

The Construct Validity of the Spanish Version of the ABQ Using a Multi-Trait/Multi-Method Approach

Thomas D. Raedeke¹, Constantino Arce², Cristina De Francisco^{3*}, Gloria Seoane² and María J. Ferraces²

1 East Carolina University, USA

2 University of Santiago de Compostela, Spain

3 Catholic University of San Antonio, Spain

Título: Validez de constructo de la versión española del ABQ a través de aproximación multi-rasgo/multi-método

Resumen: El objetivo de la presente investigación fue evaluar la validez de constructo de la versión española del Athlete Burnout Questionnaire (ABQ) utilizando la aproximación multi-rasgo/multi-método (MTMM). El ABQ fue administrado a una muestra de 302 deportistas españoles, junto con dos otros cuestionarios, el Maslach Burnout Inventory-General Survey (MBI-GS) y la Escala de Depresión, Ansiedad y Estrés (DASS-21), que miden respectivamente burnout en el contexto organizacional e indicadores de depresión, ansiedad y estrés. El análisis multi-rasgo/multi-método se hizo desde la perspectiva de los modelos de ecuaciones estructurales. Los resultados obtenidos por medio de la comparación entre cuatro modelos revelaron que la versión española del ABQ tiene validez convergente y discriminante interna como lo evidencian las altas correlaciones observadas entre las dimensiones semejantes del burnout medidas por los dos cuestionarios de burnout y las bajas correlaciones observadas entre dimensiones no equivalentes. Además, se ha podido concluir que las medidas de burnout también disponen de validez discriminante externa dado que las correlaciones entre las dimensiones del burnout fueron más altas que las obtenidas entre los constructos únicos conceptualmente relacionados.

Palabras clave: Validez; burnout; ABQ; aproximación multi-rasgo/multi-método.

Abstract: This study was designed to evaluate construct validity evidence associated with the Spanish version of the Athlete Burnout Questionnaire (ABQ) using a multi-trait/multi-method (MTMM) approach. The ABQ was administered to a sample of 302 Spanish athletes, along with two other questionnaires including the Maslach Burnout Inventory-General Survey (MBI-GS) and the Depression, Anxiety, Stress Scale (DASS-21), which respectively measure burnout in organizational settings and indicators of ill-being including depression, anxiety and stress. A structural equation modeling approach to a MTMM analysis was used. Results revealed by comparative analysis of four models that the Spanish version of ABQ has convergent and internal discriminant validity evident by high correlations between matching burnout subscales across two measures and lower correlations between non-matching dimensions. In addition, the burnout measures exhibited external discriminant validity as the correlations between burnout dimensions were higher than those seen between conceptually related, but unique, constructs.

Key words: Validity; burnout; ABQ; multi-trait/multi-method.

Introduction

Athlete burnout has drawn considerable attention from the sport science community as well as the general public through media attention. Although minimal research has attempted to examine its prevalence (Eklund, Smith, Raedeke, & Cresswell, 2012; Eklund & Cresswell, 2007; Gustafsson, Kenttä, Hassmén, & Lundqvist, 2007; Raedeke & Smith, 2009), the modern sport culture is thought to be replete with qualities thought to make burnout likely. Although research documenting these trends is sparse, a common belief is that today's athletes are specializing at relatively young ages and that training loads and psychosocial stressors associated with competitive sport participation are increasing (Malina, 2010). Despite the lack of evidence about its prevalence, athlete burnout is thought to have epidemiological significance due to the millions of sport participants across the globe and the negative toll it has on individuals suffering from it. Burnout is presumed to be associated with a variety of negative outcomes such as decreased motivation, sport discontinuation, and diminished psychological and physical well-being (Eklund et al., 2012).

In exploring factors that may potentially contribute to athlete burnout, researchers have not only linked this phenomenon to a variety of stress-related factors (e.g., Hill, Hall, & Appleton, 2010; Raedeke & Smith, 2004), they have also examined burnout from motivation perspectives including achievement motivation (Smith, Gustafsson, & Hassmén, 2010), commitment (Raedeke, 1997), self-determination (Lonsdale & Hodge, 2011; Perreault, Gaudreau, Lapointe, & Lacroix, 2007), and social cognitive theory (Lemyre, Hall, & Roberts, 2008) perspectives.

Understanding the nature of burnout, including antecedents and consequences, is predicated on having psychometrically sound assessment tools. Currently, the most commonly used measure of this construct in athletic populations is the Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2001, 2009). Although this scale was originally developed in English, in recent years it has been translated into several other languages including Arabic (Altahayneh, 2005), Chinese (Chen & Kee, 2008; Lu, Chen, and Cho, 2006), French (Perreault, Gaudreau, Lapointe, & Lacroix, 2007; Isoard-Gautheur, Oger, Guillet, & Martin-Krumm, 2010), German (Ziemainz, Abu-Omar, Raedeke, and Krause, 2004), Norwegian (Lemyre, Hall & Roberts, 2008; Lemyre, Roberts & Stray-Gundersen, 2007), Portuguese (Rosado, Mesquita, Correia, Colaço, 2009; Alvarez, Ferreira, & Borim, 2006), Spanish (Arce, De Francisco, Andrade, Arce, & Raedeke, 2010; De Francisco, Arce, Andrade, Arce & Raedeke 2009) and Swedish (Smith, Gustafsson, & Hassmén, 2010). Although the ABQ is commonly used, research specifically

* Dirección para correspondencia [Correspondence address]: Cristina De Francisco. Bachelor in Education. Faculty of Social Sciences and Communications. Catholic University San Antonio. Los Jerónimos Avenue, Guadalupe 30107, Murcia (Spain).
E-mail: cdefrancisco@ucam.edu

focused on examining the psychometric properties of translated scales is sparse. Therefore the purpose of the current study is to examine the psychometric properties of a Spanish version of the ABQ (ABQ-Spanish) through a multi-trait/multi-method evaluation.

Validity is widely considered the most fundamental issue in scale development, evaluation and usage (American Educational Research Association, 1999; Marsh, 1998; Rowe & Mahar, 2006). The central concern surrounding validity focuses on evaluating how well scores derived from the measurement tool reflect the construct they are designed to assess. Specifically, validity is the degree to which theory and evidence support the intended meaning and interpretation of scores derived from a measure. Contemporary views forward validity as a unified concept under the auspices of construct validity (AERA, 1999; Marsh, 1998; Zhu, 2012). Construct validity is defined as the extent to which scores derived from a measure assess the construct it is designed to measure rather than some other construct.

The first part of scale development efforts center on defining the conceptual underpinnings of the construct. Although the nature of burnout in both sport and organizational context continues to be discussed (Cox, Raedeke & Smith, 2009; Tisserand, & Taris, 2005), Raedeke (1995, 1997) initially cast athlete burnout as a psychological syndrome modeled after Maslach and Jackson's (1984) description of this phenomenon in human services where burnout was characterized by "emotional exhaustion, depersonalization, and reduced personal accomplishment" (p. 134). Although Maslach and Jackson's definition is well accepted, it was originally limited to people-oriented occupations where the provider-recipient relationship is of central importance. Raedeke (1995, 1997) highlighted the need to modify Maslach and Jackson's (1984) burnout definition to adjust for contextual differences between the role of an athlete and that of a human services provider as the provider-recipient relationship does not define the most central aspect of sport for athletes. Consequently, Raedeke extended emotional exhaustion to include physical exhaustion given the nature of the sport experience. Rather than describing reduced personal accomplishment in terms of relationships, Raedeke defined it in terms of sport performance and ability. Finally, depersonalization represents devaluation of and detachment from what is important in a particular domain such clients in the human service professions where depersonalization is represented by a negative and detached attitude toward them. Applied to athletes, Raedeke (1995, 1997) posited sport devaluation rather than depersonalization. Sport devaluation consists of negative attitudes toward sport and psychological detachment from sport to the point of developing a negative resentful attitude toward sport involvement.

Support for this syndrome-based burnout conceptualization is consistent with the extant research across a wide variety of sport and organizational contexts. For example, about the same time of Raedeke's (1995) burnout conceptualiza-

tion, Maslach and colleagues developed a General Survey version of the Maslach Burnout Inventory (MBI-GS) (Maslach, Jackson & Leiter, 1996). Similar to Raedeke (1995), emotional exhaustion was extended to include physical exhaustion. The perceived accomplishment scale was recast as personal efficacy to assess how effective individuals felt at work rather than with clients. Depersonalization was reconceptualized as a broader construct of cynicism, depicted by a negative and detached attitude toward one's job. Although this version of the MBI did not exist when Raedeke (1995) initiated development of the ABQ, both scales converge by including emotional/physical exhaustion, reduced sense of accomplishment or inefficacy, and devaluation or cynicism.

Additional support for the multidimensional conceptualization of the ABQ stems from qualitative studies on athlete burnout across a variety of sport types, cultures, and contexts (Creswell & Eklund, 2006b, 2007; Goodger, Wolfenden, & Lavallee, 2007; Gustafsson, Kenttä, Hassmén, & Johansson, 2008; Raedeke, Lunney, & Venables, 2002). Across these qualitative studies, researchers have supported that emotional/physical exhaustion, reduced sense of accomplishment, and devaluation characterize athletes' burnout experiences.

In describing the nature of burnout, another issue centers on whether burnout can be differentiated from other markers of mental ill-being such as depression, stress, and anxiety (Schaufeli, Maslach, & Marek, 1993). Some early researchers questioned whether burnout could be differentiated from depression (e.g., Schaufeli, Enzmann, & Girault, 1993). Likewise, given the conceptual overlap between stress and burnout, there was uncertainty as to whether burnout and stress can be differentiated (see Jackson, Scwhab, & Schuler, 1986; Maslach & Schaufeli, 1993). Although organizational psychology research has examined the extent to which burnout is both conceptually and empirically distinct from related states (e.g., Glass & McKnight, 1996; Leiter & Dunlap, 1994), those issues have not received much empirical investigation in the sport domain which is critical to understanding the nature of athlete burnout.

In addition to investigating the ABQ's conceptual underpinnings, another central part of scale development involves evaluating structural (Clark & Watson, 1995) or within-network (Marsh, 1998) validity evidence. This involves evaluating the internal structure or dimensionality of a construct. Research evaluating the ABQ through structural equation modelling and confirmatory factors analysis has found that the ABQ's hypothesized factor structure has an acceptable fit to the data based on a variety of incremental and absolute fit indices (for a review see Raedeke & Smith, 2009). More recently, researchers using confirmatory factor analysis evaluating a Swedish (Smith, et al. 2010) and Spanish (Arce, et al., 2010; De Francisco, et al. 2009) versions of the ABQ have also reported that specified factor structure fits athlete responses on the ABQ well.

Although confirmatory factor analysis provides insights on dimensionality of the ABQ, a multi-trait/multi-method (MTMM) approach provides another avenue for examining within network construct validity evidence. Theoretically, ABQ dimensions should strongly converge with equivalent subscales of an alternative measure (convergent validity and internal discriminant validity) with correlations between matched factors higher than those observed among non-equivalent factors. In addition, the correlations between the ABQ and the MBI-GS should be higher than that found between burnout and DASS scores (discriminant validity between traits). Using this approach, Creswell and Eklund (2006a) had athletes complete the ABQ (Raedeke & Smith, 2009) as well as the MBI-GS (Maslach et al., 1996). In addition, they had athletes complete anxiety and depression inventories, which are theoretically related, but conceptually distinct from burnout.

Based on a MTMM analysis, conceptually matching burnout dimensions (e.g., ABQ emotional/physical exhaustion with MBI-GS exhaustion) should be more strongly related than non-matching dimensions (e.g. ABQ emotional/physical exhaustion with MBI-GS cynicism). In support, conceptually matching burnout measures subscales showed moderate to strong latent intercorrelations (i.e. range from $|.64|$ to $|.73|$) whereas conceptually non-matching subscales across the measures showed low to moderate intercorrelations ranging from $|.24|$ to $|.53|$. In addition, both burnout measures demonstrated discriminant validity relative to depression and anxiety evident by low to moderate latent intercorrelations (range = $|.22|$ to $|.60|$). Although validity evidence was found for both burnout measures, the MBI-GS cynicism scale had some measurement difficulties that were not observed with the corresponding ABQ devaluation scale.

Although considerable validity evidence exists for scores derived from the ABQ, less research has evaluated the measurement properties of translated versions of the ABQ. Of those translations, most research has focused on the factor structure of the ABQ along with examining theoretical relationships of burnout with related constructs. Research has not yet evaluated the conceptual and measurement underpinnings of the ABQ-Spanish Version from a MTMM approach. Therefore, this study was designed to compare athlete responses on the Spanish version of the ABQ to another burnout measure and conceptually distinct markers of ill-being including depression, anxiety, and stress using an MTMM approach. Although Creswell and Eklund (2006a) included anxiety and depression, we also assessed stress given its conceptual overlap with burnout. Thus, this study extends previous research by evaluating the nature of burnout in a different culture than from which the original ABQ was developed and also evaluates whether stress and burnout can be differentiated in athletic populations.

Specifically, we hypothesized that conceptually matching burnout dimensions should be more strongly correlated than non-matching burnout dimensions across the Spanish ver-

sions of the ABQ and MBI-GS. Specifically, convergence should occur between (a) emotional and physical exhaustion (E) and exhaustion (EX), (b) devaluation (D) and cynicism (C) and (c) reduced sense of accomplishment (RSA) and professional efficacy (PE) from the ABQ and MBI-GS respectively. Second, we hypothesized that the relationship between equivalent constructs measured by different measures to be higher than the correlations between burnout and conceptually related measures including anxiety, depression, and stress.

Method

Design

A multi-trait/multi-method (MTMM) design was used through a structural equation modeling approach to provide construct validity evidence surrounding the use of the ABQ to assess athlete burnout. This approach enables a comparison of responses on the ABQ to an alternative measure of burnout as well as theoretically related but distinct constructs including anxiety, depression, and stress to evaluate convergent and discriminant validity evidence.

Participants

A sample of 302 Spanish athletes from 14 different sport modalities (track and field, basketball, cycling, fencing, soccer, indoor soccer, field hockey, judo, karate, swimming, canoeing, rowing, taekwondo, and kick boxing) participated in this study. Of the sample, 206 were male (68%) and 96 were female (32%) who ranged in age from 14-20 years of age ($M = 19.06$ and $SD = 3.88$). On average, athletes reported participating in competitive organized sport for an average of 6.95 years ($SD = 4.29$). They also reported practicing their respective sport between 1 and 10 ($M = 5.12$, $SD = 1.79$) times per week, anywhere from 60 and 240 minutes ($M = 117.28$, $SD = 31.63$) each practice session. A wide range of competitive levels were represented in the sample with 10.9% competing at local level, 26.8% at regional level, and 62.3% at the national level.

Instruments

Athlete Burnout Questionnaire (ABQ). The ABQ is multidimensional measure of athlete burnout (Raedeke & Smith, 2001, 2009) based on Raedeke's (1995, 1997) conceptualisation of this issue. The English version of the ABQ has demonstrated strong psychometric properties (for review see Raedeke & Smith, 2009). For this study, the Spanish version of the questionnaire was used which has showed a similar psychometric structure to the English version (Arce, et al., 2010). Similar to the original version of the ABQ, it contains fifteen items measuring the three hypothesized dimensions of athlete burnout including emotional and physical exhaustion (E), devaluation, (D) and a reduced sense of accomplishment (RSA) with 5 items existing for each subscale.

Items are based on a Likert type scale ranging from 1 “almost never” to 5 “almost always”.

Maslach Burnout Inventory-General Survey (MBI-GS). The MBI-GS (Schaufeli, Leiter, Maslach, & Jackson, 1996) is designed to assess burnout across a wide variety of work-related contexts. It consists of 16-item that assess three burnout dimensions including exhaustion, (EX, 5 items), cynicism, (C, 5 items) and professional efficacy (PE, 6 items). For this investigation the Spanish version was used which replicated the original structure of the inventory (Salanova & Schaufeli, 2000). Items were modified to be specific to the sport context by replacing “work” and “organization” to “sport” and “team” respectively. Each item is evaluated on a Likert response scale ranging from 1 “never” to 7 “always”.

Depression Anxiety Stress Scale (DASS-21). This measure was developed by Lovibond and Lovibond (1995a, 1995b) to assess markers of ill-being including stress, anxiety, and depression. The scale consists of 42 items, 14 items per factor (depression, anxiety, stress). For this study, we used a Spanish version of the scale (Bados, Solanas, Andrés, 2005) in which the total number of items was reduced to 21 (7 items per factor) and the scale items adapted to the Spanish culture. The Spanish version of the scale has demonstrated strong psychometric properties including reliability and validity evidence. The stress subscale was further adapted to sport context by asking the athletes to rate each statement specific to the sport setting. The response scale for all items ranged from 0 (not all true for me) to 3 (very true for me) or is there more accurate—“Not applicable to me” and “applies to me most of the time”.

The three measurement instruments (ABQ, MBI-GS, and DASS-21) were presented in booklet form. In addition to these primary measures, the booklet also included questionnaire items to assess socio-demographic (sex and age) and sport related variables including sport type, competitive level, years of practice, number of weekly training sessions and their duration.

Procedure

Initially, telephone contact was established with team management and coaches to explain the purpose of the study and ask permission to meet with athletes during a training session. After receiving the consent of clubs and coaches, athletes met in a group setting before a structured practice session and invited to participate by answering a survey packet containing the three questionnaires (ABQ, MBI-GS and DASS-21), plus other demographic items used to describe the sample. Data was collected by two psychologist specifically trained by the research team for this purpose. A standardized instruction protocol was used to ensure that athletes were aware of the voluntary nature of their study participation and the confidential nature of their responses.

Data analysis

Three types of data analyses were conducted in sequential order. First, the factor structure of the ABQ, MBI-GS and DASS-21 were evaluated through confirmatory factor analyses (CFA) using AMOS (Arbuckle, 2007). Second, we calculated the multi-trait/multi-method matrix with the correlations between factors (traits) of the three questionnaires (methods) obtained from CFA. Finally, a MTMM matrix level evaluation of construct validity involves comparing a series of four nested models by examining individual fit indices as well as comparisons between models with the χ^2 statistic.

Results

The initial measurement model

First we conducted a confirmatory factor analysis (CFA) for which we specified 9 factors (3 for each questionnaire), 52 observed variables (total number of items), and 52 error terms. The model was over-identify with 1378 elements in data matrix and 140 parameters to estimate which distribution was as follows: (1) 52 factor loadings, one of each hypothesized association item-factor fixing the remaining loadings to zero, (2) 52 error terms, one for each observed variable (item) keeping uncorrelated the error terms among them, and (3) 36 correlations between factors. ML was used to estimate parameters as implemented in AMOS (Arbuckle, 2007; Byrne, 2010). Although a significant difference was obtained between the implied and observed covariance matrices ($\chi^2(1238) = 2494.957, p < .001$), a reasonable fit was observed for the model based on the ratio of chi-square and degrees of freedom equal to 2.02, the comparative fit index equal to .781 and the root mean square error of approximation equal to .058 (90% CI .055-.061). Table 1 provides the standardized loadings for the items of the nine factors being all of them highly significant ($p < .001$) with the exception of the item 13 of MBI-GS corresponding to cynicism subscale (“I just want to play my sport and not be bothered”) which showed a clearly insufficient factor loading of .152 ($p = .014$).

Table 1. Factor loadings for ABQ, MBI-GS and DASS-21 subscales.

		ABQ			MBI-GS			DASS-21		
		E	D	RSA	EX	C	PE	DP	A	S
Items	1	.70	.39	.59	.75	.78	.43	.42	.41	.60
	2	.69	.71	.49	.77	.81	.54	.51	.49	.59
	3	.69	.76	.56	.71	.15	.71	.71	.50	.52
	4	.72	.64	.70	.53	.61	.55	.63	.53	.68
	5	.76	.36	.57	.71	.68	.63	.76	.57	.67
	6						.69	.62	.56	.47
	7							.49	.43	.67

E = Emotional and Physical Exhaustion, D = Devaluation, RSA = Reduced Sense of Accomplishment, EX = Exhaustion, C = Cynicism, PE = Professional Efficacy, DP = Depression, A = Anxiety, and S = Stress, M = Mean, SD = Standard Deviation.

Multi-trait/multi-method matrix

Table 2 provides multi-trait/multi-method matrix with the correlations between traits of the three measuring instruments derived by AMOS and Cronbach alpha coefficients on the main diagonal calculated with SPSS. According to hypothesis 1 it can be seen the highest correlations occurred between the same traits measured by different methods (ABQ and MBI-GS respectively) such as with E and EX ($r_{xy}=.855$, $p<.01$), D and C ($r_{xy}=.755$, $p<.01$) and RSA and PE ($r_{xy}= -.644$), $p<.01$). The correlations between non-equivalent burnout dimensions were generally lower in magnitude than those for matching dimensions. However, the correlation between RSA and C approached that found for RSA and PE. In addition, the correlations between matching subscales across two methods were higher than those observed among different traits measured by the same method, ranging from .257 and .553 in the case of ABQ and between -.126 and .545 in the case of the MBI-GS.

Table 2. Multi-trait/multi-method matrix.

		ABQ		MBI-GS			DASS-21			
		E	D	RSA	EX	C	PE	DP	A	S
ABQ	E	.84								
	D	.33	.70							
	RSA	.25	.55	.72						
MBI-GS	EX	.85	.33	.33	.82					
	C	.36	.77	.60	.54	.67				
	PE	-.06	-.31	-.64	-.12	-.30	.76			
DASS-21	DP	.34	.33	.55	.37	.47	-.21	.78		
	A	.27	.12	.33	.30	.26	-.25	.63	.70	
	S	.53	.20	.45	.54	.39	-.16	.60	.55	.79
Mean		2.24	2.37	1.73	2.35	2.22	5.18	3.14	3.57	7.03
SD		.82	.80	.72	1.12	1.04	1.14	3.34	3.05	4.50

E = Emotional and Physical Exhaustion, D= Devaluation, RSA = Reduced Sense of Accomplishment, EX = Exhaustion, C = Cynicism, PE = Professional Efficacy, DP = Depression, A = Anxiety, and S = Stress. Alpha coefficients are listed on the diagonal.

Regarding the second hypothesis which specified the relationship between the features of the ABQ and DASS-21, the correlations between burnout and related markers of ill-being including stress, anxiety, and depression were in the low to moderate range (i.e., .129 through .551 for ABQ and -.161 through .541 for the MBI-GS) and lower than that found for matching burnout subscales ranging from |.644| to |.855|. These findings support that burnout and related markers of ill-being are related but distinct constructs.

Structural equation model approach

In a second stage, we proceeded to carry out a multi-trait/multi-method complementary analysis from the perspective of structural equation models (SEM), as directed by Widaman (1985). Four models were specified. A base model or Model 1, the least restrictive of the four, so-called correlated traits/correlated methods (CT/CM), which assumes

that the variance of each item is determined by three components (trait factor, method factor and error term) and allows free correlations between traits and between methods, with the traits and methods uncorrelated with each other. The second model (Model 2), no traits/correlated methods (NT/CM), more restrictive and nested to the base model, assumes the absence of traits and free correlations between methods. Model 3, which is called perfectly correlated traits/correlated methods (PCT/CM), specifies a perfect correlation between traits and a free correlations between methods. Finally, Model 4, called correlated traits/uncorrelated methods (CT/UM), states the hypothesis that the traits are correlated, but not the methods.

Convergent validity is supported when independent measures of the same trait are correlated. From a SEM perspective, evidence of convergent validity is found when a model in which traits are specified has a better fit to the data compared to one in which traits are not specified. This is indicated by comparing a correlated traits/correlated methods model (Model 1) to a no traits/correlated methods model (Model 2). A significantly better fit for Model 1 compared to Model 2 provides evidence supporting convergent validity.

Discriminant validity between traits is supported when independent measures of different traits are minimally correlated. Evidence of discriminant validity between traits is found when the model fit is better when traits are free to correlate (correlated traits/correlated methods, i.e., Model 1) compared to a model that specifies perfect correlations (perfectly correlated traits/correlated methods, i.e. Model 3). A significant difference between models supports discriminant validity between traits.

Finally, as pointed out by Byrne (2010, p. 291), “evidence of discriminant validity related to methods can be tested by comparing a model in which method factors are freely correlated (Model 1) with one in which method factors are specified as uncorrelated (Model 4). In this case, a large $\Delta\chi^2$... argues for the lack of discriminant validity and, thus, for common method bias across methods of measurement”. That is, a nonsignificant difference between models supports discriminant validity between methods.

Table 3 provides the overall fit indices of the four models and Table 4 the differences in χ^2 with its statistical significance, the differences in the degrees of freedom and the observed differences in CFI between the base model or Model 1 and the remaining models.

Table 3. Goodness of fit indexes for multi-trait/multi-method models

Models	χ^2	df	χ^2/df	CFI	RMSEA	C.I.
Model 1	2235.34	1189	1.88	.817	.05	.051-05
Model 2	4383.19	1277	3.43	.458	.09	.08-093
Model 3	2741.08	1217	2.25	.734	.06	.061-06
Model 4	2223.47	1195	2.02	.786	.05	.055-06

Model 1 = Correlated traits/Correlated methods, Model 2 = No traits/Correlated methods, Model 3 = Perfectly correlated traits/Correlated methods, and Model 4 = Correlated traits/Uncorrelated methods.

Table 4. Differential goodness of fit indices for multi-trait/multi-method models

Model comparisons	Difference in		
	χ^2	df	CFI
<i>Test of convergent validity</i>			
Model 1 vs Model 2 (traits)	2147.75***	88	.35
<i>Test of discriminant validity</i>			
Model 1 vs Model 3 (traits)	505.64***	60	.08
Model 1 vs Model 4 (methods)	11.97	6	.02

*** $p < .001$

The statistically significant difference between the base model or Model 1 and Model 2 is interpreted as evidence in favor of the convergent validity of the ABQ, the statistically significant difference between the base model or Model 1 and the Model 3 as evidence in favor of the discriminant validity between traits and the statistically not significant difference between the base model or Model 1 and Model 4 as evidence for discriminant validity between methods.

Discussion

The present research was conducted with the aim of obtaining evidence for convergent and discriminant validity of the Spanish version of the ABQ, a questionnaire designed by Raedeke and Smith (2001, 2009) for assessing burnout in athletes. Previous research sampling Spanish athletes evaluating within network validity evidence associated with the ABQ has focused on the questionnaire's factor structure and reliability (e.g. De Francisco, et al., 2009; Arce, et al., 2010). Although initial scale development appear promising, additional psychometric research is necessary in the process of adapting an instrument to cultures for which it was not initially developed before using it both in research and professional settings. This is especially true in the case of burnout as signs and symptoms associated with burnout, although theoretically distinguishable, are conceptually related to a variety of other ill-being constructs such as depression, anxiety and stress (Jackson, Scwhab, & Schuler, 1986; Maslach & Schaufeli, 1993; Schaufeli, Enzmann, & Girault, 1993; Schaufeli, Maslach & Marek, 1993).

Currently, researchers have not evaluated convergent validity and internal discriminant validity of the ABQ-Spanish version by comparing responses on the ABQ with alternative measures of the same constructs nor have they examined the discriminant validity by comparing ABQ responses to those of related, but conceptually distinct markers of psychological ill-being using a MTMM approach. Although Cresswell and Eklund (2006a) used a MTMM approach to provide insights on athlete burnout, their study was based on an English version of the ABQ. Given potential cultural differences, it is not apparent whether their findings would extend to translated versions of the ABQ.

In general, results from the current study provide evidence for the ABQ and the MBI-GS convergent and internal discriminant validity. Specifically, equivalent subscales across the two burnout measures were highly correlated

(convergent validity). The correlations between matching subscales were higher than for nonmatching subscales (internal discriminant validity). Based on the relationship between burnout assessed by the ABQ and MBI-GS and other markers of ill-being including depression, anxiety and stress, results revealed that burnout was related, but distinguishable from theoretically related traits (external discriminant validity).

Developing a Spanish version of the ABQ with strong validity evidence has the potential not only to develop an increased understanding of burnout in Spanish athletes, but also to facilitate cross-cultural research on this issue. An extensive amount of research has shown that the burnout construct has epidemiological significance across a variety of cultures within the organizational psychology literature (Schaufeli, Leiter, & Maslach, 2009; Schutte, Toppinen, Kallimo, & Schaufeli, 2000). Within the sport domain there is also growing international interest in athlete burnout (Raedeke & Smith, 2009). Concomitantly, recent years have been marked by an increased recognition of the importance of cross-cultural research as there is increased recognition that cultural influences may potentially have an important role in theoretical models (Ryba, Schnike, & Stambulova, 2012). Without comparative cross-cultural research, theoretical frameworks may lack generalizability or be misleading in presumed generalizability as cultural factors may impact cognition, affect, and behavior. Thus, cross-cultural research on burnout is needed to evaluate whether theoretical frameworks and potential antecedents and consequences are generalizable as cultural factors may influence burnout related processes.

Recognizing that the nature and meaning of burnout may be potentially influenced by cultural considerations, Cresswell and Eklund (2006b, 2007) interviewed rugby players in New Zealand and the United Kingdom representing unique organizational cultures. In doing so they found that the experiential characteristics associated with burnout are robust across settings, despite varying situational and environmental demands associated with burnout. Although they compared two distinct organizational cultures, participants in both studies were high level rugby players from English speaking countries. Given the sparse cross-cultural research on athlete burnout, an increased focus on comparative cross-cultural studies may proffer a greater understanding of athlete burnout.

In addition to cross-cultural research at the conceptual level, future research is needed to test the psychometric equivalence of the ABQ measurement properties across the original and translated versions. Cultural factors potentially influence item translation and how athletes interpret and respond to items. Consequently, athlete responses on the ABQ might not be psychometrically invariant even if the underlying meaning and nature of burnout is similar across cultures. Thus, research assessing whether athlete responses to the ABQ are invariant across the various translated versions will shed insights on whether scores derived from the

ABQ have similar meaning across cultural groups. Ultimately, such comparison may develop the foundation for testing the cross cultural applicability of theories and models and thereby develop a more robust understanding of athlete burnout.

Although sampling a diverse range of sport types and competitive levels is appropriate from a generalizability standpoint and also helps ensure measurement variability, several study limitations exist. The sample size is somewhat

small ($n = 302$), most of the participants were male (68%), and the age range included only adolescent athletes (14-20 years of age). Most notably, elite professional athletes were not sampled.

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