Adaptation and Validation of Sport-Confidence Measure to Gymnasts and Football Players

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Abstract

This study aimed to adapt the *Sport-Confidence Inventory* to Brazilian athletes and to investigate validity and reliability of adapted instrument. Elite athletes from 12 to 22 years of age that practice artistic gymnastics, rhythm gymnastics or football have participated in the study. The research procedures were: a) to realize the transcultural adaptation of SCI; b) to investigate evidences of content validity by pilot study; c) to investigate the construct validity, by principal component analysis; and d) to investigate reliability evidences by analysis of Cronbach's alpha values of the adapted instrument. Results showed reliability evidences of the instrument to the application in gymnasts and football players. Construct validity indicated different composition to the subscales in each group. Future research may improve the semantic quality of *Questionário de Autoconfiança no Esporte*, considering the particularities of each sport.

Keywords: self-confidence, psychometrics, sport psychology

Adaptação e Validação de Medida de Autoconfiança para Atletas de Ginástica e Futebol

Resumo

Este estudo teve como objetivos adaptar o instrumento de medida da autoconfiança *Sport-Confidence Inventory* para atletas brasileiros e investigar evidências de validade e precisão do instrumento adaptado. Participaram atletas de alto rendimento, com idades entre 12 e 22 anos, das modalidades esportivas ginástica artística, ginástica rítmica e futebol. Os procedimentos consistiram em: a) realizar a adaptação transcultural do SCI; b) investigar evidências de validade de conteúdo por meio de estudo piloto; c) validade de construto, por meio de análise de componentes principais; e d) evidências de precisão, pela verificação dos valores alfa de Cronbach, do instrumento adaptado. Os resultados demonstraram evidências de precisão para as aplicações em atletas de ginástica e de futebol. A validade de construto indicou composições diferentes para as subescalas em cada grupo. Estudos futuros poderiam aprimorar a qualidade semântica do Questionário de Autoconfiança no Esporte, considerando as particularidades de cada modalidade esportiva.

Palavras-chave: autoconfiança, psicometria, psicologia do esporte

Adaptación y Validación de Medida de Autoconfianza para Deportistas de Gimnasia y Fútbol

Resumen

Este estudio tuvo como objetivos adaptar el instrumento de medida de autoconfianza *Sport-Confidence Inventory* para deportistas brasileños e investigar evidencias de validez y precisión del instrumento adaptado. Participaron deportistas de alto rendimiento, con edades entre 12 y 22 años, de las siguientes modalidades deportivas: gimnasia artística, gimnasia rítmica y fútbol. Los procedimientos consisten en: a) realizar la adaptación transcultural del SCI; b) investigar evidencias de validez de contenido por medio de estudio piloto; c) validez del constructo, por medio de análisis de componentes principales; y d) evidencias de precisión, por la verificación de los valores Alfa de Cronbach del instrumento adaptado. Los resultados demostraron evidencias de precisión para las aplicaciones en deportistas de gimnasia y fútbol. La validez del constructo indicó composiciones diferentes para las sub-escalas en cada grupo. Estudios futuros podrían mejorar la calidad semántica del Cuestionario de Autoconfianza en el Deporte, considerando las particularidades de cada modalidad deportiva.

Palabras-clave: autoconfianza, psicometría, psicología del deporte

Introduction

Sport-confidence can be defined as the athlete's level of certainty they will have a successful performance in training and competition, considering their own resources and ability. It is characterized by the athlete's conviction they will be successful in moments where there is a high success expectation (Bandura, 1977; Karageorghis & Terry, 2011; Martin, 2001; Vealey, 1986, 2003; Weinberg & Gould, 2011).

The self-confidence concept is derived from the self-efficacy conceptual model. Beliefs of self-efficacy are said to be an individual's perceptions on their own skills in specific settings (Bandura, 1977). Self-efficacy theory has been adapted to explain behavior in Psychology's various disciplines and constitutes a

theoretical basis adopted by many sport confidence-oriented research studies on performance (Vealey, 1986; Weinberg & Gould, 2011).

Vealey (1986) suggests that operationalizing self-confidence specifically for athletes would render more consistent behavior prediction in different sporting events. She suggests that phenomena be analyzed by traits and states, differentiating an athlete's predominant characteristics from levels that may vary in individual sporting events. Vealey posits that the self-confidence trait and the athlete's competitive orientation interact in every sporting event and affect their state, thus affecting behavioral responses and, consequently, their subjective results, such as causal attributions, perception of success, and satisfaction with one's own performance. This conceptual model was used as a basis for development of the sport-confidence assessment unidimensional instruments State Sport Confidence Inventory and Trait Sport Confidence Inventory (Vealey, 1986).

Vealey, Garner-Holman, Hayashi and Giacobbi (1998) hypothesized that self-confidence could be based on different aspects, which varied in different levels of significance for each athlete. To further expand Vealey's conceptual model (1986), these authors aimed to investigate elements preceding phenomena and suggested the following sources as a basis: Physical Self-Presentation, Environmental Comfort, Demonstration of Ability, Vicarious Experience, Coaches' Leadership, Mastery, Physical/Mental Preparation, Situational Favorableness, and Social Support. This study offered a basis for proposing that the sport-confidence construct no longer be separated into trait and state components, both of which were unidimensional. Self-confidence was then considered as a general construct, comprised of multiple dimensions.

Vealey's aim (2003) was investigating sport-confidence multidimensionality. The researcher postulated a social cognitive model accounting the athletes' personality characteristics, organizational culture, and self-confidence in a multidimensional perspective. Recent literature further confirm the proposal, which suggests that an athletes' personal characteristics and their training and competition environment's organizational culture impact sources of self-confidence. These sources may be categorized as: Achievement, Self-regulation, and Social Climate and influence the athlete's level of certainty on their performance in sports, considering their own physical skills, cognitive ability, and resilience. Consequently, success expectations influence emotions, cognition, and behavior, which in turn influence beliefs of success and performance in sports.

Performance is influenced as well by external factors and physical skills and characteristics, simultaneously impacting behavior, emotions, and cognition (Vealey & Chase, 2008).

Self-confidence assessment instruments were investigated in national and international literature. SciElo, Psycnet, Psycinfo, and Google Scholar databases were searched using the following descriptors (or combinations): 'autoconfiança E atletas'; 'self-confidence AND athletes'; and 'sport-confidence'; between March 2012 and June 2014. Instruments used in research studies dating from 1980 were selected. Specific questionnaire for measuring self-confidence with precision and validity evidence (Manzo, Silva III & Mink, 2001; Vealey, 1986, 2003) and instruments for measuring self-confidence in their subscales (Martens, Vealey, & Burton, 1990; Smith, Smoll, Schultz, & Ptacek, 1995) were found. Instruments measuring self-confidence assessment specifically developed for Brazilian athletes were not found.

Some studies investigated precision and validity evidence on the Competitive Sport Anxiety Inventory-2's Portuguese version (Martens et al., 1990) and on the Athletic Coping Skills Inventory-28's adaptation to current Brazilian Portuguese (Smith et al., 1995). Results suggest preliminary CSAI-2 adequacy evidence for Brazilian athletes. However, results suggest some changes may be necessary so the instrument may present acceptable psychometric properties (Bartholomeu, Montiel, & Machado, 2013; Coelho, Vasconcelos-Raposo, & Mahl, 2010). Coimbra (2011) transculturally adapted the Athletic Coping Skills Inventory-28 (Smith et al., 1995) for Brazilian athletes. ACSI-25BR's construct validity supports the instrument's original subscales composition without three of its original items. Cronbach's alpha values suggest precision evidence for five out of the seven subscales and the test-retest method showed instrument stability.

Based on this setting, this study aims to transculturally adapt the Sport Confidence Inventory (Vealey, 2003) into current Brazilian Portuguese e investigate validity and precision evidence for the adapted instrument. This paper presents the adapted instrument's translation process, investigation of content and construct validity, and precision.

Method

This study aims to translate the Sport Confidence Inventory (Vealey, 2003) self confidence-measuring instrument into current Brazilian Portuguese and

investigate content validity evidence through instrument internal structure and result precision with a gymnast and soccer player population. The method presented the following characteristics:

Participants

All participants were selected by nonprobalistic sampling, for convenience (Cozby, 2003). The study's initial Phases – i.e., translating and retrotranslating Vealey's 2003 Sport Confidence Inventory into current Brazilian Portuguese – included a total of 6 Brazilian professionals who spoke fluent English: 4 specialists in Sport Psychology, 1 specialist in Psychological Assessment, and 1 specialist in the English language. The content validity Phase was comprised of 30 athletes from different sports modalities between 11 and 30 years of age who played as amateur/youth, professional or varsity teams.

The validity evidence through internal structure and result precision investigation process included 379 competition sport athletes between 12 and 22 years of age, out of which 258 were male and 121 were female. Regarding sport modality, population consisted of 47 artistic gymnasts, 92 rhythmic gymnasts, and 240 soccer players. This Phase's inclusion criterion was that the athlete had to have been competing actively and nationally at the time of the assessment.

Instruments

A version resulting from Vealey's 2003 Sport Confidence Inventory (SCI) transcultural adaptation process, named by the authors as Sport Confidence Questionnaire (*Questionário de Autoconfiança no Esporte – SCQ*), was used. SCI is a self-report instrument whose aim is measuring self-confidence levels by the respondent's checking choices on items that better represent their level of confidence they will achieve a certain skill successfully. Scale variation ranges from 7 (Totally certain – Absolutely sure I can without a doubt) to 1 (Can't do it at all – Absolutely not at all). It consists of 14 items distributed along 3 subscales, classified by the author as types of self-confidence, as shown below in Table 1.

The instrument applied for data collection presents the same characteristics, except for item distribution in subscales. Validity evidence investigation through internal structure results suggest a similar composition for soccer athlete results, and a different composition for gymnast results, as will be shown below in the results section.

The Sport Confidence Questionnaire was applied before competitions. Gymnasts answered the instrument 1 or 2 training days prior to their competition and soccer players answered it during a competition, between matches. The instrument was applied individually or collectively, according to coach authorization. At the time of instrument application, athletes were verbally explained about the study and ethical issues. After providing a positive response, athletes signed an Informed Consent Form, read instructions individually, and filled out the instrument. All athletes were instructed to express their questions privately or publicly, according to personal preference.

Procedures

Initially, the Sport Confidence Inventory (Vealey, 2003) author was contacted by e-mail to clarify questions on the original instrument's development and so an interest could be expressed for the instrument's transcultural adaptation to current Brazilian Portuguese. At the time, the author promptly replied, sent researchers some specific material on the instrument's

Table 1
Subscale composition of the Sport Confidence Inventory

Types of self-confidence	Description	Items
Confidence in physical skills and training	Athlete's level of certainty they will be able to be successful in their physical sport skills	1; 4; 7; 10; 13
Confidence in cognitive efficiency	Athlete's level of certainty they will be able to be successful in their cognitive sport ability	2; 5; 8; 11
Confidence in resilience	Athlete's level of certainty they will be able to handle adverse situations	3; 6; 9; 12; 14

Source: Adapted from Vealey (2003).

development, and informally authorized their proposal. Then, a formal authorization addressed to researchers was signed and sent by e-mail. The research project was initially submitted to the Brazilian Gymnastics Confederation's Institutional Review Board due to the study's interest in subjects practicing said modality. The study's proposal was submitted to the Institutional Review Board's Human Subject Division of Santa Catarina Federal University. After being granted permission by these institutions, investigations began.

As posited by Dobansky and Santos (2000) and Beaton and Guillemin (2000), 3 Sports Psychology experts translated the Sport Confidence Inventory (SCI) into current Brazilian Portuguese as part of the instrument's transcultural adaptation. Translations were compared and used as a basis for the first version of the Brazilian questionnaire, which was submitted to the first pilot study. Subjects were 19 high performance athletes and 3 varsity athletes. Subjects answered the instrument individually and reported their impressions, suggestions, and questions. While answering the instrument, subjects would voice their questions and contributions, which were registered by the researcher applying the instrument. All suggestions were taken into consideration and used as a basis for changing the Brazilian instrument, which was submitted to retrotranslation performed by three other professionals. Then, versions resulting from this Phase were compared to SCI for validating content continuity. A new pilot study was conducted including five high performance athletes and five varsity athletes to verify content clarity. Content validity evidence investigation aimed to verify whether instrument instructions, items, scale variation, and presentation were fully understood (Cozby, 2003). Instrument content clarity was verified based on perceptions voiced by athletes during pilot studies.

In order to investigate construct validity and result precision, SCQ was applied to high performance gymnasts ($n = 47$), rhythmic gymnasts ($n = 93$), and soccer players ($n = 239$). Study population was separated into two groups to get comparative results between gymnasts and soccer players. A principal component analysis (PCA) with varimax rotation was conducted, as per Vealey's 2003 Sport Confidence Inventory development procedure, model adequacy verification through KMO values and spherical Bartlett's test ($p < 0.05$). Components presenting with self-values of at least 1.0 were extracted, along with items of a 0.3 or higher factor loading and a 95% confidence interval ($p < 0.05$).

Investigation of precision evidence was conducted through Cronbach's alpha value analysis per item, for scale total e for components.

Results and Discussion

Sport Confidence Questionnaire Adaptation and Content Validation

Vealey's 2003 Sport Confidence Inventory adaptation process into current Brazilian Portuguese consisted of several Phases. Initially, three different professionals translated the instrument from English into Portuguese. These three versions were compared to check for terminological and content consistency. This comparison was used as a basis to determine an initial Portuguese version, which was submitted to the first pilot study. The instrument was applied to 22 athletes individually, who voiced their questions and suggestions on terms, content, instruction presentation, and items. Their considerations were used as a basis for researchers to change the instrument to improve its understanding and instruction presentation.

Participants reported difficulty to relate instruction information to the explanatory images. The location of the scale image was changed. Images were removed from the instructions section and included in the answer fields after each item. The key question beginning all items was also changed. The 'How certain are you that...?' question's verbatim translation into Portuguese [Quão certo você está de que...?] was changed to [Você acredita que...?], a verbatim equivalent to 'Do you believe that...?', in English, as subjects reported not being familiar with the 'how certain' verbatim translation into Portuguese, which made performing questionnaire tasks harder. Scale variation classifications were also changed. Table 2 compares the aforementioned differences between the original scale and the resulting one.

As seen in Table 2, the 7-to-1 scale variation was maintained to preserve Vealey's original proposal (2003). By the end of the translation process, 'very' and 'fairly' had been translated as [muito] and [bastante], respectively. However, pilot study subjects reported not being able to distinguish between those. Therefore, researchers adapted choices to the target population. Explanatory information were kept in parentheses, resulting in Brazilian Portuguese verbatim equivalents of 'very certain/ uncertain' to mean 'I think so/not' and 'virtually certain/uncertain' to mean 'most certainly so/not'.

In the instructions field, terms that were unfamiliar to Brazilian athletes were also replaced after the

first pilot study. Athletes questioned the meaning of translation into Brazilian Portuguese of the following expressions: physical skills [*habilidades físicas*], physical aptitude [*aptidão física*], and focus [*foco mental*]. To resolve the issue, a brief explanation and examples were included after these expressions were mentioned.

This procedure was also applied to a few other items. The 'critical decision-making' expression's verbatim translation [*tomar decisões críticas*] was changed to a verbatim equivalent of 'making important decisions' [*tomar decisões importantes*] due to complaints voiced by pilot study subjects who were younger and/or had less schooling. 'overcoming doubts', translated verbatim as [*superar a dúvida*] was replaced with a verbatim equivalent of 'overcoming negative thoughts', [*superar pensamentos negativos*]. Items 1 and 4 mentioning skills to 'be successful' [*obter sucesso*] were included in 'sports performance' [*desempenho esportivo*], given subjects classifying these items as vague or not sufficiently clear. Terms were modified to semantically improve on the Sport Confidence Inventory's (*Vealey, 2003*) adaptation without impairing item meaning.

After these changes, the modified instrument was retrotranslated by three other professionals and the resulting versions were compared to the original instrument. The process was once again checked for consistency. A new pilot study was conducted, and ten high performance athletes answered the Brazilian Portuguese questionnaire individually and were asked to report on their impressions.

No issues were voiced during athlete completion of the final version and the Sport Confidence Questionnaire was concluded with the inclusion of University logo and author names. However, during data collection phases, subjects continued to question the 'physical aptitude' [*aptidão física*] term in item 7. This may suggest that the explanation included was insufficient or that perhaps instructions may have not been cautiously read. For future studies, we suggest that researchers read instructions aloud along with subjects or that instruction quality be checked through further insight on instrument comprehension by the target population.

Transcultural adaptation studies for Vealey's 2003 Sport Confidence Inventory into other languages were not found in scientific literature. We suggest this scenery might be related to the fact that its development manuscript is new, as suggested by its author. This might also be one of the reasons why many international studies have used the State Sport Confidence Inventory and/or the Trait Sport Confidence Inventory (Vealey, 1986). Vealey (2003) points out that her social cognitive model, which triggered development of the Sport Confidence Inventory, was established as a preliminary study and suggests that new studies might improve on this model and measurement instrument.

SCQ Validity through Internal Structure and Result Precision

Vealey's 2003 Sport Confidence Inventory consists of three subscales: confidence in physical skills and training (items 1, 4, 7, 10, 13), confidence in cognitive efficiency (items 2, 5, 8, 11), and confidence in resilience (items 3, 6, 9, 12, 14). To identify construct validity evidence and compare it to the original model, Vealey's process (2003) was replicated: a Varimax rotation principal component analysis (PCA) was conducted.

Table 2

Comparison between the Sport Confidence Inventory (original version) and the adapted final version to Brazilian athletes (adapted version)

	SCI	QAE
?	How certain are you that…?	Você acredita que...?
7	Totally certain (absolutely sure I can without a doubt)	Absolutamente certo (tenho certeza que sim)
6	Very certain (very sure I can)	Praticamente certo (quase certeza que sim)
5	Fairly certain (I feel like I can)	Bastante certo (acho que sim)
4	Maybe I can	Talvez (tenho dúvidas)
3	Fairly uncertain (I have doubts)	Bastante incerto (acho que não)
2	Very uncertain (pretty sure I can't)	Praticamente incerto (quase certeza que não)
1	Can't do it at all (absolutely not at all)	Não posso fazer de jeito nenhum (absolutamente não)

Source: Adapted from Vealey (2003); data in file (2014).

Gymnast group results were distributed throughout four components that respectively explain 31.6%, 12.3%, 9.1%, and 7.3% of variance, respectively. Table 3 presents item distribution along components and their factor loadings.

Table 3 shows that items 4, 7, 10, and 13 regarding confidence in physical skills and training, remain unchanged according to Vealey's 2003 proposal. In accordance to the original instrument, items 3, 6, 9, 12, and 14 that relate to confidence in resilience, also presented similar loadings, differing from the original instrument only regarding component localization. We thus suggest that items 2 and 11, relating to confidence in cognitive efficiency, are included in component 3. Location of components 2 and 3 –differing from Vealey's 2003 considerations – was considered to be an expected result for measurement instruments transcultural adaptation processes.

Other results in addition to these are also analyzed in detail. Item 1 indicates the athlete's confidence in their own physical skills to be successful in their sport performance. In gymnastics practice, gymnasts – especially amateur/youth gymnasts –are constantly submitted to learning new skills or elements in order to improve their routine's difficulty level. We thus suggest that one of the possible ways gymnasts might construe 'physical skills' in the sports performance context is connected to this setting.

Item 5, regarding important decisions, corresponds to confidence in cognitive efficiency. However, its physical skills and training component presents a similar factor loading. In gymnastics, important decisions – such as establishing a routine for practice and presentation – are mostly made by coaches during practice. Considering that this is usually pre-established by coaches, making important decisions might be related to training or be construed in relation to unforeseen events – and thus related to resilience.

Item 8 is represented by self-confidence in tactical strategy and presents higher factor loading in component 4. Its factor loading is also significant regarding physical skill and training. During empirical analyses, gymnasts did not seem to be familiar to the 'tactical strategy' term. Strategy can be represented by predefined series varying according to athlete condition and key competition. Pesca (2013) writes that, in Brazil, coaches associate sport strategy learning to basic skills. This might be the reason why athletes construe the

Table 3

Main Component Analysis for Gymnast Population

Items	Component1	Component2	Component3	Component4
1. Physical performance skills	0.399		0.693	
4. Sufficient physical training	0.845			
7. Physical aptitude for competing	0.615			0.443
8. Effective tactical strategy	0.307			0.732
10. Sport-specific physical skills	0.512		0.590	
13. Physical preparation for competing	0.828			
3. Recovery after making a mistake		0.731		0.30
5. Important decision-making	0.391	0.339		
6. Focus after making a mistake		0.726		0.356
9. Overcoming negative thoughts		0.672		
12. Overcoming mishaps		0.575	0.369	
14. Controlling feelings of uneasiness		0.502		0.497
2. Focus during competitions			0.664	0.478
11. Keeping focused		0.363	0.669	

Source: Data in file (2014).

tactical strategy item as a basic skill and, thus, something to be trained during practice.

Four components were confirmed to present three items (1, 5, and 8) that clearly diverged from the originally proposed model (Vealey, 2003) in the gymnast population. These results may be related to sporting modality culture and tasks taken on by coaches, which reflect practice organization and athlete background, and to item content, which were understood by subjects but are generally missing from their routine.

Soccer player group results suggest the creation of three components that respectively explain 34.94%, 12.98%, and 8.14% of variance, respectively. Table 4 presents item distribution along components and their factor loadings.

Table 4 shows main component analysis results for the soccer player population, which were similar to Vealet's 2003 proposal. Items 3, 6, 9, 12, and 14 related to resilience had similar factor loading in the same group. Items 1, 4, 7, 10, and 13 related to physical skills and training were grouped in component 2. Items relating to cognitive efficiency – 2, 5, 8, and 11 – were associated and formed the third group of items. This composition was the one closest to the original model (Vealey, 2003). It consisted of three components representing success conviction based on physical skills and

training, cognitive efficiency, and resilience. The only difference found is regarding new components' classification (localization).

For comparison purposes, the same analysis was conducted with the whole population (*n* = 379). Table 5 shows its results.

Table 5 results also confirm Vealey's 2003 proposal, despite it showing different classification (localization) for components 2 and 3 and items 1 and 14. Item 1 presents similar factor loading for components 1 and 3, given that it was originally found in the first group of items. Question 14 – relating to controlling feelings of uneasiness regarding resilience confidence (Vealey, 2003) – presented only component 3 factor loadings, whose content was related to cognitive efficiency. Anxiety control and psychophysiological activation level skills are theoretically related to cognitive ability (Souza, 2007), especially regarding training of psychological skills (Weinberg & Gould, 2011). Thus, it might be expected that confidence in controlling feelings of uneasiness be related to cognitive ability.

To investigate the Sport Confidence Questionnaire's internal consistency, Cronbach's alpha values of gymnasts and soccer players were analyzed for items and scale total. Values above 0.8 were found for item correlation in both groups. Total alpha resulted in

Table 4

Main Component Analysis for Soccer Player Population

Items	Component 1	Component 2	Component 3
3. Recovery after making a mistake	0.634		
6. Focus after making a mistake	0.744		
9. Overcoming negative thoughts	0.781		
12. Overcoming mishaps	0.575		0.415
14. Controlling feelings of uneasiness	0.682		
1. Physical performance skills	0.399	0.558	
4. Sufficient physical training		0.767	
7. Physical aptitude for competing		0.672	
10. Sport-specific physical skills		0.724	
13. Physical preparation for competing		0.788	
2. Focus during competitions	0.375		0.456
5. Important decision-making			0.630
8. Effective tactical strategy			0.799
11. Keeping focused	0.303		0.656

Source: Data in file (2014).

0.82 for the gymnast population and 0.85 for the soccer player population. Vealey (2003) found an α total = 0.93 in the population consisting of athletes from different sporting modalities. The fact the instrument was originally developed specifically for the author's target population may be one of the explanations for the observed comparative results. Cronbach's alpha values are similar in Brazilian gymnasts and soccer players. Indexes found were above 0.8 for all correlations and the scale's total, showing evidence of instrument precision (Dancey & Reidy, 2013).

Cronbach's alpha item values were also estimated per component. Table 6 shows a result comparison between the Sport Confidence Questionnaire

application to gymnasts and soccer players and the Sport Confidence Inventory development study (Vealey, 2003).

In Table 6, internal consistency shows acceptable Cronbach's alpha indexes between 0.6 and 0.7 for Brazilian athlete components (Dancey & Reidy, 2013). Comparative values between Brazilian athletes and the population used in Vealey's development study (2003) results were found to be close. The Sport Confidence Inventory (Vealey, 2003) highest indexes may be associated to the fact that the scale was not developed for Brazilian athletes, only adapted.

It is worth noting that alpha values for compared results between gymnasts and soccer players were

Table 5

Main Component Analysis for Gymnast and Soccer Player Population

Items	Component 1	Component 2	Component 3
1. Physical performance skills	0.400		0.412
4. Sufficient physical training	0.854		
7. Physical aptitude for competing	0.689		
10. Sport-specific physical skills	0.629		
13. Physical preparation for competing	0.816		
3. Recovery after making a mistake		0.781	
6. Focus after making a mistake		0.787	
9. Overcoming negative thoughts		0.708	
12. Overcoming mishaps		0.518	
2. Focus during competitions			0.8
5. Important decision-making			0.364
8. Effective tactical strategy			0.454
11. Keeping focused			0.729
14. Controlling feelings of uneasiness			0.521

Source: Data in file (2014).

Table 6

SCI and SCQ Component Precision for Brazilian Gymnasts and Soccer Players

Types of sport-confidence	Vealey (2003)	Data in file (2014)	
	α SCI	α gymnasts	α soccer players
Physical skills and training	0.87	0.78	0.77
Cognitive Efficiency	0.84	0.61	0.7
Resilience	0.85	0.72	0.79
Scale's total	0.93	0.82	0.85

Source: Adapted from Vealey (2003); data in file (2014).

similar, except for the Confidence in Cognitive Efficiency component. This finding may further confirm the hypothesis regarding items 5 and 8's –

that cover important decision-making and using an effective tactical strategy – specific interpretation.

Regarding construct validity, distinct component quality and location compositions were found. Additionally, some items were distributed differently than the location suggested by literature (Vealey, 2003), especially regarding gymnasts. Precision evidence for the adapted instrument was also investigated, for gymnast and the soccer player groups. We suggest that main differences between population groups and Vealey's original 2003 study are associated to specific participant sporting modality characteristics that may have influenced item interpretation.

Conclusion

This study aims to adapt and investigate validity and precision evidence for the Sport Confidence Inventory (Vealey, 2003). Scientific literature used in research on measuring Brazilian athlete self-confidence did not identify instruments assessing this construct specifically. Literature review found no published international studies on transcultural adaptation of this instrument to other populations. Only one study was found to have used the Sport Confidence Inventory as a data collection instrument (Paquette & Sullivan, 2009). As previously mentioned, we suggest the scenery is associated to the fact that the instrument's development study is yet to be published and was kindly provided by Professor Robin Vealey Ph.D. for this study.

The transcultural adaptation process showed evidence of content validity through a pilot study conducted on the target population. This Phase verified that 12 year-old and up athletes understood instructions, scale variation, and instrument items. However, during empirical analyses, despite athletes understanding the language, gymnasts presented difficulty to put a few terms in context with their sporting modality.

For comparison purposes, construct validity evidence were investigated as instructed by Vealey (2003). Factor analysis was conducted separately for the gymnast group, soccer player group, and for the whole population. Results indicate four components for the gymnast group, three for the soccer player group, and for the whole population. We suggest a few items might have been interpreted differently by athletes, especially in the gymnast group, which showed lack of familiarity to tactical strategy and important decision-making items. The soccer player group showed an item factorial distribution similar to the one seen in literature (Vealey, 2003), modifying only component location. Content validity and construct validity evidence suggest that sporting modality-specific semantic adaptations may enhance measurement instrument quality.

Precision indexes suggest the assessment instrument presented internal consistency for both groups. We suggest that differences in factor analyses and Cronbach's alpha values between population groups and the original study are related to theoretical, empirical, cultural context, and sporting modality issues.

Additional investigation may perfect the Sport Confidence Questionnaire, an adapted version for Brazilian athletes. Future studies may confirm the Sport Confidence Questionnaire's multidimensional composition, or transculturally adapt the Sport Confidence Inventory based on other psychometric theories, such as the Item Response Theory, for instance. Additionally, considering each sporting modality's particularities in the adaptation process may also be warranted in order to improve the instrument's semantic quality. After development of an acceptable validity and precision evidence scale, classifications for the resulting levels of total self-confidence scores may be developed in order to make SCQ quantitative results' interpretation possible and contribute to research and evaluation for future interventions in Sport Psychology.

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