measurement stability.

Concerning criterion-related validity, a number of surveys have been conducted to analyse the relationship between the ACSI-28 measures and sports experience, along with the test's ability to discriminate the athletes' performance level. Generally speaking, this research has revealed that the ACSI-28 shows an acceptable ability to discriminate the athletic performance or level (Brigido, Gaspar, & Teixeira, 2004; Géczi et al., 2008; Gould et al., 2002; Karamousalidis et al., 2006; Nieh & Lu, 2001; Perreault & Vallerand, 2007; Rolo et al., 2004; Smith et al., 1995; Waples, 2003). The results of our study are in line with these findings, since the general scale of Personal coping resources and some subscales have shown a significant ability to discriminate between groups of low-level (regional competitions) and high-level (international competition) athletes. In contrast, we found extremely small positive correlations between years of sport participation and the total Personal coping resources scores and some subscale scores (Peaking under pressure, Freedom from worry, and Confidence-Motivation). This same trend of positive correlation between years of sports experience and the ACSI-28 was also found by Goudas (1998).

In summary, the Spanish version of the ACSI-28 preserves the factor structure of the original English version, its structure applies to both genders, reliability is good on the total scale and acceptable on the subscales, and the correlations with sports experience and athletic level are consistent with the results of studies carried out in other cultural environments. Consequently, the model of coping skills and the measure can be applicable and useful to evaluate athletes in Spanish-speaking cultural environments. The results of our cross-cultural research should also encourage sport psychology consultants from other cultural and linguistic environments to investigate and utilize the measure in future research. Moreover, it would be of interest to complement this study with research enabling a comparison of the ACSI-28 model invariance in different cultural groups (Marsh, 2007).

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