

Psychometric properties of the Spanish version of the Collective Efficacy Questionnaire for Sports

Julio Román Martínez¹, Félix Guillén¹ and Deborah Feltz²

¹ Universidad de Las Palmas de Gran Canaria and ² Michigan State University

The present study analyses the psychometric properties of the Spanish version of the Collective Efficacy Questionnaire in Sports (CEQS). The sample comprises 312 athletes (167 males and 145 females), with a mean age of 24.09 (SD= 6.67), with diverse performance levels (professional, semiprofessional and university level), all practitioners of team sports. The factor structure of the questionnaire was analyzed with confirmatory factor analysis (CFA). The results confirm the 5-factor internal structure of the CESQ (Effort, Ability, Unity, Perseverance and Preparation), made up of four items each. We also found acceptable values of the alpha coefficient, which confirms that the CESQ is a reliable instrument. Lastly, we found preliminary support for the validity of the construct of the CESQ, which is sufficient evidence to justify its use to measure the collective efficacy in Spanish athletes.

Propiedades psicométricas de la versión española del Collective Efficacy Questionnaire en deportes.
El presente estudio analiza las propiedades psicométricas de la versión española del Cuestionario de Eficacia Colectiva en el Deporte (CEQS). La muestra estuvo compuesta por 312 deportistas (167 hombres y 145 mujeres) españoles, con una edad media de 24,09 años (DT= 6,67), de diferentes niveles de rendimiento (profesional, federado y universitario) y practicantes de deportes de equipo. La estructura factorial del cuestionario se analizó a través de un análisis factorial confirmatorio (AFC). Los resultados confirman una estructura interna del CEQS de cinco factores (esfuerzo, habilidad, unidad, persistencia y preparación) formados por cuatro ítems cada uno. También encontramos puntuaciones aceptables en el coeficiente de alfa, lo que confirma que el CESQ es un instrumento fiable. Finalmente, encontramos apoyo preliminar sobre la validez de constructo del CESQ, evidencia suficiente para justificar la utilización del CESQ en la medición de la eficacia colectiva con deportistas españoles.

Collective efficacy is considered an extension of the self-efficacy construct (Bandura, 1977), which is a sub model of the social cognitive theory proposed by Bandura (1986) and refers to the judgment of belief which a group has in its own ability to carry out tasks on a collective level. Perceived collective efficacy is defined as a group's shared belief in its ability to organize and execute the actions required to reach certain levels of achievement (Bandura, 1997, p. 447). Using this definition as a starting point, it is important to define two fundamental units of analysis for the study of collective efficacy: self-efficacy and group efficacy, which are conceptually interrelated since collective efficacy is a phenomenon given on a group level whilst being measured on an individual level. Zaccaro, Blair, Peterson, and Zazanis (1995), formulated another definition of collective efficacy as «a sense of collective competence shared among members when coordinating and integrating their resources as a concerted response to specific situational demands». In this respect, collective efficacy plays a predominant function in sports that require a high level of

interaction, interdependence and cooperation to carry out tasks. Sports such as basketball, soccer, handball, volleyball, rugby and field hockey require high levels of interaction and interdependence among its members who try to coordinate group tasks which are necessary for the success of the group's goals, and to obtain favorable results.

Collective efficacy is a multidimensional element and is analysed as a situational condition rather than a global characteristic of personality (Bandura, 1986, 1997, 2001) and, in a sports context, it has also been postulated as team efficacy or team confidence (Short, Sullivan, & Feltz, 2005). Bandura (1982) affirmed that collective efficacy has its roots in the concept of self-efficacy which does not signify that this has the same meaning. Collective efficacy has been described as a consequential attribute of a group composed of individual perceptions (Feltz & Lirrg, 1998). It is possible to differentiate between these two constructs without ignoring their close relationship and that both operate by means of similar processes (Bandura, 2001) where the social nature of the group determines the way in which they develop shared beliefs in a team.

Therefore, collective efficacy is not only the sum of the individual efficacy beliefs of the members of a team (Bandura, 1997), but is an emergent property at a group level (Bandura, 2000). A soccer player can believe he/she is capable of executing an individual action of play (e.g. swerve, feint or breakaway)

but not have confidence in the capability of the team to achieve success in shared tasks which require a certain level of interaction (e.g. forming a wall, or carrying out an area mark during a corner kick by the attacking team). In contrast, a basketball player may have little confidence in his/her capability to achieve success in the individual task of scoring a basket but believe that the team can successfully perform in interdependent collective tasks. The perceived collective efficacy can have an influence on what the members decide to do as a group; on how to administer their resources; on the construction of goals and strategies; on their capability to persist when the collective efforts fail to produce results, or on the strength they demonstrate when confronting obstacles (Bandura, 1997).

An important element that is characteristic of team variables such as collective efficacy or group cohesion is the concept of interdependence that is determined by the task, the objective and the interdependence of the result (Feltz & Lirgg, 1998). The level of interaction among members of a team is determined by, among other factors, the interdependence of the task itself which, in great measure, determines whether the team operates as an integrated unit. Therefore, interdependence among members of a team is crucial for the comprehension of phenomena given at a team level. Bray, Brawley, and Carron (2002) drew up an instrument to measure role efficacy in offensive and defensive interdependent functions in sports teams, which indicated relationships that are moderated by the efficacy of the task at both an individual and a team level.

Individuals and groups interpret perceptions of efficacy in a similar way. They are influenced by their own direct experiences of success or failure; by social comparison or vicarious experience; by a persuasive influence; and, by means of cognitive appreciation and psychological state (Bandura, 1997; Feltz, 1995). The sportsperson integrates this information in relation to situational factors which affect behaviour, thought patterns and the individual's emotions. Bandura (1986, 1997) described these sources and defined them as sources of information. He affirmed that they are decisive at an individual level and equally as important for the development of efficacy beliefs at a group level. According to the sources of information theory, the most powerful is derived from the direct experience of success or failure whilst the least influential is transmitted via language (Balaguer, Escartí, & Villamarín, 1995; George & Feltz, 1995). Vealey, Hayashi, Garner-Holman, and Giacobbi (1998) identified other sources of confidence such as mental and physical preparation, as well as social support and leadership from coaches, which could mean that apart from the four basic sources described by Bandura (1986, 1997) other sources of information exist at a group level.

To measure perceived collective efficacy, two main methodological approaches exist (Bandura, 1997). The first one considers the individual interpretations of the members about their personal capabilities to execute the specific functions they carry out within the team. The second approach takes into account the interpretations by the members on the capability of the group to function as a team (Bandura, 2006; Feltz, Short, & Sullivan, 2008). The second evaluation includes the coordinating and interactive aspects that function within the teams. The two indices of perceived collective efficacy differentiate in the relative weight given to the individual and interactive factors although, finally, the two complement one another being moderately correlated. The predictive relationship of the two indices of collective efficacy

depends, in great measure, on the interdependent level of effort required to achieve the desired results. In particular, some studies have been carried out which emphasize a multilevel approach to examine group constructs such as collective efficacy (see Myers, Payment, & Feltz, 2004; Watson, Chemers, & Preiser, 2001). In short, multiple level approaches examine the perception that each individual has of the collective efficacy of their team as well as the sum of the perceptions of the group as a whole. The efficacy scales of multiple levels not only possess a predictive usefulness but also help to define the dynamics of self-control behaviour (Bandura, 2000).

The majority of research carried out and relevant to the collective efficacy construct, preferred to design specific measures for the sports under study (Bray & Widmeyer, 2000; Chow & Feltz, 2008; Feltz & Lirgg, 1998; Greenlees, Nunn, Graydon, & Maynard, 1999; Heuzé, Raimbault, & Fontayne, 2006; Heuzé, Sarrazin, Masiero, Raimbault, & Thomas, 2006; Kozub & McDonell, 2000; Magyar, Feltz, & Simpson, 2004; Myers, Feltz, & Short, 2004; Paskevich, Brawley, Dorsch, & Widmeyer, 1999; Vargas-Tonsing, Warners, & Feltz, 2003). They followed the recommendations of Bandura (2006) for the construction of efficacy scales, which are methodologically acceptable. Other studies have measured collective efficacy with one or two items (Greenlees, Gaydon, & Maynard, 1999; Meseguer & Ortega, 2009; Spink, 1990); confidence sub-scales (Smith, Schutz, Smoll, & Ptacek, 1995) and semi-structured interview (Ronglan, 2007). The majority of these studies try to find a relationship between perceived collective efficacy and other constructs, mainly between group cohesion and sports performance. However, we are continually discovering studies that explore other variables which use longitudinal methods.

Nowadays, the use of global and general collective efficacy scales in the areas of sport is scarce. Recently, in the US, Short, Feltz, and Sullivan (2005) designed the collective efficacy questionnaire for sports (CEQS). No record exists within the Spanish context of a general scale to measure collective efficacy in sports. We have only found the Collective Family Efficacy Scale (Pepe, Sobral, Gómez-Fragela, & Villar Torres, 2008). We have decided to follow the guidelines set out by Short, Feltz, and Sullivan (2005) and include some of our own contributions to complement the study.

The concept of collective efficacy has received less investigatory attention in comparison to the number of important studies carried out in relation to self-efficacy (Greenlees, Gaydon, & Maynard, 1999; Paskevich et al., 1999; Watson, Chemers, & Preiser, 2001). The same occurs within the Spanish context where investigations carried out on self-efficacy (see, Balaguer, Colilla, Gimeno, & Soler, 1990; Blasco, 1999; Escartí, Guzmán, Cervelló, & Campos, 1994; Lázaro, Villamarín, & Limonero, 1993; Leo, García-Calvo, Sánchez, & Parejo, 2009) exceed the number of studies on collective efficacy. The few studies that have been carried out have opted for the construction of scales specific to the sports under study: Basketball (Lázaro & Villamarín, 1993) and Handball (Alzate, Lázaro, Ramírez, & Valencia, 1997).

With respect to the sports used for the study of collective efficacy, we find studies on Ice-hockey (Feltz & Lirgg, 1998; Myers, Paiement, & Feltz, 2007; Myers, Payment, & Feltz, 2004); Basketball (Bray & Widmeyer, 2000; Heuzé et al., 2006; Watson, Chemers, & Preiser, 2001); Relay races in Athletics (Chow & Feltz, 2008); Rugby (Greenlees et al., 1999; Kozub & McDonell, 2000), Volleyball (Paskevich et al., 1999; Spink, 1990; Vargas-Tonsing et al., 2003), Handball (Heuzé, Bosselut, & Thomas, 2007;

Ronglan, 2007); Soccer (Damato, Grove, Eklund, & Cresswell, 2008) and American football (Myers, Feltz, & Short, 2004). Some studies have opted to include more than one type of sport (Heuzé, Sarrazin et al., 2006; Shearer, Thomson, Mellalieu, & Shearer, 2007) or to design specific tasks (Bray, 2004; Greenlees, Graydon, & Maynard, 1999).

As there is no general scale for collective efficacy that can be used for various sports, we believe that it is necessary to broaden the possibilities of the investigator who wishes to construct a scale, therefore, economising on time. It is unquestionable that the use of a global scale will help advance the development of studies of collective efficacy and its possible relationship with other constructs. Based on the aforementioned, the intention of this study is to analyse the psychometric properties of the Collective Efficacy Questionnaire for Sports (CEQS), adapting it to the Spanish context.

Method

Participants

The sample group is composed of 312 athletes from the Community of Madrid, Spain (167 males and 145 female) whose average of 24.09 years ($SD= 6.67$). Our idea is to use a heterogeneous sample, therefore, we include athletes from different levels of performance (professional, federation, university) of 11 different sports: relay athletes ($n= 3$); basketball ($n= 31$); handball ($n= 44$); curling ($n= 5$); soccer ($n= 43$); indoor soccer ($n= 11$); field hockey ($n= 10$); roller hockey ($n= 30$); rugby ($n= 55$); volleyball ($n= 31$); and water polo ($n= 49$). These athletes present an average of 12.28 years ($SD= 5.76$) practising their sport and 6.19 years ($SD= 4.55$) belonging to their current team. The average number of hours spent training per week is 7.67 ($SD= 4.78$).

Procedure

To translate the CEQS into Spanish we used one of the methods most utilised in the area of investigation (parallel back-translation) where two professional translators translated their version of the scale from English to Spanish and another two translators carried out the Spanish-English translation without seeing the original version of the questionnaire. Subsequently, we analysed all the versions of the questionnaire, our main task being that of maintaining the original sense of each item. The questionnaire was then answered by 25 athletes who confirmed the clarity of the instructions and the items. Lastly, the investigators, with advice from the translators, carried out the adjustments to the questionnaire based on the corrections made by the athletes. It is important to mention that all the translators who participated in our study are native Spanish speakers.

We presented the objectives of our study to the corresponding Federations and Clubs and asked them for their authorisation to carry out the study. It was necessary in all of the cases to obtain the consent of the coaches of the teams interested in participating. We decided, together with the coaches, the right moment to apply the questionnaire. This can only be answered after the first third of the season, thus allowing sufficient time for the development of the group phenomena under study.

The questionnaire was applied in a collective way, in the changing rooms, one hour before the competition and without the

presence of the coach. The head researcher was present during the filling in of the questionnaire to solve any of the athletes' doubts. The athletes were reminded of the confidentiality of their answers and were asked to be sincere when responding. The approximate time taken to fill in the questionnaire was 10 minutes. The participation of all of the athletes was voluntary.

Instruments

The CEQS is defined by five factors (effort, ability, preparation, persistence and unity) each consisting of four items making a total twenty items. The items are written in a clear brief way stating, «*I can do*» thus reflecting the judgement ability in accordance with the recommendations by Bandura (2006). The Collective Efficacy Questionnaire for Sports consists of an 11-point scale (0 - 10) which scores answers from «*No confidence at all*» to «*Absolute confidence*». The initial instructions reflect the confidence of the team's capability when faced with the situation of competing in the near future («*Grade to what extent your team believes in its abilities when faced with an imminent match or competition...*»). These initial instructions are written in present tense considering that efficacy is a changing construction not a characteristic.

We decided to use the Group Environment Questionnaire (GEQ; Carron, Widmeyer, & Brawley, 1985) in the Spanish version (Balaguer, Castillo, Moreno, Garrigues, & Soriano, 2004), which is very similar to the recent Spanish adaptation (Iturbide, Elosua, & Yanes, 2010) because of its similarity with the CEQS in its structure, its multidimensional character and its nature as a group construct. We believe it is convenient to include the GEQ to check the concurrent validity to foretell a positive correlation among its factors. This measure of group cohesion consists of four subscales: individual attractions to the team-task (ATT) which includes four items; individual attractions to the team-social (ATS) formed by five items; group integration task (GIT) made up of five items; and group integration-social (GIS) consisting of four items. The scale for scoring the answers ranges from 1 (*total disagreement*) to 9 (*total agreement*), the highest scores indicate a perception of greater cohesion of the group.

Data analysis

We calculated the descriptive statistics (average, standard deviation, asymmetry and kurtosis) of the variables of the study with the intention of verifying whether our data falls within the normalcy of the statistics that allows us to carry out the confirmatory factor analysis (CFA). We used the statistic program SPSS 15.0 for these calculations.

We carried out a confirmatory factor analysis (CFA) of the CEQS to validate the construct using the method of maximum likelihood with the program AMOS 7.0. We proposed a model of 5 factors each consisting of 4 items. We used the following indices to check the adjustment of these models: chi squared divided by the degrees of freedom ($\chi^2 / gl.$) the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), the Incremental Fit Index (IFI) and the Root Mean Square Measure of Approximation (RMSEA). Values below 5.0 in $\chi^2 / gl.$ indicate a good fit of the model. The IFI indicates improvements in the fit of the model by degrees of freedom in comparison with the base line of the independent model. Values that are equal to or more than .90 are considered acceptable. The

CFI uses values between 0 and 1 recommending values equal to or above .90 for a good fit and above .95 for an excellent fit of the model (Hu & Bentler, 1999). The TLI considers the degree of freedom of the proposed and null models. Values that are equal to or above .90 indicate a good fit of the model. The RMSEA checks the degree of poor fit of the residuals of the covariance matrixes of the theoretical and empirical model. Values of between .05 and .10 are considered acceptable (Cole & Maxwell, 1985).

To verify the reliability of the scale we used Cronbach's alpha coefficients (Cronbach, 1951), following recommendations by Bandura (2006). This analysis was carried out for both the CEQS and the GEQ scales.

To verify the concurrent validity of the questionnaire, the correlations between the CEQS and the GEQ will have to be high as both are group constructs. To investigate the discriminant validity, the correlations between the subscales of the CEQS must be greater than the correlations between the CEQS and the GEQ (Marsh, 1998).

Results

Descriptive statistics

Table 1 shows the descriptive statistics for the variables of the study. The athletes reported medium and high scores for effort, persistence, preparation, unity and ability. Similar scores are registered for the global evaluation for the five subscales called «CEQS scores» ($M= 7.17, SD= 1.27$). The scores for asymmetry and kurtosis oscillate between 1 and -1, this indicates that the data is distributed within the area of normalcy.

Confirmation factor analysis

The results demonstrate an acceptable fit of the hypothetical factor model of the CEQS ($\chi^2 / gl= 3.01; p<.01; CFI= .92; TLI= .90; IFI= .92; RMSEA= .08$) with a five-factor structure consisting of four items each. Table 2 demonstrates the fit indices used to evaluate the hypothetical model.

To define the contribution of each of the items with their respective factor, we analyzed the standardized regression

	M	SD	Asymmetry	Kurtosis
Effort	7.12	1.41	-.53	.38
Persistence	7.18	1.42	-.56	.66
Preparation	6.95	1.59	-.86	.79
Unity	7.34	1.45	-.87	.96
Ability	7.25	1.56	-.77	.58
CEQS total	7.17	1.27	-.77	.98

χ^2	gl	χ^2 / gl	CFI	TLI	IFI	RMSEA
443.24	147	3.01	.92	.90	.92	.08

loadings. In table 3, all items demonstrate significant standardized regression loadings. The item with the highest regression loadings (.83) is number 7 (*Persist when confronted with obstacles*) which is related to the persistence factor. Item 15 which also scored the same regression loadings (*Perform better than the opposing team*) is related to the preparation factor. The item with the lowest regression loadings is number 19 (.58) also related to the preparation factor.

Analysis of the correlations and internal consistency of the CEQS and GEQ subscales

To verify the concurrent and discriminant validity of the CEQS, we have carried out bivariate correlations using Pearson's coefficient. The results indicate a significant relationship between the factors of the collective efficacy construct and the group cohesion construct therefore proving the concurrent validity of the CEQS.

The relationship between the CEQS subscales is greater than those between the CEQS and the GEQ subscales, thus confirming the discriminant validity of the CEQS.

The reliability of the CEQS and the GEQ factors was calculated using Cronbach's alpha coefficient which found acceptable values for almost all the factors. In table 2, the alpha values oscillate

Item	1	2	3	4	5
3. Perform under pressure	.67				
7. Persist when confronted with obstacles	.83				
9. Continue fighting even when luck seems to go against you	.75				
11. Play well, even when your best player is missing	.59				
4. Be prepared		.79			
12. Mentally prepare yourself for this competition		.73			
18. Physically prepare yourself for this competition		.72			
19. Prepare an efficient strategy		.58			
2. Resolve conflicts			.65		
6. Be united			.66		
13. Maintain a positive attitude			.80		
20. Maintain an effective contact			.70		
1. Outplay the opposing team				.78	
5. Demonstrate greater ability than the other team				.81	
14. Play more skillfully than your opponent				.78	
15. Perform better than the opposing team				.83	
8. Demonstrated responsibility in your work					.76
10. Play to the maximum of your ability					.70
16. Show enthusiasm					.75
17. Avoid distractions					.59

Note: 1= persistence; 2= preparation; 3= unity; 4= ability and 5= effort

between .63 and .94. Two of the GEQ factors resulted in an alpha reliability coefficient slightly below .70 (ATT: individual attractions to the team-task and ATS: individual attractions to the team-social. Table 4 demonstrates the correlations among the five factors of the CEQS and the four factors of the GEQ, as well as their global or total score.

Discussion

The purpose of the present study is to translate and analyse the psychometric properties of the Spanish version of the CEQS. The results confirm a structure of five factors with four items in each: effort, ability, unity, persistence and preparation. We verified the

Table 4
Pearson's correlations and internal consistency of the CEQS and GEQ factors

	1	2	3	4	5	6	7	8	9	10	11
1. Effort	(.81)										
2. Persistence	.73**	(.80)									
3. Preparation	.74**	.61**	(.82)								
4. Unity	.71**	.67**	.63**	(.80)							
5. Ability	.61**	.63**	.62**	.64**	(.88)						
6. CEQS Total	.88**	.85**	.85**	.85**	.83**	(.94)					
7. ATT	.35**	.26**	.40**	.41**	.33**	.41**	(.67)				
8. ATS	.11*	.14*	.11*	.23**	.04	.15**	.40**	(.63)			
9. GIT	.47**	.38**	.42**	.58**	.37**	.52**	.51**	.39**	(.73)		
10. GIS	.18**	.18**	.13*	.33**	.12*	.22**	.42**	.48**	.58**	(.70)	
11. GEQ Total	.36**	.31**	.34**	.51**	.28**	.42**	.77**	.72**	.80**	.80**	(.85)

Note: ** $p < .01$, * $p < .05$

Tabla 5
Cuestionario de Eficacia Colectiva para el Deporte (CECD)

Califica la confianza en tu equipo, según el próximo partido o competición. Tu equipo tiene la habilidad de...

	Nada confiado										Extremadamente confiado		
	0	1	2	3	4	5	6	7	8	9	10	11	12
1. Superar en jugadas al equipo rival	0	1	2	3	4	5	6	7	8	9	10		
2. Resolver conflictos	0	1	2	3	4	5	6	7	8	9	10		
3. Actuar bajo presión	0	1	2	3	4	5	6	7	8	9	10		
4. Estar listo	0	1	2	3	4	5	6	7	8	9	10		
5. Mostrar más habilidad que el otro equipo	0	1	2	3	4	5	6	7	8	9	10		
6. Estar unidos	0	1	2	3	4	5	6	7	8	9	10		
7. Persistir cuando se presentan obstáculos	0	1	2	3	4	5	6	7	8	9	10		
8. Demostrar una fuerte ética de equipo	0	1	2	3	4	5	6	7	8	9	10		
9. Permanecer en el juego cuando parece que tu equipo no tiene descanso alguno	0	1	2	3	4	5	6	7	8	9	10		
10. Jugar a sus capacidades	0	1	2	3	4	5	6	7	8	9	10		
11. Jugar bien sin su mejor jugador	0	1	2	3	4	5	6	7	8	9	10		
12. Prepararse mentalmente para la competición	0	1	2	3	4	5	6	7	8	9	10		
13. Mantener una actitud positiva	0	1	2	3	4	5	6	7	8	9	10		
14. Jugar con más habilidad que el oponente	0	1	2	3	4	5	6	7	8	9	10		
15. Jugar mejor que el equipo contrario	0	1	2	3	4	5	6	7	8	9	10		
16. Mostrar entusiasmo	0	1	2	3	4	5	6	7	8	9	10		
17. Superar distracciones	0	1	2	3	4	5	6	7	8	9	10		
18. Prepararse físicamente para esta competición	0	1	2	3	4	5	6	7	8	9	10		
19. Preparar una estrategia exitosa	0	1	2	3	4	5	6	7	8	9	10		
20. Mantener una comunicación efectiva	0	1	2	3	4	5	6	7	8	9	10		

contribution of each item on its respective factor calculating the standardised factor loadings which showed that, in all of the cases, the scores were above .50, thus achieving significant contributions in all the items. These results are very similar to those found for the original English version of the questionnaire (Short et al., 2005), with similar fit indices (English $CFI = .92$; $RMSEA = .09$).

The reliability of the CEQS confirmed acceptable alpha scores for the five subscales demonstrating that this is a questionnaire with acceptable internal consistency. The CEQS total scores showed the same results thus providing a global evaluation of collective efficacy in a sports context.

With the aim of determining the construct validity and concurrent validity of the CEQS, we used the GEQ subscales. This instrument is used to measure another construct of similar group characteristics such as group cohesion. The results of the correlation analysis between the CEQS and the GEQ subscales indicate high relationships.

The discriminant validity of the CEQS was confirmed using a comparison of the correlations of the CEQS and GEQ subscales.

In order to obtain this confirmation, we hypothesised that the correlations between the CEQS subscales must be greater than the correlations between the CEQS and the GEQ. The results showed this to be true: the correlations between the CEQS subscales are higher than the correlations between the CEQS and the GEQ.

The CEQS is a brief questionnaire that is easy to apply and evaluate and contains simple instructions therefore allowing it to be applied prior to a competition following the recommendations established by Bandura (2006) for the design of collective efficacy questionnaires.

We can use two different possibilities for evaluating collective efficacy in a sports context: design a questionnaire for each sport; use a general questionnaire such as the CEQS which can be used for different team sports with athletes of different performance levels, age and gender. The CEQS is therefore a valid and reliable alternative for measuring collective efficacy in a sports context. Future investigations which use CEQS would help to consolidate its ecological validity – there is still a long way to go for the latest versions of measures to achieve this requirement.

References

- Alzate, R., Lázaro, M.I., Ramírez, A., & Valencia J. (1997). Análisis del impacto del estilo de comunicación del entrenador en el desarrollo de la cohesión grupal, la eficacia colectiva y la satisfacción. *Revista de Psicología del Deporte*, 12, 7-25.
- Balaguer, I., Colilla, A., Gimeno, C., & Soler, M.J. (1990). Influencia de la autoeficacia física, la ansiedad y la autoconfianza sobre la ejecución de los jugadores de baloncesto. *III National Conference of Social Psychology, Spain, vol. II*, 473-483.
- Balaguer, I., Escartí, A., & Villamarín, F. (1995). Autoeficacia en el deporte y en la actividad física: estado actual de la investigación. *Revista de Psicología General y Aplicada*, 48(1), 139-159.
- Balaguer, I., Castillo, I., Moreno, Y., Garrigues, V., y Soriano, L. (2004). El clima motivacional y la cohesión en equipos de fútbol. *Encuentros en Psicología Social*, 2(1), 152-156.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
- Bandura, A. (1982). Self-efficacy mechanisms in human agency. *American Psychologist*, 37, 122-147.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (2000). Exercise of human agency through collective efficacy. *Current Directions in Psychological Science*, 9, 75-78.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26.
- Bandura, A. (2006). Guide for creating self-efficacy scales. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 307-337). Greenwich, CT: Information Age.
- Blasco, T.B. (1999). Competencia personal, autoeficacia y estrés en árbitros de ciclismo. *Revista de Psicología del Deporte*, 8(2), 195-206.
- Bray, S.R. (2004). Collective efficacy, group goals, and group performance of a muscular endurance task. *Small Group Research*, 35(2), 230-238.
- Bray, S.R., Brawley L.R., & Carron, A.V. (2002). Efficacy for interdependent role functions: Evidence from the sport domain. *Small Group Research*, 33(6), 644-666.
- Bray, S.R., & Widmeyer, W.N. (2000). Athletes' perceptions of the home advantage: An investigation of perceived causal factors. *Journal of Sport Behavior*, 23, 1-10.
- Carron, A.V., Widmeyer, W.N., & Brawley, L.R. (1985). The development of an instrument to assess cohesion in sport teams: The Group Environment Questionnaire. *Journal of Sport Psychology*, 7, 244-266.
- Chow, G.M., & Feltz, D.L. (2008). Exploring a relationships between collective efficacy, perceptions of success and team attributions. *Journal of Sport Sciences*, 26(11), 1179-1189.
- Cole, D., & Maxwell, S.E. (1985). Multitrait-multimethod comparisons across populations: A confirmatory factor analysis approach. *Multivariate Behavioral Research*, 18, 147-167.
- Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 297-334.
- Damato, G.C., Grove, J.R., Eklund, R.C., & Cresswell, S.L. (2008). An exploratory examination into the effect of absence due to hypothetical injury on collective efficacy. *The Sport Psychologist*, 22(3), 253-268.
- Escartí, E., Guzmán, J.F., Cervelló, E., & Campos, J. (1994). *Un estudio piloto de la influencia de la experiencia vicaria en la expectativa de autoeficacia*. Minutes of the International Conference of Psychological intervention and human development: Educational and Community Intervention, Valencia, Spain.
- Feltz, D.L. (1995). *Motivación en el deporte y el ejercicio*. In G.C. Roberts (Ed.), *Comprensión de la motivación en el deporte: una perspectiva de autoeficacia* (pp. 123-137). Bilbao: Desclée de Brouwer.
- Feltz, D.L., & Lirgg, C.D. (1998). Perceived team and player efficacy in hockey. *Journal of Applied Sport Psychology*, 83, 557-564.
- Feltz, D.L., Short, S.E., & Sullivan, P.J. (2008). *Self-efficacy in sport: Research and strategies for working with athletes, teams and coaches*. Champaign, IL: Human Kinetic.
- George, T.R., & Feltz D.L. (1995). Motivation in sport from a collective efficacy perspective. *International Journal of Sport Psychology*, 26, 98-116.
- Greenlees, I.A., Graydon, J.K., & Maynard, I.W. (1999). The impact of collective efficacy beliefs on effort and persistence in a group task. *Journal of Sport Sciences*, 17, 151-158.
- Greenlees, I.A., Nunn, R.L., Graydon, J.K., & Maynard, I.W. (1999). The relationship between collective efficacy and precompetitive affect in rugby players: Testing Bandura's model of collective efficacy. *Perceptual and Motor Skills*, 89, 431-440.
- Heuzé, J.P., Bosselut, G., & Thomas, J.P. (2007). Should the coaches of elite female Handball teams focus on collective efficacy or group cohesion? *The Sport Psychologist*, 21, 383-399.
- Heuzé, J.P., Raimbault, N., & Fontayne, P. (2006). Relationships between cohesion, collective efficacy and performance in professional basketball teams: An examination of mediating effects. *Journal of Sports Sciences*, 24, 59-68.

- Heuzé, J.P., Sarrazin, P., Masiero, M., Raimbault, N., & Thomas, J.P. (2006). The relationships of perceived motivational climate to cohesion and collective efficacy in elite female teams. *Journal of Applied Sport Psychology, 18*, 201-218.
- Kozub, S.A., & McDonnell, J.F. (2000). Exploring the relationship between cohesion and collective efficacy in Rugby teams. *Journal of Sport Behavior, 23*(2), 120-129.
- Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.
- Iturbide, L.M., Elosua, P., & Yanes, F. (2010). Medida de la cohesión en equipos deportivos. Adaptación al español del Group Environment Questionnaire (GEQ). *Psicothema, 22*(3), 482-488.
- Lázaro, M.I., & Villamarín, F. (1993). Capacidad predictiva de la autoeficacia individual y colectiva sobre el rendimiento en jugadoras de baloncesto. *Revista de Psicología del Deporte, 4*, 27-38.
- Lázaro, M.I., Villamarín, F., & Limonero, J. (1993, March). *Motivación para participar y autoeficacia en jóvenes jugadores de baloncesto*. Paper presented at the IV National Conference of Physical Activity and Sport Psychology, Sevilla, Spain.
- Leo, F.M., García-Calvo, T., Sánchez, P.A., & Parejo, I. (2008). Importancia de la percepción de eficacia para la mejora de la cohesión en el fútbol. *Cuadernos de Psicología del Deporte, 8*(1), 47-60.
- Magyar, T.M., Feltz, D.L., & Simpson, I.P. (2004). Individual and crew level determinants of collective efficacy in rowing. *Journal of Sport and Exercise Psychology, 26*, 136-153.
- Marsh, H.W. (1998). Foreword. In J.L. Duda (Ed.), *Advances in sport and exercise psychology measurement* (pp. xv-xix). Morgantown, WV: Fitness Information Technology.
- Meseguer, M., & Ortega, E. (2009). Evaluación de la autoeficacia percibida en jugadores de baloncesto y comparación con los valores reflejados por sus entrenadores. *Revista Iberoamericana de Psicología del Ejercicio y el Deporte, 4*(2), 271-288.
- Myers, N., Feltz, D.L., & Short, S.E. (2004). Collective efficacy and team performance: A longitudinal study of collegiate football teams. *Group Dynamics: Theory, Research and Practice, 8*(2), 126-138.
- Myers, N.D., Paiement, C.A., & Feltz, D.L. (2007). Regressing team performance on collective efficacy: Considerations of temporal proximity and concordance. *Measurement in Physical Education and Exercise Science, 11*(1), 1-24.
- Myers, N. D., Payment, C. A., & Feltz, D. L. (2004). Reciprocal relationships between collective efficacy and team performance in women's ice hockey. *Group Dynamics: Theory, Research and Practice, 8*(3), 182-195.
- Paskevich, D.M., Brawley, L.R., Dorsch, K.D., & Widmeyer, W.N. (1999). Relationship between collective efficacy and team cohesion: Conceptual and measurement issues. *Group Dynamics: Theory, Research and Practice, 3*, 210-222.
- Pepe, S., Sobral, J., Gómez-Fraguela, J.A., y Villar-Torres, P. (2008). Spanish adaptation of the Adolescents' perceived collective family efficacy scale. *Psicothema, 20*(1), 148-154.
- Ronglan, L.T. (2007). Building and communicating collective efficacy: A season-long in-depth study of an elite sport team. *The Sport Psychologist, 21*, 78-93.
- Shearer, D.A., Thomson, R., Mellalieu, S.D., & Shearer, C.R. (2007). The relationship between imagery type and collective efficacy in elite and non elite athletes. *Journal of Sports Science and Medicine, 6*, 180-187.
- Short, S.E., Sullivan, P., & Feltz, D.L. (2005). Development and Preliminary Validation of the Collective Efficacy Questionnaire for Sports. *Measurement in Physical Education and Exercise Science, 9*(3), 181-202.
- Smith, R.E., Schutz, R.W., Smoll, F.L., & Ptacek, J.T. (1995). Development and validation of a multidimensional measure of sport-specific psychological skills: The Athletic Coping Skills Inventory-28. *Journal of Sport and Exercise Psychology, 17*, 379-398.
- Spink, K.S. (1990). Group cohesion and collective efficacy of volleyball teams. *Journal of Sport and Exercise Psychology, 12*, 301-311.
- Vargas-Tonsing, T.M., Warners, A.L., & Feltz, D.L. (2003). The predictability of coaching efficacy on team efficacy and player efficacy in volleyball. *Journal of Sport Behavior, 26*(4), 396-407.
- Vealey, R.S., Hayashi, S.W., Garner-Holman, M., & Giacobbi, P. (1998). Sources of sport confidence: Conceptualization and instrument development. *Journal of Sport & Exercise Psychology, 20*, 54-80.
- Watson, C.B., Chemers, M.M., & Preiser, N. (2001). Collective efficacy: A multilevel analysis. *Personality and Social Psychology Bulletin, 27*, 1057-1068.
- Zaccaro, S.J., Blair, V., Peterson, C., & Zazanis, M. (1995). Collective efficacy. In J.E. Maddux (Ed.), *Self-efficacy, adaptation and adjustment: Theory, research and application* (pp. 305-328). New York: Plenum Press.