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ORIGINAL

VALIDATION OF THE YOUTH SPORT ENVIRONMENT QUESTIONNAIRE FOR SPANISH (YSEQ-S) WITH YOUNG PLAYERS

VALIDACIÓN DEL YOUTH SPORT ENVIRONMENT QUESTIONNAIRE AL ESPAÑOL (YSEQ-S) CON JÓVENES JUGADORES

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ABSTRACT

This research presents two studies with the aim to validate the Youth Sport Environment Questionnaire for Spanish (YSEQ-S). A total of 231 players of both genders aged 11-16 (*M* = 13.19; *SD* = 1.13) participated in Study 1, while 614 male and female athletes aged 10-15 years (*M* = 13.28; *SD* = 1.14) participated in Study 2. The results of both studies revealed adequate factor validity and internal consistency for a model composed of two first-order factors: task cohesion and social cohesion. Furthermore, in Study 2, the moderate correlation between factors confirmed the discriminant validity and the correlation with athlete satisfaction confirmed the nomological validity. Moreover, the instrument was invariant across age group. The YSEQ-S can be considered as a valid and reliable instrument to assess cohesion in young team sport athletes.

KEY WORDS: Team environment, group cohesion, questionnaire, sport, psychometric properties.

RESUMEN

Esta investigación presenta dos estudios con el objetivo de validar el Youth Sport Environment Questionnaire al Español (YSEQ-S). En el Estudio 1, participaron 231 jugadores de ambos géneros con edades entre 11-16 años (*M* = 13,19; *DT* = 1,13); mientras en el Estudio 2 participaron un total de 614 deportistas masculinos y femeninos con edades entre 10-15 años (*M* = 13,28; *DT* = 1,14). Los resultados en ambos estudios indicaron una validez factorial y consistencia interna adecuada formado por dos factores de primer orden: cohesión tarea y cohesión social. Además, el Estudio 2, la correlación evidenciada entre ambos factores apoyó la validez discriminante y la correlación con la satisfacción del deportista corroboró su validez nomológica. También, el instrumento se mostró invariante en función de la categoría de los deportistas. La YSEQ-S puede considerarse como un instrumento válido y fiable para evaluar la cohesión con jóvenes atletas de deportes de equipo.

PALABRAS CLAVE: Ambiente de equipo, cohesión grupal, cuestionario, deporte, propiedades psicométricas.

INTRODUCTION

Cohesion has been deemed to be one of the most important variables when studying groups (Eys & Brawley, 2018). Due to its relevance, it has been examined in depth within different fields. Various instruments have been developed with the aim to assess it, among which the Group Environment Questionnaire (Carron, Widmeyer & Brawley, 1985), designed within a sport context, must be highlighted. In this regard, Carron and Brawley (2000) pointed out the need for instrument adaptation to every field or population under study. Due to this reason, different versions of this scale have been created depending on the context: occupational (Lyons, Brown & Bourke-Taylor, 2018), education

(Bosselut, Heuzé, Castro, Fouquereau & Chevalier, 2018; Esquiva & Gómez-Millán, 2020) or even physical activity groups (Estabrooks & Carron, 2000). Besides, within the sport field, this questionnaire has been translated into several languages, such as Portuguese (Borrego, Leitão, Silva, Alves & Palmi, 2010), Spanish (Leo, González-Ponce, Sánchez-Oliva, Pulido & García-Calvo, 2015) or French (Heuzé & Fontayne, 2002). Furthermore, the original version has been adapted to different population groups, such as children (Martin, Carron, Eys & Loughead, 2013) or adolescents (Eys, Loughead, Bray & Carron, 2009). Nevertheless, the Spanish version has only been validated for adult athletes (Leo, Sánchez-Miguel, Sánchez-Oliva & García-Calvo, 2010). This has limited the assessment of youth athletes, in which cohesion has been proved to be associated with numerous benefits (Bruner, Eys, Wilson & Côté, 2014). Therefore, given the need for using instruments adapted to every study's participants, the aim of the present study was to adapt and validate the YSEQ questionnaire for Spanish, allowing for valid and reliable cohesion assessment in young athletes.

Group cohesion

Group cohesion has been conceptually defined as an emerging state that "is reflected in part in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of members' affective needs" (Carron, Brawley & Widmeyer, 1998, p. 213). This construct belongs to the cohesion conceptual model developed by Carron et al., which has been broadly used in the past years as theoretical framework of reference (Eys & Brawley, 2018). This model establishes that there are a series of environmental, personal, team and leadership precedents that generate a certain type and level of cohesion in a player, leading to different consequences at the individual and collective levels (Carron et al., 1998). The perception of cohesion is based on two main aspects: the attraction towards the group (referring to how the group satisfies their personal needs and goals) and the integration into the group (referring to the extent to which the group works as a whole). Furthermore, Carron et al. sustained that every member of a team perceives the extent to which the members of a group work together to achieve common goals (task cohesion) and the extent to which the members of a team empathise with each other and enjoy team spirit (social cohesion). Consequently, based on players' perception, four different dimensions can be identified: group integration-task (GI-T), group integration-social (GI-S), individual attractions to group-task (ATG-T) and individual attractions to group-social (ATG-S).

Despite this instrument having been widely used in numerous studies, some authors have questioned its validity (Carless & De Paola, 2000; Sullivan, Short & Cramer, 2002). The main aspects that have been discussed were related to the factor structure suggested by Carron et al. (1985), since various validations conducted in sport (Heuze & Fontayne, 2002) and other contexts (Carless & De Paola, 2000; Schütz, Eom, Smoll & Smith, 1994; Sullivan et al., 2002) did not show an appropriate factor structure. Moreover, the lack of validity shown by the GEQ for adolescents (Schütz et al., 1994) revealed the major limitation described by the questionnaire's authors: the need for generalisation of GEQ's

items to cultures and population groups other than the ones used to develop it (Carron et al., 1998, p. 39). The participants selected to validate the English (Carron et al., 1985) and Spanish (Leo et al., 2010) versions were male and female players aged 18 to 30 who competed in sport teams. Therefore, those researchers who would like to apply the GEQ to other populations (e.g. adolescents) must test the suitability of the existing version for that specific case (Carron & Brawley, 2000; Heuzé & Fontayne, 2002).

Some versions have modified the item description (Eys, Carron, Bray & Brawley, 2007) or established a different number of items in the scale (Bosselut et al., 2018). These versions have considered the following aspects: a) participants are able to understand the words and sentences contained in the questionnaire, given the language complexity of the original questionnaire for adolescents and children; and b) the use of positive and negative items is appropriate (Eys et al., 2007), given the issues generated by their combination. Eys et al. (2007) pointed out that certain individual characteristics (e.g. age) may influence the ability to interpret negative items and may, therefore, affect internal consistency values of GEQ's dimensions.

In an attempt to solve these limitations in the assessment of group cohesion in young athletes, Eys et al. (2009), in a research project that contained four studies, designed an 18-item questionnaire that was specific to this population. The major difference between this one and the scale for adults was that this questionnaire did not distinguish between integration or attraction factors. Thus, it consisted of 8 positive items aimed to assess task cohesion and 8 positive items intended to assess social cohesion. Furthermore, the authors included two negative items as control, in order to identify random answers. This scale presented adequate validity and reliability.

Aims

In spite of the advantages of GEQ adaptation for adolescent players (YSEQ; Eys et al., 2009), this questionnaire has only been translated into Persian (Eshghi et al., 2015), Portuguese (Junior et al., 2018) and Czech (Siska, Benson, Priklerova & Slepicka, 2014). Thus, considering the importance of this construct to achieve adequate development of personal, social and cognitive skills in youth (Bruner et al., 2014), and even greater satisfaction (Jeffery-Tosoni, Eys, Schinke & Lewko, 2011; Sanmiguel-Rodríguez, 2020) and performance (Gómez-Millán, Delgado-Vega & Fernández-Gavira, 2017; Siska et al., 2014), it would be interesting to be able to assess this construct in Spanish using an instrument especially designed for this population. Consequently, the main purpose of this study was to validate the Youth Sport Environment Questionnaire (YSEQ; Eys et al., 2009) for Spanish through two studies, in order to obtain an instrument that is adapted to young Spanish-speaking team-sport athletes.

To do so, various aims were established. The first aim was to examine the scale's psychometric properties, by testing the original instrument's factor structure with two first-order factors: task and social (Eys et al., 2009). Study 1 aimed to perform an exploratory analysis on every item's capacity to explain

each factor, while Study 2 aimed to confirm the two-factor structure. In this regard, hypothesis 1 established adequate factor validity with optimal goodness-of-fit index values for a model with two first-order factors, task and social cohesion, and with appropriate internal consistency values for the task cohesion and social cohesion factors.

The second aim was to assess the discriminant capacity of the instrument's factors in Study 2. The purpose was to determine the level of differentiation between factors and to test whether they were independent from each other. For this to occur, the relationship between the instrument factors (task cohesion and social cohesion) must be moderate (Kline, 2015). Therefore, hypothesis 2 stated that task cohesion and social cohesion factors would be moderately correlated to each other (Eys et al., 2009).

The third aim consisted in analysing the instrument's nomological validity with variables related to group cohesion. Player satisfaction was the variable chosen to assess such validity. Based on theory, it has been deemed as a direct consequence of cohesive groups (Aoyagi, Cox & McGuire, 2008; Jeffery-Toson, et al. 2011; Leo, Sánchez-Miguel, Sánchez-Oliva, Amado & García-Calvo, 2014). Considering the previously obtained results, hypothesis 3 established that task and social cohesion would be positively correlated with player satisfaction.

Lastly, to ensure that the assessment instrument behaved identically in all groups under study, the fourth aim was to examine factor invariance in Study 2. Differences in cohesion were previously found depending on athletes' age group (Carron, Colman, Wheeler y Stevens, 2002). Therefore, it seems necessary to test whether the results obtained can be generalised to the different subgroups. In this regard, hypothesis 4 stated that YSEQ's factor structure would be invariant regardless of the participants' age group.

STUDY 1

MATERIAL AND METHOD

DESIGN

According to the classification system proposed by Ato, López and Benavente (2013), the present study corresponds to the instrumental methodology, since its aim was to validate the Youth Sport Environment Questionnaire (YSEQ; Eys et al., 2009) for Spanish.

SAMPLE

A total of 231 players aged 11 to 16 (M = 13.19; SD = 1.13) participated in Study 1. There were 182 male (M = 13.25; SD = 1.26) and 49 female (M = 12.96; SD = 0.99), and they played one of the following team sports: basketball (n = 30), handball (n = 18), football (n = 164) or volleyball (n = 19). The athletes belonged to U14 (n = 141; M = 12.40; SD = 0.57) and U16 (n = 90; M = 14.42;

SD = 0.54) age groups and were competing in a total of 20 teams of various Spanish clubs.

INSTRUMENTS

Group cohesion in young athletes: In order to analyse young players' perception on their team's group cohesion, an adaptation of the Youth Sport Environment Questionnaire (YSEQ; Eys et al., 2009) for Spanish was used. This instrument consists of 18 items, eight to analyse task cohesion (e.g. "I like the way we work together as a team") and eight to assess social cohesion (e.g. "We stay united outside the court"). Moreover, it includes two negative items in order to detect invalid answers (e.g. "I don't get on well with my team mates"). The answers to these two items that were considered invalid were disregarded and not used for further analysis. The answers to all items were provided on a 9-point Likert-type scale, from 1 (*totally disagree*) to 9 (*totally agree*).

PROCEDURE

This research was approved by the Bioethics Committee of the university of the first author (239/2019). Furthermore, the participants involved in the study confirmed their consent, confidentiality and answer anonymity according to the ethical guidelines provided by the American Psychological Association (2010). Subsequently, the steps established by Muñiz, Elosua and Hambleton (2013) in their methodological proposal were followed in order to obtain a valid and reliable adaptation process of the YSEQ-S in young athletes and to achieve greater data objectivity and optimisation. The first stage consisted in the translation of the original scale into Spanish by a professional translator, who had 18 years of experience within the sport psychology field.
In the second stage, three experts individually analysed every item, paying special attention to translation quality and item adaptation. The group of experts was composed of doctors in Sport Sciences and university professors with more than seven years of experience in teaching and research, more than 50 papers published in high-impact journals and broad experience in the validation of questionnaires containing variables related to sport psychology. Besides, all experts had advanced level of English (Cambridge First Certificate in English). Therefore, according to the recommendations by Escobar-Pérez and Cuervo-Martínez (2008), the group of experts proved broad experience in the translation and adaptation of methodological scales and in the context in which the validation was being conducted. During the instrument translation and adaptation, attention was paid to every item's content as regards concept representation, relevance and clarity. The item was not completed until total agreement was reached by the group of experts. Furthermore, Cohen's Kappa (Cohen, 1968) was calculated to assess inter-expert reliability, yielding almost perfect agreement (k = 0.825; Landis & Koch, 1977).

In the third stage, 12 players (U14 and U16) were requested to complete the questionnaire in order to identify issues in the items' content. Subsequently, data were collected to confirm the scale's factor validity. To do so, the principal investigator contacted the coaches and club managers to explain in detail the

research aims and the steps to be followed in every stage. Once all clubs selected as potential participants had been reached, the principal investigator contacted again those who accepted to be involved in the project and agreed on a date to start completing the scale. Since the participants were underage, they were requested to ask their father, mother or legal guardian for approval through a consent form. The athletes were also informed that participation was completely voluntary and anonymity was guaranteed. The questionnaire was administered right before a training session, with no presence of any member of the club and supervised by a researcher at all times. Questionnaire completion lasted approximately six minutes.

STATISTICAL ANALYSIS

Statistical software Mplus 7.3 (Muthén & Muthén, 1998-2019) was used to analyse the factor structure of the group cohesion scale for young athletes. This factor structure was estimated applying exploratory structural equation modelling (ESEM; Marsh et al., 2009; Figure 1). Oblique target rotation was used, the main loadings were freely estimated, while the cross-loadings were targeted to be as close to zero as possible (Asparouhov & Muthén, 2009). Within structural equation modelling, ESEM can be considered to be an integration of the best features of exploratory and confirmatory factor analysis (CFA; Marsh, Morin, Parker & Kaur, 2014). One of the major advantages of this model is that it allows for cross-loading of the elements in multiple factors, providing a more flexible, natural and valid structure (Asparouhov & Muthén, 2009; Marsh et al., 2014). Furthermore, according to these authors, it is a particularly interesting approach to assess the psychometric properties of multidimensional scales where factors are correlated.

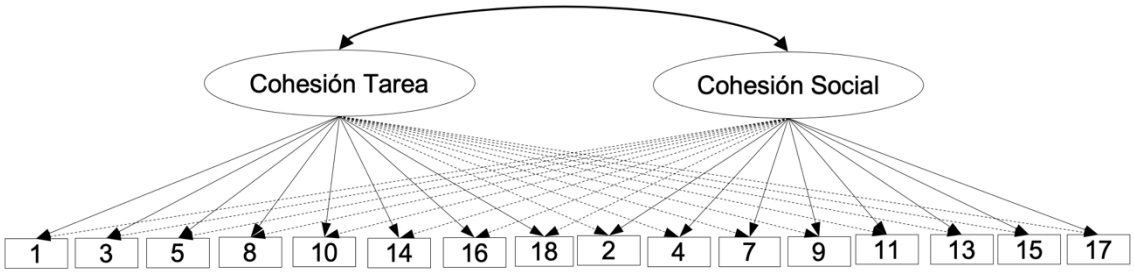

Figure 1. Factor analysis of YSEQ-S through exploratory structural equation modelling.

The following indices were calculated in order to assess the model's goodness of fit: chi-square (χ^2), degrees of freedom (df), comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA) and standardised root mean square residual (SRMR). CFI and TLI are acceptable when their values are above 0.90 and excellent when they are above 0.95 (Hu & Bentler, 1999). Furthermore, according to Cole and Maxwell (1985), the model will be well-fitted if RMSEA and SRMR are below 0.06. Lastly, Cronbach's alpha and coefficient omega were calculated to assess the scale's reliability.

RESULTS

Factor structure and internal consistency. In order to confirm the original factor structure developed by Eys et al. (2009) and consisting in two first-order factors—task cohesion (eight items) and social cohesion (eight items)—ESEM was conducted. This factor structure yielded adequate values of the goodness-of-fit indices: $\chi^2 = 158.81$, df = 89, $p < 0.001$, CFI = 0.92, TLI = 0.90, RMSEA = 0.05 (95% CI [0.043, 0.073]), SRMR = 0.04. Table 1 contains the standardised factor loadings obtained for each item in their corresponding factor. All values were adequate ($\lambda > 0.400$), except that for item 16, which presented factor loading of 0.371. In spite of this, the cross-loading with social cohesion factor was not significant. The majority of other cross-loadings presented low values ($\lambda < 0.200$); only items 4 ($\lambda = 0.248$), 13 ($\lambda = 0.205$) and 15 ($\lambda = 0.236$) yielded slightly higher values.

Both task cohesion (α = 0.79; ω = 0.79) and social cohesion (α = 0.86; ω = 0.86) factors yielded adequate internal consistency values (Nunnally & Bernstein, 1994). Once more, the values were similar to the original scale (Eys et al., 2009), internal consistency in the present study being higher for task cohesion (α = 0.89) and social cohesion (α = 0.94).

Table 1. *Standardised factor loadings for the exploratory structural equation modelling of Study 1*

	1	**2**
1. Todos compartimos el mismo compromiso con los objetivos del equipo	**0.618*****	
2. Invito a mis compañeros a hacer cosas conmigo		**0.425*****
3. Como equipo, todos tenemos la misma idea de juego	**0.482*****	
4. Algunos de mis mejores amigos están en este equipo	0.248*	**0.400*****
5. Me gusta la forma en que trabajamos juntos como equipo	**0.647*****	
6. No me llevo bien con los jugadores de mi equipo		
7. Salimos unos con otros siempre que sea posible		**0.521*****
8. Trabajamos unidos como un equipo	**0.583*****	
9. Contacto con mis compañeros a menudo (teléfono, whatsApp, Internet,…)		**0.955*****
10. Este equipo me brinda suficientes oportunidades para mejorar mi habilidades	**0.534*****	
11. Paso tiempo con mis compañeros de equipo		**0.635*****
12. Nuestro equipo no trabaja bien junto		
13. Seguiré en contacto con mis compañeros después de que termine la temporada	0.205*	**0.553*****
14. Estoy contento con el nivel de deseo de ganar de mi equipo	**0.503*****	
15. Nos mantenemos unidos fuera del campo	0.236*	**0.487*****
16. Mi forma de cómo jugar es la misma que la de mis compañeros	**0.371*****	
17. Contactamos a menudo unos con otros (teléfono, whatsApp, internet, etc.)		**0.959*****
18. Nos gusta la forma en que trabajamos juntos como equipo	**0.666*****	

Note. $^{*}p < 0.05$, $^{***}p < 0.001$. 1. Task cohesion: 1, 3, 5, 8, 10, 14, 16, 18; Social cohesion: 2, 4, 7, 9, 11, 13, 15, 17. Negative items: 6, 12. To keep it simple, cross-loadings below 0.20 are not shown in the table.

DISCUSSION

The aim of Study 1 was to conduct exploratory analysis on YSEQ's (Eys et al., 2009) original factor structure with Spanish adolescents. The scale was structured in two first-order factors (task cohesion and social cohesion) and proved to be valid and reliable. The limitations found regarding item 16's factor loading and the low cross-loading values were analysed by the group of experts, who did not consider it necessary to modify the item's content. With the aim to confirm this factor structure and to assess the instrument's discriminant capacity, nomological validity and invariance, Study 2 was conducted using a larger sample.

STUDY 2

MATERIAL AND METHOD

DESIGN

The design of Study 2 was the same as of Study 1 (instrumental design; Ato et al., 2013).

SAMPLE

A total of 641 players aged 10 to 16 (M = 13.28; SD = 1.14) participated in Study 2. There were 481 male (M = 13.34; SD = 1.16) and 133 female (M = 13.06; SD = 1.18), and they played one of the following team sports: basketball (n = 101), handball (n = 18), football (n = 435) or volleyball (n = 60). The athletes included in the study belonged to U14 (n = 345; M = 12.41; SD = 0.60) and U16 (n = 269; M = 14.38; SD = 0.54) age groups and were competing in a total of 52 teams of various Spanish clubs.

INSTRUMENTS

Group cohesion in young athletes: the same questionnaire as in Study 1 (YSEQ; Eys et al., 2009) was used to analyse young players' perception of group cohesion.

Player satisfaction. The Spanish version of the Athlete Satisfaction Questionnaire (ASQ: Riemer & Chelladurai, 1998) was applied to assess player satisfaction. The dimensions included in the ASQ were satisfaction with: individual performance (3 items), team performance (3 items), team task contribution (3 items), team social contribution (3 items), team ethics (3 items), team integration (4 items) and personal dedication to the team (4 items). The instrument begins with the introductory phrase: "I was satisfied with…", followed by the 23 items previously mentioned (e.g. "… the extent to which this team is achieving its goals"). The answers are provided on a 7-point Likert-type scale, ranging from 1 (not at all satisfied) to 7 (extremely satisfied). The data obtained from the confirmatory factor analysis (CFA) revealed adequate model fitting: χ^2 = 213.01, df = 209, p < 0.001, CFI = 0.97, TLI = 0.97, RMSEA = 0.03

(95% CI [0.022, 0.035]), SRMR = 0.04. Moreover, internal consistency was adequate for all ASQ dimensions: individual performance (α = 0.79; ω = 0.79), team performance (α = 0.83; ω = 0.83), team task contribution (α = 0.83; ω = 0.84), team social contribution (α = 0.76; ω = 0.77), team ethics (α = 0.75; ω = 0.76), team integration (4 items) and personal dedication (α = 0.75; ω = 0.75).

PROCEDURE

The same data collection procedure as in Study 1 was used.

STATISTICAL ANALYSIS

In Study 2, firstly, the questionnaire's factor structure was assessed through CFA using software Mplus 7.3 (Muthén & Muthén, 1998-2019). The same goodness-of-fit indices as in Study 1 were calculated (χ^2, df, p, CFI, TLI, RMSEA and SRMR). Secondly, internal consistency was examined through two parameters: Cronbach's alpha and coefficient omega. Thirdly, bivariate correlation analysis was conducted between the scale's factors to analyse the discriminant validity. Fourthly, the athlete's satisfaction construct was applied to assess the nomological validity. Lastly, an invariance analysis across players' age group was performed using the following model sequence: configural invariance, measurement invariance, strong invariance and strict invariance. In this case, it was not possible to assess the instrument's invariance across sport and gender due to the limited number of participants available in some subgroups of these variables. To do so, the different models were compared based on the changes observed in the goodness-of-fit indices, considering increases in CFI, TLI, RMSEA and SRMR smaller than 0.015 as evidence of factor invariance (Cheung & Rensvold, 2002).

RESULTS

Factor structure. CFA was conducted following Byrne's (2001) guidelines. Maximum likelihood estimation method was used, ensuring that the estimation results were robust and not affected by the lack of multivariate normality. YSEQ-S' factor structure, composed of two first-order factors, yielded adequate goodness-of-fit index values: χ^2 = 243.10, df = 101, p < 0.001, CFI = 0.95, TLI = 0.94, RMSEA = 0.05 (95% CI [0.040, 0.056]), SRMR = 0.04. Furthermore, Figure 2 reveals how factor loadings for task cohesion (λ = 0.602–0.781) and social cohesion (λ = 0.477–0.774) factors presented adequate values.

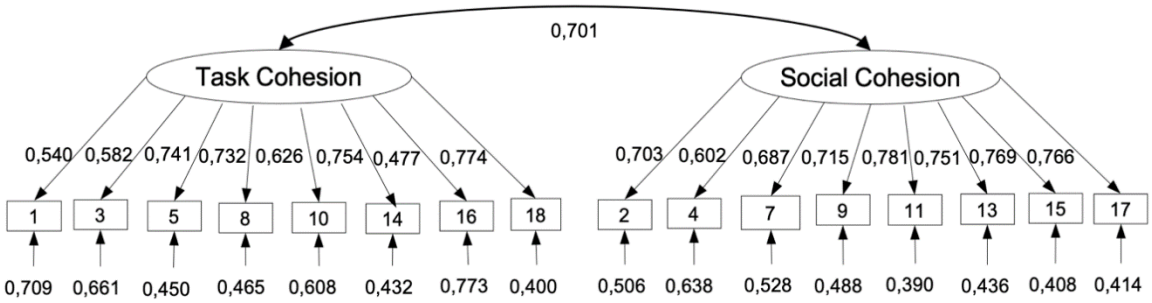

Figure 2. Confirmatory factor analysis of YSEQ-S in Study 2.

Descriptive statistics and internal consistency. Table 2 contains the descriptive statistics of both YSEQ-S' factors. Mean scores were above the central values in task cohesion (*M* = 6.88; *SD* = 1.45) and social cohesion (M = 6.98; DT = 1.68). Internal consistency values were acceptable for both task cohesion (α = 0.86; ω = 0.86) and social cohesion (α = 0.90; ω = 0.90) factors (Nunnally & Bernstein, 1994).

Discriminant validity and nomological validity. Firstly, in order to determine YSEQ-S' discriminant validity, Table 2 shows the correlations between the two factors of the measuring scale. Significant, positive, moderate correlations were found between the task cohesion and social cohesion factors. With regard to YSEQ-S' nomological validity, both cohesion factors yielded positive correlations with the seven player satisfaction factors ($p < 0.001$).

Table 2. *Descriptive statistics, internal consistency, discriminant validity and nomological validity of Study 2*

	M	*SD*	α	ω	1	2	3	4	5	6	7	8	9
1.TC	6.88	1.45	0.86	0.86	0.70***	-	0.55***	0.55***	0.66***	0.54***	0.63***	0.74***	0.48***
2.SC	6.98	1.68	0.90	0.90	-		0.41***	0.29***	0.50***	0.50***	0.45***	0.40***	0.38***

Note. ***p < 0,001. 1. Task cohesion; 2. Social cohesion; 3. Individual performance; 4. Team performance; 5. Team task contribution; 6. Team social contribution; 7. Team ethics; 8. Team integration; 9. Personal dedication to the team.

Invariance across age group. Invariance of YSEQ-S' factor structure was analysed considering the participants' age group. To do so, multigroup analysis was applied. Firstly, the factor structure was tested independently for every age group (U14 and U16). Afterwards, different nested models were examined and compared based on the changes observed in the goodness-of-fit indices, taking the model with no restrictions as reference. Table 3 shows that CFA yielded appropriate goodness-of-fit index values for U14 and U16 teams. Besides, the three models with restrictions presented optimal goodness of fit, with increases in CFI, TLI, RMSEA and SRMR not larger than 0.01 (Cheung & Rensvold, 2002).

Table 3. *Invariance analysis across age group of Study 2*

	χ^2	$\Delta\chi^2$	*df*	*CFI*	*ΔCFI*	*TLI*	*ΔTLI*	*RMSEA*	*ΔRMSEA*	*SRMR*	*ΔSRMR*
Age group											
Model 0. U14	209.22	-	102	0.92	-	0.92	-	0.05	-	0.05	-
Model 0. U16	221.00	-	102	0.92	-	0.91	-	0.06	-	0.05	-
Model 1. Configural invariance	430.05	-	204	0.92	-	0.91	-	0.06	-	0.05	-
Model 2. Weak invariance	506.54	76.48	220	0.91	-0.01	0.90	0.01	0.06	<0.001	0.06	0.01
Model 3. Strong invariance	543.15	36.61	236	0.90	-0.01	0.90	<0.001	0.06	<0.001	0.06	<0.001
Model 4. Strict invariance	543.15	<0.01	236	0.90	<0.001	0.90	<0.001	0.06	<0.001	0.06	<0.001

DISCUSSION

The aims of Study 2 were to confirm the factor validity and the reliability analysed in Study 1 and to assess discriminant and nomological validity and factor invariance. CFA revealed, once more, adequate goodness-of-fit index values for YSEQ-S' factor structure (Eys et al., 2009), which was composed of two first-order factors and presented optimal internal consistency values. Moreover, YSEQ-S' discriminant and nomological validity were confirmed using the variable athlete's satisfaction, yielding similar values to those obtained by Martin et al. (2013). Furthermore, YSEQ-S proved to be invariant across the age groups analysed in the study.

GENERAL DISCUSSION

The aim of the present research was to translate and adapt the YSEQ to Spanish and to examine its psychometric properties with U14 and U16 Spanish players of different team sports. To do so, the factor structure previously reported by Eys et al. (2009) in the original version was confirmed through Study 1 and Study 2. Besides, the instrument's reliability, discriminant validity, nomological validity and factor invariance across age group (U14 and U16) were analysed. In light of the results of both studies, YSEQ-S seems to be a valid and reliable instrument to assess team environment in youth team sports. More specifically, both Study 1 through ESEM and Study 2 through CFA yielded acceptable goodness-of-fit index values, thus confirming YSEQ's factor structure (Eys et al., 2009). Furthermore, acceptable and significant factor loadings were found in all items. These data are in keeping with the validations for Persian (Eshghi et al., 2015), Czech (Siska et al., 2014) and Portuguese (Junior et al., 2018), and even coincided with the latter on item 16, which presented the lowest factor loading. Likewise, internal consistency values for task cohesion and social cohesion factors were also adequate in both studies (Nunnally & Bernstein, 1994) and similar to previous validations for other languages (Eshghi et al., 2015; Eys et al., 2009; Junior et al., 2018). Consequently, YSEQ-S' validity and reliability were proved, confirming hypothesis 1 of the present study.

The aim of Study 2 was to examine the discriminant validity between the task cohesion and the social cohesion factors, evidenced in YSEQ-S' factor structure. Positive, moderate correlation (Kline, 2015) was obtained between the two factors, the value being lower than that of the Persian version (r = 0.89; Eshghi et al., 2015) and slightly higher than that of the original validation (r = 0.45; Eys et al., 2009). Moreover, this positive correlation was proved in previous studies involving young athletes (Bosselut, McLaren, Eys & Heuzé, 2012; McLaren, Newland, Eys & Newton, 2017). Therefore, the results suggest that there is a relationship between YSEQ-S' factors since they belong to the same construct, but they are still different since correlations were not close to 1 (Kline, 2015). Thus, hypothesis 2 was confirmed.

The next aim was to assess the questionnaire's nomological validity using the variable athlete's satisfaction. Positive correlations were obtained between the

two group cohesion factors and every factor included in the variable satisfaction. These results are in agreement with the validation conducted by Martin et al. (2013) in children and with other previous studies (Aoyagi et al., 2008; Jeffery-Tosoni, et al. 2011). All of them reported stronger association between task cohesion and satisfaction than between social cohesion and satisfaction. Therefore, hypothesis 3 was confirmed.

Lastly, the scale's invariance across age group was examined in Study 2. In general, the goodness-of-fit index values obtained for the models with and without restrictions revealed that YSEQ-S was invariant across U14 and U16 groups. This type of invariance was previously tested using other psychological variables (e.g. team resilience; López-Gajardo, González-Ponce, García-Calvo, Ponce-Bordón & Leo, 2020). Therefore, hypothesis 4 of the present research was confirmed.

LIMITATIONS AND FUTURE PERSPECTIVES

Despite the fact that the present research proposes a valid and reliable instrument to assess group cohesion in young athletes, it presents certain limitations that must be acknowledged before it is used in the future. The first limitation was that participants of only four team sports were included, mostly football players. Therefore, although these are the most representative sport modalities, it would be positive to extend the YSEQ-S to other sports. Another limitation of this research was the small number of female participants. Thus, it would be advisable to increase the sample size of female players of every sport included in the study in order to determine whether the YSEQ-S is invariant across gender (Leo et al., 2015). And lastly, although Spanish is widely spoken across Latin America, the specific linguistic nuances used in every country must be taken into account by authors who would like to apply the YSEQ-S. In future studies, it would be interesting to use the YSEQ-S with players from other Spanish-speaking countries and to examine the instrument's cross-cultural validity.

CONCLUSIONS

In light of the results of the two studies conducted in this research, it was confirmed that the YSEQ-S presented adequate psychometric properties that were in accordance with previous studies. It presented appropriate factor validity, with optimal goodness-of-fit index values for a model composed of two first-order factors (task cohesion and social cohesion) and adequate internal consistency values for the task cohesion and social cohesion factors. Furthermore, it showed adequate discriminant validity, with moderate correlations between the task cohesion and the social cohesion factors, and adequate nomological validity, task cohesion and social cohesion being positively correlated to the variable satisfaction. Lastly, the YSEQ-S showed invariant factor structure across age group. Therefore, the YSEQ-S proved to be a valid and reliable instrument to assess the level of group cohesion in adolescent Spanish sport teams.

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