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ORIGINAL

LSS-3 LEADERSHIP SCALE ADAPTATION IN SOCCER

ADAPTACIÓN DE LA ESCALA DE LIDERAZGO LSS-3 AL FÚTBOL

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ABSTRACT

Given the theoretical and empirical characteristics of the Multidimensional Model of Leadership Chelladurai, this research aims to adapt the level of leadership to soccer (version perception of their own coaches, LSS-3) in Spanish, analyzing its psychometric properties and the degree of congruence and divergence in prior studies. The adjustment has been made taking the scale of Crespo, Balaguer and Atienza (1994) as point of departure in tennis. The results show that the factor structure of 5 factors proposed by Chelladurai and Saleh (1980) is not kept, although one gets a significantly high degree of stability factor in the following dimensions: Training and Instruction, Positive Feedback and Autocratic Behavior. Except for Conduct Democratic and Autocratic Conduct, good internal consistency values on all scales are also obtained. Finally, the practical implications and research of this scale on soccer are addressed.

KEY WORDS: Leadership, Football soccer, Test, Multidimensional Model of Leadership Coach.

RESUMEN

Dadas las características teóricas y empíricas del Modelo Multidimensional de Liderazgo de Chelladurai, el presente trabajo de investigación tiene por objetivo adaptar la escala de Liderazgo al deporte del Fútbol (versión percepción de los propios entrenadores; LSS-3) en castellano, analizando sus propiedades psicométricas y el grado de congruencia y divergencia hallado en estudios precedentes. La adaptación se ha realizado a partir de la escala de Crespo, Balaguer y Atienza (1994) en el deporte del tenis. Los resultados muestran como no se mantiene la estructura factorial de cinco factores propuesta por Chelladurai y Saleh (1980), si bien se obtiene de forma significativa un importante grado de estabilidad factorial en las dimensiones *Entrenamiento e Instrucción*, *Feedback Positivo* y *Conducta Autocrática*. Asimismo, se obtienen valores adecuados de consistencia interna en todas las escalas, a excepción de *Conducta Democrática* y *Conducta Autocrática*. Por último, se discuten las implicaciones prácticas y de investigación de esta escala para el fútbol.

PALABRAS CLAVE: Liderazgo, Fútbol, Test, Modelo Multidimensional de Liderazgo, Entrenador.

INTRODUCTION

For the past decade studies on sport psychology have mainly focused on sportsmen and on the repercussions that different psychological variables have on their performance (Molinero, Salguero & Márquez, 2012; De la Vega, Rivera & Ruiz, 2011, De la Vega et. al., 2011). Specifically, in terms of sport leadership there are numerous studies which connect a coach's leadership style with his/her sportsmen (Álvarez, Castillo & Falcó, 2010; Duda & Balaguer, 1999; Fenoy & Campoy, 2012; Ruiz, 2006, 2007). Two models have been especially studied: on the one hand, Chelladurai's Multidimensional Model of Leadership Coach (1993) and, on the other, the Mediation Model of Leadership (Smith, Smoll & Curtis, 1978). Based on Chelladurai's model, the Leadership Scale for Sport for the evaluation of leadership in sport is created. Except for the confirmatory statistical analyses with the version of "sportsmen's preference" (LSS-1) and "sportsmen's perception" (LSS-2) conducted by Sánchez, González, García & de Nicolás (1999a, 1999b), no specific adaptations of the scale applied to soccer have been found in the revisions made so far. This consideration has led us to develop the adaptation of the scale applied to soccer and analyze the specific factorial structure and other psychometric characteristics in the version "coaches' perception" (LSS-3) in order to compare the results obtained with other prior studies mainly conducted in Spain (Crespo, Balaguer & Atienza, 1994; Mayo, 1997; Ruiz, 2007).

As for the concept of leadership, among the many definitions given, it is worth recalling that leadership is "the behavioral process of influencing individuals and groups towards set goals" (Barrow, 1977, p. 232). Chelladurai's

Multidimensional Model of Leadership was created as a specific model of Leadership in sport, departing from the assumption that sportsmen's performance and satisfaction are determined by the degree of congruence between the leader's actual behavior—the one preferred by sportsmen—and the one required within this context, where the coach has a key role to play. These three kinds of behavior are assessed by means of the Leadership Scale applied to Sport (LSS) in their three versions (Cox, 2009, Crespo, 1995; Crespo & Balaguer, 1994; Weinberg & Gould, 2010): Leadership preferred by sportsmen (LSS-1), Leadership perceived or observed by sportsmen (LSS-2), and the coach's own perception of his/her leadership behavior (LSS-3). These scales, specifically used in sport, are made up of the three 40-item scales—symmetrical, the same items considered for the two scales for sportsmen and for the scale for coaches—and five dimensions: three aim to evaluate the interaction behavior between the coach and the sportsmen (Training and Instruction, Social Support and Positive Feedback), and two to evaluate the coach's decision-making behavior (Democratic and Autocratic Behavior).

The LSS scale—which has special implications in this study—was created by Chelladurai and Saleh (1978) in order to measure the Multidimensional Model of Leadership and to quantify two aspects (Antunes, Serpa & Carita, 1998): The identification of interaction styles (Training and Instruction, Social Support and Positive Feedback), decision-making styles (Democratic and Autocratic Leadership Behavior), whether it be departing from the sportsmen's assessment of the sportsmen's preferences or perception (LSS-1 o LSS-2), or departing from the coach's self-perception. Antunes et al. (1998) point out that the degree of congruence between these three measurements enables to identify behaviors which favour satisfaction and/or performance.

Antunes et al. (1998) highlight some conclusions about the results obtained in the three scales: (a) Regarding the sportsmen's preferences (LSS-1) and the interaction styles, they opt for a kind of leadership oriented to Training and Instruction (Carvalho, 1991; Chelladurai & Carron, 1983; Chelladurai, Imamura, Yamagushi, Orinuma & Miyauchi, 1988; Chelladurai & Saleh, 1980; Hastie, 1995; Terry, 1984; Terry & Howe, 1984), oriented to reinforcement or Positive Feedback (Chelladurai, 1984; Chelladurai et al., 1988; Manso, 1996; Sanches, 1991; Shliesman, 1987). Taking the decision-making styles into account, the behavior with the lowest score is the autocratic style (Chelladurai, 1984; Hastie, 1995; Manso, 1996; Shliesman, 1987; Terry, 1984), but there are significant differences in terms of gender: Male sportsmen obtain the highest scores (Chelladurai & Arnott, 1985; Chelladurai & Saleh, 1978; Martin, Jackson, Weiller & Richardson, 1997; Terry, 1984); (b) Regarding the results obtained by means of the sportsmen's perception scale (LSS-2), the highest scores are obtained in reinforcement or Positive Feedback (Chelladurai, 1993; Chelladurai et al., 1988; Leitao, Serpa & Bártolo, 1995; Sanches, 1991; Schliesman, 1987) and in Training and Instruction (Carvalho, 1991; Pinard & Lacoste, 1987; Serpa, 1995; Serpa & Antunes, 1989; Serpa, Pataco & Santos, 1989). As for decision-making styles, there is no uniformity in terms of the results obtained because in some of them the scores obtained in autocratic behavior are lower (Chelladurai et al., 1988; Leitao et al., 1995; Sanches, 1991; Serpa, 1995; Shliesman, 1987). Conversely, there are numerous studies with lower scores in democratic

behavior (Carvalho, 1991; Chelladurai et al., 1988; Pinard & Lacaste, 1987; Serpa & Antunes, 1989; Serpa et al., 1989). Much the same as in the case of the sportsmen's preference scale, Lopes (1995) shows that male sportsmen perceive styles of autocratic decision-making more regularly as well as interaction styles oriented to Training and Instruction and Positive Feedback or reinforcement; (c) Finally, the results obtained by means of the coach's self-perception scale—which has special implications in this study—are congruent with the ones obtained in the questionnaires administered to sportsmen (LSS-1 and LSS-2). The coaches are perceived to show a high degree of Training and Instruction-related behavior (Carvalho, 1991; Leitao et al., 1995; Serpa et al., 1989), as well as Positive Feedback or reinforcement-related behavior (Horne & Carron, 1985; Liukkonen, Salminen & Telama, 1989; Valadares, 1990).

Cox (2009) highlights some of the main results obtained when it comes to considering the degree of congruence of the three assessment scales: There are studies which confirm the relationship between the degree of congruence between the three kinds of behavior, and an increase in the sportsmen's performance and satisfaction (Reimer & Chelladurai, 1995; Reimer & Toon, 2001; Vealey, Armstrong, Comar & Greenleaf, 1998). Some studies which show levels of dissatisfaction due to the lack of adjustment between different leadership perceptions and preferences have been made by Allen and Howe (1998) and Vealey et al. (1998) and reveal differences in terms of age and gender (Martin et al., 1997) as well as the level of training (Jambor & Zhang, 1997). Therefore, one of the most relevant conclusions the above authors draw is precisely that the variations in the levels obtained in the three sub-scales depend upon personal variables such as gender, competition level, contextual and/or situational variables—goals imposed by the organization, kinds of tasks to be carried out, etc. Other authors like Crespo and Balaguer (1994) point out other individual characteristics which are closely connected with the variations in the results obtained in different scales.

The increasing importance of this model in sport is reflected in the creation of the revised LSS (Zhang, Jensen & Mann, 1997), which shows 60 items and 6 scales and keeps the initial structure of the LSS virtually unaltered when considering the 5 scales—a sixth scale is added when situational variables are taken into account. In order to be able to establish most accurate comparisons between the present study and others conducted in Spain, the traditional 5-dimension, 40-item LSS scale (LSS-3) to soccer coaches was adapted. As explained by Crespo et al. (1994), the leadership scale has been translated into several languages (Japanese, Portuguese, Finnish, French and Swedish, among others). The Spanish version applied to tennis made by Crespo et al. is especially significant, there has been an increasing number of research studies in the sportsmen's leadership preferences and perceptions (LSS-1 and LSS-2), in the analyses of the consequences of leadership (Satisfaction and Performance) (Chelladurai, 1984; Chelladurai et al., 1988; Chelladurai & Saleh, 1978, 1980; Isberg & Chelladurai, 1990) and a decreasing number in the coach's perception (LSS-3) (Horne & Carron, 1985; Dweyr & Fischer, 1998; Ruiz, 2006, 2007; Ruiz & Lorenzo, 2010). Likewise, this scale has not only been used in high-performance sport but also in education (Antunes et al., 1998; Chelladurai & Saleh, 1980).

Some of the main research studies with an LSS-3 in sport are conducted by Horne and Carron (1985). They use coaches in different sports: Dwyer and Fisher (1988) with 38 wrestling coaches, etc. In Spain, there are significant studies like Crespo et al. (1994) in tennis, Sánchez (1996) used 28 coaches in different sports, Gosálvez (1996) focused on swimming, Nieto and García (1999) worked in the world of basketball, Ruiz (2006, 2007) focused on Judo, and Ruiz and Lorenzo (2010) worked in the world of paddle tennis. Apart from these studies, it is worth mentioning Mayo (1997) in the world of handball, where in spite of administering the three versions of the model (LSS-1, LSS-2 and LSS-3), the factorial analysis for coaches was not carried out because only 14 coaches were evaluated. Specifically, in the world of soccer, Sánchez et al. (1999a and 1999b) were considered, although LSS-3 for coaches was not administered nor the development of specific, exhaustive, comparative psychometric analyses with other sports. Some of the most significant results of these studies where the factorial structure of the scales was revised are:

1.- The results obtained in the Spanish version of LSS-3 adapted to tennis with a sample of 122 participants and the development of the confirmatory factorial analysis do not confirm the 5-factor structure proposed by Chelladurai (Positive Feedback, Training and Instruction, Social Support, Democratic Behavior and Autocratic Behavior). The variance percentage is lower than the one obtained by Chelladurai and Saleh (1980) in Physical Education (36.5% vs. 55.8%). It is necessary to consider the application of the criterion of 0.30 saturation in the factorial analyses made and the application of Cattell's test in order to observe in the sedimentation graph which factors that account for a higher variance percentage are truly significant. 4 factors were finally chosen— Orientation in Relations, Orientation toward the Task, Democratic and Autocratic Conduct. Likewise, these analyses led the authors of the present study to eventually choose 31 items vs. the 40 items proposed by Chelladurai and Saleh (1980). From an interpretative standpoint—and taking the 5 initially proposed factors into account—the tennis coaches obtained higher scores in Positive Feedback and Training and Instruction (4.4 and 4.0 in 5), average scores in Social Support and Democratic Behavior (3.3. and 3.2) and low scores in Autocratic Behavior (2.5).

2.- The studies by Sánchez (1996) and Gosálvez (1996) did not confirm the factorial structure proposed by Chelladurai and Saleh (1980). By selecting a number of items with a saturation of 0.45, it was possible to obtain a new 6-factor factorial structure (Permeability to the sportsmen's opinion, Instruction and group management, Individual Attention, Social Support, Margin for the Sportsman's Initiative, Management and Capacity of Forecasting) and 27 final items. The variance percentage obtained accounts for 66%.

3.- 388 basketball coaches participated in Nieto and García (1999). Firstly, they conducted an exploratory study—12 factors with an Eigenvalue higher than 1 were extracted. Due to a lack of congruence of the results obtained with the 5 factors proposed by Chelladurai and Saleh

(1980), they made a 5-factor confirmatory analysis. The variance percentage obtained accounts for 43.6%, which confirms the solidity of the factorial structure in 3 factors: Training and Instruction, Social Support, and Positive Feedback. However, factors connected with decision-making styles—Autocratic and Democratic Behavior—were not confirmed. Based on Crespo et al. (1994), they made a 4-factor factorial analysis with an item selection with a saturation higher than 0.40. They extracted these factors: Training and Instruction, Social Support, Managing Style and Positive Feedback with a variance percentage obtained which accounts for 39.2%.

Some conclusions in these studies are shown below: the 5-factor factorial structure proposed by the authors of the scale was not confirmed; in most of the studies carried out so far, the scales of Training and Instruction, Positive Feedback and Social Support are more solid than Autocratic and Democratic Behavior; conducting exploratory analyses entails a number higher than the 5 proposed by the authors—a minimum of 9 is required; the variation in the criteria of item selection—between 0.30 and 0.45—and the differential sample size in the studies conducted—between 44 and 388 participants—could account for, although in partial terms, the differences in the number of factors and items resulting in the final scales: the studies which show the levels of reliability of the overall scale are satisfactory (Alpha de Cronbach > 0.70), although there are studies which do not show the reliability by sub-scale (Bañuelos, 1996; Gosálvez, 1996; Nieto & García, 1999) or show reduced values in some of the 5 factors, especially in Autocratic Behavior (Crespo et. al., 1994; Ruiz, 2007).

In order to attempt an adaptation of LSS-3 for soccer coaches as accurate as possible, the adaptation was made after the one used in tennis by Crespo et al. (1994). One of the main reasons lies precisely in the fact that the scale adapted to tennis actually includes terms compatible with soccer such as the terms 'sportsman'—instead of 'athlete'—and 'match'. As in the case of Crespo et al. (1994), a confirmatory factorial analysis with varimax rotation—the 5 factors in the scale are confirmed—was made. 3 objectives are set in this study: 1.- Adapt to soccer Chelladurai and Saleh's (1980) Leadership scale for sport (LSS-3 for coaches); 2.- Establish specific comparisons between the levels of self-perception in the evaluated soccer coaches' leadership behavior and the values obtained in prior studies; 3.- Analyze the main psychometric properties of the adapted scale and establish comparisons between the reliability levels found with those obtained in prior studies.

MATERIAL AND METHOD

Participants

The sample is made up of 129 (male) soccer coaches enrolled in physical education programmes (monitors, $N=74$; regional coaches; $N=20$; national coaches, $N=35$) in Madrid's Soccer Federation (2008-2009). As regards their age, $M=32.8$; $DT=7.41$; their experience was $M=5.26$ and $DT=4.5$ years training.

Tools

The adaptation made for soccer of the Leadership scale for Sport in LSS-3 (coaches' perception) was administered and a number of personal and sport-related data were included. The coach's players' sport degree, age, gender, time devoted to soccer, years of experience, kind of club and sporting level.

The scale is made up of 40 items which should be answered in a scale of multiple-choice test with 5 answers—always, often, occasionally, seldom, never. The 5 dimensions the scale is made up of (Chelladurai & Saleh, 1980; Crespo et al., 1994; Weinberg & Gould, 2010) are:

1.- Training and Instruction: This dimension refers to those behaviors oriented to improving sportsmen's performance by means of technical, tactical and physical instructions and training sessions.

2.- Democratic Behavior: A number of behaviors oriented to enabling the sportsmen to participate in the decision-making process more actively.

3.- Autocratic Behavior: A kind of behavior oriented to emphasizing unilateral and independent decision-making processes basically based on personal authority.

4.- Social Support: This kind of dimension refers to a concern for the sportsmen's welfare. Harmony and a positive atmosphere are encouraged by fostering good interpersonal relationships between the team members.

5.- Positive Feedback: These behaviors are oriented to positive reinforcement and to acknowledging the sportsman's good performance.

Although in "results" the reliability levels obtained in this study with a sample of soccer coaches are specified, it is important to highlight that the adaptation into Spanish made by Crespo et al. (1994) with tennis coaches ($n=120$) offers these reliability levels: Training and Instruction, $\alpha=.75$; Democratic Behavior, $\alpha=.68$; Autocratic Behavior, $\alpha=.50$; Social Support, $\alpha=.68$; Positive Feedback, $\alpha=.45$.

Taking the studies with wrestling coaches by Dwyer and Fisher (1988) into account, these are the values obtained ($n=38$): Training and Instruction, $\alpha=.86$; Democratic Behavior, $\alpha=.67$; Autocratic Behavior, $\alpha=.04$; Social Support, $\alpha=.57$; Positive Feedback, $\alpha=.75$

Procedure

After revising the tests carried out with LSS-3, the authors of the present study made the adaptation and basically used the one by Crespo et al. (1994) as point of departure. The semantic similarities between tennis and soccer were

more significant to the adaptations made in other sports like Judo (Ruiz, 2007). The eventually adapted items were as follows (Table 1):

Table 1: Items adapted of LSS-3 adapted to soccer.

LSS-3. Adaptation to tennis	LSS-3. Adaptation to soccer
5.- I explain the tennis-related techniques and tactics to each player.	5.- I explain the soccer-related techniques and tactics to each player.
36.- I have a friendly relationship with the players outside the court.	36.- I have a friendly relationship with the players outside the soccer pitch.

Once the adaptation was made, the authors applied the questionnaire to a 37-coach pilot sample who were doing a course for soccer monitors-instructors in Madrid's Soccer Federation. The adequate semantic comprehension of the questionnaire led the authors of the present study to increase the sample up to a total of 129 coaches. All the participants were told about the objectives of the research, data confidentiality and about the fact that completing the questionnaire was entirely voluntary.

As far as the design employed in this research is concerned, this is a transversal (Montero & León, 2007), descriptive, correlational (factorial) study.

RESULTS

As regards the first objective, the descriptive data obtained are shown below as well as a comparison with the most relevant studies made with this scale (Table 2).

Table 2: A comparison of the descriptive analysis between the present study and prior studies.

	Dwyer & Fischer (1988) N=38 Wrestling		Horne & Carron (1985) N=9 Different sports		Crespo et al. (1994) N=120 Tennis		Ruiz (2007) N=26 Judo		Present study N=129 Soccer	
	M	SD	M	SD	M	SD	M	SD	M	SD
Positive Feedback	4.50	.40	4.40	.50	3.80	.30	4.22	.71	4.04	.43
Training & Instruction	3.90	.50	4.00	.50	4.00	.20	3.91	.46	2.62	.41
Social Support	3.60	.50	3.30	.60	3.60	.50	4.05	.54	2.66	.51
Democratic Behavior	3.20	.60	3.20	.60	3.30	.20	3.16	.52	3.47	.51
Autocratic Behavior	2.30	.40	2.40	.40	2.30	.30	2.34	.49	3.94	.61

The descriptive analyses show that in the present study the highest scores were obtained in Positive Feedback and Autocratic behavior whereas the lowest scores were obtained in Training and Instruction and Social Support, and

average scores in Autocratic Behavior. In all the scales the standard deviation reached similar values in all the 5 scales.

The normality analyses by means of the Kolmogorov-Smirnov test are shown below. The results offer that the dimensions of Positive Feedback ($Z=.738$; $p=.647$), Training and Instruction ($Z=1.062$; $p=.209$) and Democratic Behavior ($Z=1.273$; $p=.078$) fulfill the assumptions of normality ($p>0.05$). However, the dimensions Social Support ($Z=1.481$; $p=.025$) and Autocratic Behavior ($Z=1.640$; $p=.009$) are not distributed in an ordinary way ($p<.05$). For this reason, the hypothesis of ordinary distribution has been rejected.

As far as the third objective is concerned, the main psychometric characteristics of the scale are analyzed. First, a confirmatory factorial analysis was made; then, an exploratory, factorial analysis and a correlational analysis between dimensions were made; and finally, a reliability analysis was made. By applying the Kaiser-Meyer-Olkin test, a value of .656 was obtained and in Barlett's sphericity test a value of $X^2_{780} = 1615,405$ with a $p<.0001$ was obtained. These data not only show that there is an average level of adequacy of the data and the sample for an analysis of the main components—Kaiser-Meyer-Olkin mean $>.500$ y <1.000 —but also the adequacy of the data for this analysis when it was confirmed that the variables considered correlate. As in the case of prior studies, an exploratory, factorial analysis was made based on the criterion of factorial selection with Eigenvalues <1 (Table 3).

Table 3: Total variance explained. Analysis of the Main Components.

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.081	15.203	15.203	6.081	15.203	15.203
2	3.112	7.781	22.984	3.112	7.781	22.984
3	2.255	5.637	28.621	2.255	5.637	28.621
4	1.984	4.961	33.582	1.984	4.961	33.582
5	1.785	4.463	38.045	1.785	4.463	38.045
6	1.663	4.157	42.202	1.663	4.157	42.202
7	1.560	3.900	46.102	1.560	3.900	46.102
8	1.529	3.823	49.925	1.529	3.823	49.925
9	1.375	3.438	53.362	1.375	3.438	53.362
10	1.350	3.376	56.738	1.350	3.376	56.738
11	1.262	3.156	59.894	1.262	3.156	59.894
12	1.102	2.754	62.648	1.102	2.754	62.648
13	1.066	2.665	65.313	1.066	2.665	65.313
14	1.020	2.550	67.863	1.020	2.550	67.863
15	.947	2.366	70.229			
16	.906	2.264	72.493			
17	.887	2.217	74.710			
18	.790	1.976	76.686			
19	.744	1.860	78.546			
20	.727	1.819	80.365			
21	.690	1.724	82.089			
22	.654	1.635	83.724			

23	.616	1.540	85.265
24	.577	1.443	86.707
25	.524	1.311	88.018
26	.515	1.287	89.306
27	.479	1.197	90.503
28	.456	1.141	91.644
29	.412	1.031	92.675
30	.376	.940	93.615
31	.361	.902	94.517
32	.320	.800	95.317
33	.309	.773	96.090
34	.292	.731	96.820
35	.257	.643	97.463
36	.245	.612	98.075
37	.223	.558	98.633
38	.206	.514	99.147
39	.198	.494	99.641
40	.144	.359	100.000

The results show the extraction of 14 factors which account for a variance of 67.86%. These results converge with those obtained in prior studies. As in the case of the studies by Crespo et al. (1994) and Nieto & García (1996), Cattell's test shows the graph of factor sedimentation (Figure 1).

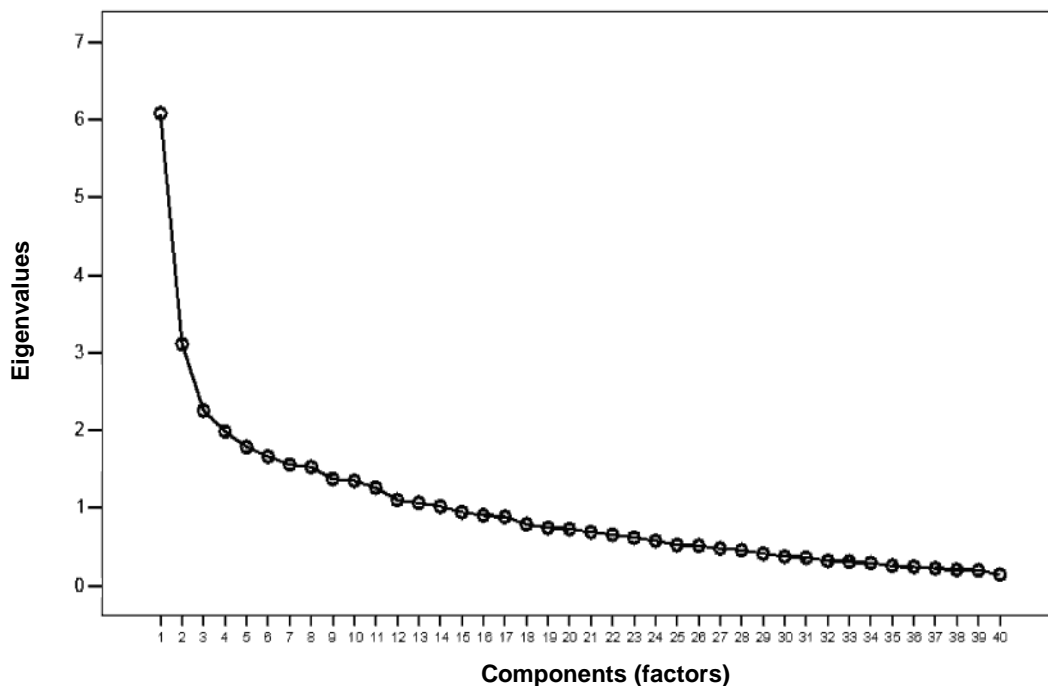


Figure 1: Graph of sedimentation.

The results show the three factors with the highest variance explained. By focusing on the variance percentage explained, it may be observed that the first 6 factors are not only over 4% of the variance explained but also that it is not

higher than .5% from the difference between factor 5 and 6 of variance explained. If the 5 theoretical factors proposed in the model are taken into account, a percentage of 38% of variance explained is obtained. The confirmatory factorial analysis made and the grouping of items according to factor and factor load are shown in Table 4. The matrix with 11 iterations has been rotated.

Table 4: Rotated matrix of components. Application of the Varimax (rotation) method, forcing 5 factors and applying Kaiser's rule.

	Components				
	1	2	3	4	5
lss35	.614				
lss38	.588				
lss31	.574				
lss329	.555				
lss323	.550				
lss332	.549				
lss320	.544				
lss325	.525				
lss37	.522				
lss39	.496				
lss326	.492				
lss313	.472				
lss321	.463				
lss311	.454				
lss338	.421				
lss33	.410				
lss317	.364				
lss331		.702			
lss334		-.674			
lss322		.628			
lss336		.622			
lss319		.526			
lss328			.666		
lss34			.646		
lss337			.546		
lss335			.543		
lss310			.432		
lss315			.383		
lss316			.382		
lss339				.647	
lss32				.599	
lss318				.577	
lss314				.459	
lss330				.427	
lss333				.380	
lss312					.540
lss36					.507
lss327					.346
lss340					.325
lss324					.268

According to Kaiser's rule, loads higher than 0.30 are accepted in the factorial analysis. As can be observed, only item 24 does not reach this criteria value (the factor load is .268). A table which summarizes the degree of the item and factor convergence is reproduced below. It compares the initial structure proposed by Chelladurai & Saleh (1980) and followed by Crespo et al. (1994) (Table 5).

Table 5: Item-factor correlation coefficient of the present study. The factorial structure extracted by Chelladurai & Saleh (1980) is taken into account.

	F-I	F-II	F-III	F-IV	F-V
lss31	.574	.100	.131	-.040	.247
lss35	.614	-.050	.024	.312	.014
lss38	.588	-.139	.055	.087	-.024
lss311	.454	-.086	.170	-.115	.120
lss314	-.006	-.181	.293	.459	-.201
lss317	.364	-.064	.011	-.306	-.050
F-I lss320	.544	-.077	.128	.246	-.279
lss323	.550	.255	.073	-.048	.140
lss326	.492	.127	.261	.162	.171
lss329	.555	-.100	.133	.247	.231
lss332	.549	.010	.171	-.158	-.226
lss335	.358	-.207	.543	.000	-.043
lss338	.421	-.188	.332	.178	-.132
lss32	.079	.078	-.140	.599	.211
lss39	.496	-.019	.137	-.155	.095
lss315	.220	.060	.383	.032	-.209
lss318	.153	.202	.077	.577	-.301
F-II lss321	.463	.051	-.207	.194	.184
lss324	.006	.143	.022	.237	.268
lss330	.272	.068	.053	.427	-.011
lss333	-.370	.089	.095	.380	-.158
lss339	-.098	.140	-.026	.647	.188
lss36	.113	.025	-.091	-.158	.507
lss312	.121	.123	.051	-.051	.540
F-III lss327	.031	-.041	-.021	.219	.346
lss334	.035	-.674	.307	-.128	.165
lss340	-.058	-.213	.128	.178	.325
lss33	.410	.234	.041	.070	-.256
lss37	.522	.034	-.060	.037	.035
lss313	.472	.247	.053	.002	-.358
lss319	-.107	.526	.279	.151	.000
F-IV lss322	.264	.628	.248	.007	-.034
lss325	.525	.049	.251	-.088	-.248
lss331	-.063	.702	.014	.147	.220
lss336	-.075	.622	.271	.027	.040
lss34	.010	.167	.646	.049	.030
lss310	.238	.295	.432	-.126	-.047

F-V	Iss316	.070	-.053	.382	.366	-.001
	Iss328	.006	.200	.666	.037	.235
	Iss337	.356	.348	.546	.020	-.078

As in the case of the results in Crespo et al. (1994), Nieto & García (1999), Bañuelo (1996) and Gosálvez, Chelladurai & Saleh's (1980), the factorial structure is not confirmed. By basically focusing on the study by Crespo et al. (1994), many of the factor loads obtained are not higher than .30 (items 1, 14, 17, 21, 24, 6,10, 40, 22,10, 28 y 37). A factor load of .60 is only achieved in item (38). If it is taken into account that the sample number of the present study is similar, on the one hand, it is observed that only 1 item does not achieve the value 0.30 (item 24; the factor load is .268); on the other hand, factor loads higher than 0.60 are obtained in some items (35, 39, 34, 22, 36, 34, 28) and a saturation of .703 is achieved in item 31. Ultimately, in Crespo et al. (1994) it is observed that many items show similar saturations in several factors. They point out that, apart from the fact that the factorial structure proposed by Chelladurai & Saleh (1980) is not replicated, there arise problems in terms of generating new alternative structures of the questionnaire. As can be seen in Table 5, these problems are solved in the present study.

Table 6 is a table which summarizes the results obtained in order to define the degree of congruence between items and factors.

Table 6: Degree of congruence between the original scale and LSS-3 for Soccer.

	Chelladurai	Soccer
Training and Instruction	F-I (13 items)	F-I. 11 congruence items (84.6%) F-III. 1 item (7.7%) F-IV. 1 item. (7.7%)
Democratic Behavior	F-II (9 items)	F-IV. 5 Congruence items (55.6%) F-I. 2 Congruence items (22.2%) F-III. 1 Congruencde item (11.1%) F-V. 1 Congruence item (11.1%) (no saturation minimum of 0.30 in item 24)
Autocratic Behavior	F-III (5 items)	F-V. 4 Congruence items (80%) F-II. 1 Congruence item (20%)
Social Support	F-IV (8 items)	F-I. 4 Congruence items (50% de congruence) F-II. 4 Congruence items (50% of congruence).
Positive Feedback	F-V (5 items)	F-III. 5 Congruence items (100%)

A significant convergence in Crespo et al. (1994) is that there is a higher stability in factor Training and Instruction. However, in the present study there is a complete degree of congruence in the saturations obtained with the factor Positive Feedback, although it appears as factor V instead of III in the present rotated factorial analysis. On the other hand, there is a significant congruence of the factor Autocratic Behavior, which moves from factor III to V in this study, although it is not complete. Finally, the Democratic Behavior has a less Unitarian structure, although most of the structure is grouped in the dimension Social Support. Therefore, the factors Training and Instruction, Positive

Feedback and Autocratic Behavior show the highest factorial stability and convergence. Likewise, it is important to highlight that in factors Democratic behavior and Social Support there is a significant degree of overlapping between each other (both are connected with orientation toward relations) (Hersey & Blanchard, 1977). It is necessary to highlight that Crespo (1995) only makes in his tennis-related study the analyses with the two scales that offer him consistency: Training and Instruction, and Social Support. Crespo also points out that Chelladurai & Carron (1983) only used the sub-scales of Training and Instruction, and of Social Support in the analysis of their research with LSS-1 (the preferred leadership among sportsmen) and the sportsmen's maturity. Likewise, Crespo et al. highlight that, when it comes to using his study between the team's perceived skill and perceived cohesion in the coach-sportsman interactions, Summers (1983) only employed the scales of Training and Instruction, Social Support and Positive feedback. In the present study, however, there is a significant degree of convergence.

Crespo et al. (1994) stress that the dimensions of Democratic Behavior and Autocratic Behavior offer lower consistency due to the fact that they are shaped as specific decision-making models which do not specifically correspond to leadership behavior. This difference has been included in subsequent studies about decision-making processes made by Chelladurai & Haggerty (1989). Therefore, the confirmatory factorial analyses of this study show these results:

- 1.- The structure proposed by Chelladurai regarding the scale adapted to soccer coaches is not exactly replicated.
- 2.- In spite of the fact that the scale is not confirmed, there is no significant congruence in the factorial structure of 3 factors (Training and Instruction, Positive Feedback and Autocratic Behavior).
- 3.- The factors most badly adjusted to the factorial structure proposed by Chelladurai are Democratic Behavior and Social Support.

From a correlational standpoint (Table 7), the correlations show significant values but with moderate, and even low values. In any case, the correlations are never higher than .40. It is worth noting that the highest correlational values are the ones obtained in Positive Feedback, Training and Instruction and Autocratic Behavior. The 3 scales are shown as elements which reflect the coach's behavior—this is basically oriented toward the task assigned rather than relations. On the other hand, it is important to highlight that the correlations between Autocratic Behavior and Democratic Behavior—here the moderate overlap of the constructs could reveal a lack of clear differentiation between each other.

Table 8: Correlational matrixes between the 5 dimensions LLS-3 for soccer is made up of.

	TI	DB	AB	SS	PF
Training and Instruction	1.000	.342**	.213*	-.059	.361**
Democratic Behavior		1.000	.351**	-.128	.328**
Autocratic Behavior			1.000	.092	.394**
Social Support				1.000	.178*
Positive Feedback					1.000

* $p < .05$; ** $p < .01$

The low correlational levels between Social Support and Positive Feedback are congruent with the observations made by Horne & Carron (1985), who point out that Positive Feedback is closely connected with Performance, not with Social Support. Another relevant consideration is that the correlation matrix confirms Chelladurai and Carron's assumptions (1983) that the factor Training and Instruction correspond to the leader's "Orientation toward the Task (Assigned)" and Social Support towards the "Consideration," which are closely connected with the difference established in social psychology by Hersey and Blanchard (1977) referred to the leader's styles of orientation toward the task (assigned) and orientation toward relations.

As regards reliability, in Table 8 the different levels of internal consistency of the 5 dimensions are shown. The item structure as proposed by Chelladurai and Saleh (1980) is kept.

Table 8: This table summarizes the reliability analyses (alpha coefficient) made for the adaptation of LSS-3 for soccer coaches in comparison to other studies. The item and dimension structure initially proposed by Chelladurai & Saleh (1980) has been used.

LSS SCALE	Factors introduced	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
5 FACTORS		TI	DB	AB	SS	PF
Soccer	Not reduced factors	.78	.48	.31	.65	.67
Judo (2007)	Not reduced factors	.80	.72	.55	.84	.84
Dwyer & Fischer (1988)	Not reduced factors	.86	.67	.04	.57	.75
	Reduced factors	.86	.77	.36	.61	.75
Crespo, Balaguer & Atienza (1994)	Reduced factors	.74	.68	.50	.68	.45
	Reduced factors	.75	.73	.54	.72	.57

It may be observed that the scales Training and Instruction, Social Support and Positive Feedback obtain acceptable values and they are higher, or close to .70 (Nunnally, 1978). However, low levels of internal consistency are obtained in the scales of Autocratic Behavior and Democratic Behavior. Therefore, in comparison to prior studies, the values obtained are similar, although there are differences between studies in the scales with lower values.

When it comes to considering the test reliability levels from a holistic standpoint, it is worth mentioning some prior studies: Sánchez (1996) obtained a reliability of .79 with a 28-coach sample; Gosálver obtained a reliability of .78 with a 44-swimming-coach sample; Nieto & García (1999) obtained .76 with a 388-basketball-coach sample; and Ruiz (2006) obtained .84 with a 26-Judo-coach sample. Taking this study into account, it is worth saying that the overall test reliability level is .80. This is a satisfactory value similar to the levels achieved in the aforementioned studies.

DISCUSSION

The adaptation of LSS-3 to soccer has enabled the authors of the present study to describe the characteristics of a sample with coaches and establish comparisons with other studies and sports at a descriptive, psychometric level.

In comparison to other prior studies (Crespo et al., 1994; Dwyer & Fischer, 1988; Horne & Carron, 1985; Ruiz, 2007), there are similar values in Positive Feedback and Democratic Behavior—they are higher in Autocratic Behavior and lower in Training and Instruction and Social Support. The scores obtained may be due to different interpretations:

- (a) There may be specific differences in terms of leadership on the basis of the characteristics of the sport in question. Although it may be advisable to conduct some research where the different parts of the model by Chelladurai (1993) such as sportsmen's performance level, age, experience, etc. were taken into account, Crespo & Balaguer (1994) already point out that sportsmen's preferences on the basis of the discipline practiced (Chelladurai & Carron, 1978) and the kind of sport—i.e. individual or team; Chelladurai & Saleh, 1978)—vary in preferences in terms of leadership, which may affect the leadership exercised in the end and, therefore, the leader's self-perception as coach.
- (b) In soccer the high scores obtained in Autocratic Behavior may be not only associated with the higher likeliness of training more experienced male sportsmen (Crespo & Balaguer, 1994) but also with the need to control the training session with a high number of players. In this way, a predominantly democratic group leadership style is hindered.
- (c) As regards the lower scores obtained in Training and Instruction, it is difficult to come up with a specific interpretation. However, in the present study it may be a crucial motive of the instructors' training about the importance of this leadership dimension during a training session, especially among young sportsmen. Ultimately, the low scores obtained in Social Support may be associated with the fact that in this sport the coach believes that the team may be supportive in various ways—all the team or just a part of it. The coach diversifies this role with other leaders of the team such as the captain.

In spite of the interpretations above, the limitation of the scale should be taken into account, mainly due to the low reliability coefficients obtained in the scales of Democratic Behavior and Autocratic behavior. Departing from the factorial analyses made, and as happens in prior studies (Crespo et al., 1994), the initial proposal by Chelladurai and Saleh (1980) is not confirmed. The dimensions are connected with task-oriented behaviors (Hersey & Blanchard, 1977)—i.e. dimensions of Training and Instruction, Positive Feedback and Autocratic Behavior, which show a higher factorial convergence between the present study and the one by Chelladurai and Saleh (1980). However, the dimensions connected with a leader's orientation toward interpersonal relations (Hersey & Blanchard, 1977)—i.e. Social Support and Democratic Behavior which do not show this convergence are factorially speaking interspersed.

By taking the psychometric analysis made into account, the percentages of variance explained and the exploratory factorial analyses, the results obtained show a much higher figure to the 5 initial factors. In the present study there are

14 factors with an Eigenvalue higher than 1. By making a confirmatory factorial analysis and forcing 5 factors, it is possible to come up with 38% of variance explained. The values obtained in the present study are similar to the ones obtained in prior studies—e.g. Crespo et al. (1994) obtained 36.5% of variance explained with tennis coaches, Chelladurai and Saleh's (1980) accounts for 41.2% with a sample of physical education students, and 39.3% with a sample of sportsmen. In both studies LSS-1 for sportsmen was used. In this case, the percentage of variance explained was 55.8% for the coach's perceptions.

If we have a look at the factor loads extracted—unlike what happens with other ones—the saturations obtained between the item and the factor are higher. Some values are over .70. This figure indicates that, in spite of the fact that in some dimensions it is possible not to be structured according to the proposal made by Chelladurai and Saleh (1980), there is a significant connection between the items and the factor to which they are associated. Except for one item, this element is connected with all those which saturate over the factor load 0.30.

It is necessary to highlight here that there are significant differences in the studies considered in the factorial saturations, minimal considered between the item and the factor, whose value could range from 0.30 to 0.45. This differential element not only affects directly the item selection in the final scales but consequently also the factorial analyses. This could partly account for the differences between both studies.

As regards the differentiation by Chelladurai and Saleh (1978)—highlighted by Antunes et al. (1998)—which consists in dividing the leader's behaviors in interaction styles (Training and Instruction, Positive Feedback and Social Support), and managerial styles (Autocratic Behavior and Democratic Behavior), the latter styles show lower reliability values. The results obtained in the dimension Autocratic Behavior are congruent with those obtained in prior studies (Crespo et al., 1994; Dwyer & Fischer, 1988; Ruiz, 2007). In this case, however, the scale of Democratic Behavior obtains slightly lower values than in prior studies (Crespo et al., 1994; Dwyer & Fischer, 1988; Ruiz, 2007). The other 3 scales are higher than, or close to the acceptable reliability values proposed by Nunnally (1978). If the overall scale is taken into account, the reliability of the scale obtained is high. Except for the case of Judo (Ruiz, 2007), it is even higher than in the revised studies in this paper.

The low reliability levels obtained in the present study in managerial styles could be interpreted in different ways. For example, the behaviors connected with interaction styles (Training and Instruction, Positive Feedback and Social Support) could be associated with easily observable, delimited, operationalized behaviors, whereas the managerial style oriented behaviors collected in LSS-3 (Democratic Behavior and Autocratic Behavior) could be regarded as complex behaviors which are more dependent upon the situational context where they take place. In this case, delimiting them is more complex and complicated. Closely connected with this first interpretation in the coach's self-evaluation and perception of their own behavior, the managerial styles could be more influenced by personal, subjective opinions than a democratic and authoritarian

behavior. The other scales show more objective, specific aspects because they are probably less dependent upon the coach's subjectivity.

In spite of evaluating a representative sample with soccer coaches in terms of sample number, it is advisable to increase the factorial analyses with LSS-3 (at least 200 participants). Assigning between 5 and 10 cases per item (Hair, Anderson, Tatham & Black, 2000) could provide a better factorial stability in some of the scales considered. Although there are already available new versions of the scale (RLSS, Zhang, Jensen & Mann, 1997), if future adaptations of the scale are envisioned, they should be redesigned or new items—those most specifically associated with managerial styles (Democratic Behavior and Autocratic Behavior)—should be added. Likewise, by applying the scale to soccer, it is possible to make specific psychometric analyses which reformulate some of the analyzed results. In this way, reducing the test to 4 factors (Crespo et al., 1994) or even increasing it (Bañuelos, 1996; Gosálver, 1996) is feasible. Finally, it is advisable to make specific analyses where some of the coach's most relevant sport-related, personal characteristics—age, experience, level, etc.—are taken into account (Crespo & Balaguer, 1994; Ruiz, 2007) so that leadership-related differential profiles in a given sport may be determined.

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