Preliminary validation of a Spanish version of the Athlete Engagement Questionnaire (AEQ)

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VALIDACIÓN PRELIMINAR DE UNA VERSIÓN ESPAÑOLA DEL ATHLETE ENGAGEMENT QUESTIONNAIRE (AEQ)

KEYWORDS: Engagement, athletes, AEQ, validity, reliability.

ABSTRACT: The Athlete Engagement Questionnaire (AEQ) has showed evidence of its validity and reliability for measuring engagement in athletes. Engagement in athletes is a positive and persistent experience characterized by emotions and cognitions of confidence, vigor, dedication and enthusiasm. The purpose of this study was to adapt the AEQ into Spanish. AEQ-Spanish was administered to a sample of 509 Spanish athletes and data were subjected to a confirmatory factor analysis. The original model comprising four factors (confidence, vigor, dedication and enthusiasm) was replicated. All estimated parameters were statistically significant and overall fit of the model was reasonable (indexes of goodness of fit reached the minimum values). The values of Cronbach´s alpha were also satisfactory for each factor with values above .70 cutoff. In conclusion, the Spanish version of AEQ offers similar psychometric properties to the findings in original version and it will allow researchers to carry out research in the Spanish context to identify personal and situational factors that contribute to engagement.

Kahn was the author of the first scholarly article on engagement at work (Schaufeli, 2013). Kahn (1990) defined it as "the harnessing of organization members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances" (p. 694). A few years later, in 1997, Maslach and Leiter presented work engagement as antithesis of burnout (Bakker, Schaufeli, Leiter and Taris, 2008). The conceptualization of Maslach and Leiter (1997) characterizes engagement in terms of energy, involvement and efficacy, the direct opposites of exhaustion, cynicism and reduced personal accomplishment, the three burnout dimensions. According to this perspective, engagement and burnout are the endpoint of a continuum (Maslach, Schaufeli and Leiter, 2001). However, there is an alternative view that considers work engagement as a concept independent of burnout, although negatively related

(Schaufeli, 2013). Thus, work engagement was defined and operationalized as ''a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption'' (Schaufeli, Salanova, González-Romá and Bakker, 2002, p. 74).

In the domain of sport, aimed engagement is also an independent opposite construct to athlete burnout. After several studies with elite athletes (Lonsdale, Hodge and Jackson, 2007; Lonsdale, Hodge and Raedeke, 2007), the first measurement of athlete engagement, the Athlete Engagement Questionnaire (AEQ), was developed. It was composed of four dimensions: confidence, vigor, dedication and enthusiasm. Lonsdale et al. (2007b) emphasized the importance of engagement as a variable to include in promotion programs of positive sports experiences. There is not a specific instrument for the measurement of engagement in Spanish athletes, so the purpose of this study was to develop a Spanish version of AEQ.

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Method

Participants

A convenience sample of 509 Spanish athletes participated in this study. They were 377 men and 132 women with M_{age} (SD)= 17.36 (4.58) years. The type of sports the most represented in the sample were football (n= 198), swimming (n= 82), rugby (n= 61), indoor football (n= 33), and table tennis (n= 30) of all 32 different type of sports. Each week they had three training sessions (M= 3.66) with a training time of 1.99 hours of average. Ethical approval to conduct the study was provided by Ethical Committee of the University.

Instruments

The original version of the Athlete Engagement Questionnaire (Lonsdale et al., 2007a) was translated and adapted into Spanish. It is composed of 16 items listed under four factors, each comprising four items: confidence, vigor, dedication and enthusiasm. Confidence is the belief in one's own ability to accomplish a high level of performance and the goals ('I believe I am capable of accomplishing my goals in sport'). Vigor is energy (physical, mental and emotional; 'I feel really alive when I participate in my sport'). Dedication represents the purpose to invest everything necessary to attain the important goals ('I am determined to achieve my goals in sport'). Finally, enthusiasm includes feelings of excitement or enjoyment about the sport ('I feel excited about my sport'). Lonsdale et al. (2007a) offered evidence of validity and reliability of the questionnaire. In the last of their three studies (Lonsdale et al., 2007a ; Study 3), data exhibit good model fit: scaled χ^2= 262.57 (p < .01), Root Mean Error of Approximation (RMSEA)= .07 (90% Confidence Interval: .06–.08), Comparative Fit Index (CFI)= .98, and Tucker-Lewis Index (TLI)= .98. Correlations among the four latent factors were moderate and high (.54 to .85) and alpha coefficients ranged from .84 to .89. The response scale is a five-option Likert scale ranging from (1) "almost never" to (5) "almost always".

Procedure

The AEQ was translated into Spanish including verification by back-translation (Muñiz, Elosua and Hambleton, 2013). Comprehensibility of the translated items was evaluated by a focus group.

Data was collected in a weekly training session by researchers. Athletes (or their tutor for minors) signed the consent form and then a standard procedure was carried out.

Prior to completing the questionnaire, participants were instructed to respond anonymously to the questionnaire. The term engagement was not mentioned at any time in order not to generate bias in the answers.

Data analysis

No missing values or out-of-range values were detected for any of the items in the AEQ, so first basic descriptive statistics of each item of the AEQ were calculated. Then confirmatory factor analyses were performed with version 19 of IBM SPSS Amos (Arbuckle, 2010). For the evaluation of the model fit the following indexes were used: quotient between χ^2 and its degrees of freedom, TLI, CFI, RMSEA and Standardized Root Mean Square Residual (SRMR). Analyses of items and analyses of reliability of the factors and items were also calculated.

Results

Descriptive statistics

Table 1 shows descriptive statistics for each item and factor of the AEQ. As far as the items are concerned, means are between 3.54 (item 2 of confidence) and 4.65 (items 3 and 4 of enthusiasm). In respect of the standard deviations, their values are between 0.643 (item 3 of enthusiasm) and 1.033 (item 2 of confidence). All the items show a negative skewness, and the kurtosis was predominant positive. About the factors, confidence was the one with the lowest mean (3.734) and enthusiasm the factor with the highest (4.597). Standard deviations ranged from .579 (enthusiasm) and .776 (dedication). The skewness was negative for all factors and the kurtosis positive with the exception of confidence factor (-.160).

Confirmatory factor analysis (CFA)

The original engagement four-factor model with four items per factor proposed by Lonsdale et al. (2007a) was specified allowing all possible between-factor correlations. Maximum likelihood method was used to estimate the parameters and bootstrap for the standard errors. The model was over-identified with 136 elements in variance-covariance matrix being 38 the total number of parameters to estimate (16 factor loadings, 16 error variances and six correlations between factors), and 98 the number of degrees of freedom. Finally, to achieve a better overall fit to the data, the original model was re-specified by adding correlations between the errors of items 1 and 3 of confidence, 1 and 2 of vigor, and 1 and 2 of enthusiasm.

Table 1 shows factor loadings and error variances with their corresponding p-values. All parameters were statistically significant. Also, significant positive correlations ($p < .001$) were found between all factors (Table 2). The lowest correlation was between confidence and enthusiasm ($r = .396$) and the highest correlation between vigor and enthusiasm ($r = .764$).

Regarding the overall fit of the model, the quotient between χ^2 (296.607; $p < .001$) and its degrees of freedom (95) was 3.122. The remaining fit indexes were GFI= .932, TLI= .938, CFI= .951, RMSEA= .065 (90% IC; .056-.073), and SRMR= .054. Table 3 shows that this model (Model 3) offered better fit indexes that the one-factor model (Model 1), the four-factor model without re-specification (Model 2) and the hierarchical model (Model 4), where the four primary factors of AEQ are grouped into a single higher-order factor.

Reliability analysis

Table 4 shows the values of Cronbach's alpha for each one of the factors and corrected item-total correlation ($r_{item-total}$) and values of alpha (α) if item is deleted. In all factors, values of Cronbach's alpha would decrease if any of its items were eliminated, with the exception of item 4 of vigor.

Discussion

The objective of this study was to adapt the AEQ into the Spanish context. The results showed that the Spanish version presents similar psychometric properties to the findings in the original one. Like the AEQ, AEQ-Spanish comprises four correlated factors, each with four items. Only slight modifications of this structure (to add three correlations between error variances) were suggested by confirmatory factor analyses. In addition, the internal consistency of the four factors was satisfactory. Also it was satisfactory the individual functioning of each item. The only item that would increase the value of alpha if it were deleted was the item 4 of vigor, but the corrected item total correlation was above the .40 cutoff.

Several personal and situational factors such as burnout (Jowett, Hill, Hall and Curran, 2016; Lonsdale et al., 2007a; Lonsdale et al., 2007b), athletic identity (Babić, Šarac, Missoni and Sindik, 2015), basic needs satisfaction (Hodge, Lonsdale and Jackson, 2009; Jowett et al., 2016), are related with engagement, but they had been not investigated in Spanish speaking athletes because of the lack of an engagement instrument. The more important practical implication is that AEQ-Spanish will allow researchers to carry out research about engagement in Spanish context.

Nevertheless, AEQ-Spanish needs more research about its psychometric properties. The sample of this study presents a gender unbalance (women athletes' make up only one quarter of the sample). Although Martins, Rosado, Ferreira and Vveinhart (2015) demonstrated the invariance of the model across multigroup analysis, the effects of gender on engagement have rarely been studied. Finally, the concurrent validity of AEQ-Spanish should be tested with the Spanish version of the Utrecht Work Engagement Scale (Salanova, Schaufeli, Llorens, Peiró and Grau, 2000) adapted to the sports context.

Factor	Item	Mean (SD)	Skewness SE=.108	Kurtosis SE= .216	λ	δ
Confidence	1	3.78 (.867)	-.337	-.018	.625**	.609**
	2	3.54 (1.033)	-.334	-.389	.849**	.279**
	3	3.60 (.965)	-.411	.002	.663**	.560*
	4	4.02 (.858)	-.647	.016	.823*	.323**
Vigor	1	4.11 (.848)	-.589	-.406	.759*	.424**
	2	4.04 (.841)	-.485	-.415	.754*	.431**
	3	4.18 (.833)	-.817	.270	.795*	.368**
	4	4.14 (.846)	-.810	.478	.564**	.682*
Dedication	1	4.16 (.938)	-.932	.196	.793*	.371**
	2	4.11 (.952)	-.912	.264	.736*	.458**
	3	4.19 (.886)	-.911	.276	.741*	.451**
	4	4.16 (.950)	-1.045	.667	.815*	.336**
Enthusiasm	1	4.63 (.677)	-1.898	3.469	.725*	.474**
	2	4.46 (.784)	-1.403	1.567	.734**	.461**
	3	4.65 (.643)	-1.849	2.910	.843*	.289*
	4	4.65 (.669)	-2.073	4.289	.738*	.455**
Confidence		3.734 (.742)	-.325	-.160		
Vigor		4.116 (.680)	-.646	.205		
Dedication		4.155 (.776)	-1.043	.805		
Enthusiasm		4.597 (.579)	-1.894	4.429		

Notes: SD= standard deviation; SE= standard error; λ= factor loading, δ= error variance

*p<.05, **p<.01.

Table 1. Descriptive statistics, factor loadings and error variances of the items of the Athlete Engagement Questionnaire (AEQ)

	Confidence	Vigor	Dedication	Enthusiasm
Confidence	1			
Vigor	.523	1		
Dedication	.630	.715	1	
Enthusiasm	.396	.764	.638	1

Table 2. Correlations between factors of Athlete Engagement Questionnaire (AEQ)

Indexes	Model 1 (one-factor model)	Model 2 (four-factor model)	Model 3 (Model 2 re-specified)	Model 4 (Hierarchical model)
χ^2	1,275.880	372.195	296.607	336.024
df	104	98	95	97
χ^2/df	12.268	3.849	3.122	3.464
GFI	.702	.914	.932	.921
TLI	.672	.917	.938	.926
CFI	.716	.932	.951	.942
RMSEA	.149	.075	.065	.070
RMSEA CI	.142 - .156	.067 - .083	.056 - .073	.062 - .078
SRMR	.098	.055	.054	.063

Notes: χ^2 = chi square statistic, df = degrees of freedom, GFI= Goodness of Fit Index, TLI= Tucker-Lewis Index, CFI= Comparative Fit Index, RMSEA= Root Mean Square Error of Approximation, CI= Confidence Interval, SRMR= Standardised Root Mean Square Residual.

Table 3. Goodness of fit of the four models examined

Factor	Items	$r_{item\text{-}total}$	α
Confidence (α = .805)	1	.563	.783
	2	.672	.732
	3	.613	.760
	4	.647	.746
Vigor (α = .822)	1	.719	.741
	2	.723	.739
	3	.665	.767
	4	.487	.846
Dedication (α = .853)	1	.723	.800
	2	.660	.827
	3	.649	.831
	4	.744	.791
Enthusiasm (α = .852)	1	.716	.803
	2	.694	.816
	3	.733	.797
	4	.643	.832

Notes: α = Cronbach's alpha, $r_{item\text{-}total}$ = corrected item-total correlation.

Table 4. Values of Cronbach's alpha, corrected item-total correlation, and values of alpha if item deleted

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PALABRAS CLAVE: *Engagement*, deportistas, AEQ, validez, fiabilidad.

RESUMEN: El *Athlete Engagement Questionnaire* (AEQ) es un instrumento que ha mostrado evidencias de su validez y fiabilidad para la medida del *engagement* en deportistas. Este se define como una experiencia positiva y mantenida en el tiempo caracterizada por emociones y pensamientos de confianza, vigor, dedicación y entusiasmo. El propósito de este estudio fue adaptar el AEQ al español con una muestra de 509 deportistas españoles. Los datos fueron sometidos a un análisis factorial confirmatorio, replicándose el modelo original de cuatro factores (confianza, vigor, dedicación y entusiasmo). Todos los parámetros estimados fueron estadísticamente significativos y el ajuste general del modelo fue aceptable, alcanzando los índices de bondad de ajuste los valores mínimos requeridos. Los valores de alfa de Cronbach de cada factor también fueron satisfactorios con valores por encima de .70. Con estos datos, se puede concluir que la versión española de AEQ ofrece propiedades psicométricas similares a la versión original. Por ello, al disponer de una herramienta de medida adecuada, esto permitirá a los investigadores realizar estudios en el contexto español para identificar factores personales y situacionales que contribuyen al *engagement*.

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