Original Article

Establishing the validity and reliability of the ACHV-PE questionnaire into the Spanish language

ERIDIOLA BUZI[1] ✉, JUAN ANTONIO LARRAZ-DOMÍNGUEZ[2], MEHMET TÜREGÜN[3], JUEL JARANI[4], EMANUELE ISIDORI[1]

[1]Laboratory of General Pedagogy, University of Rome "Foro Italico", Rome, Italy
[2]I.E.S. Villa de Vallecas, Community of Madrid, Madrid, Spain
[3]Adrian Dominican School of Education, Barry University, Miami, United States of America
[4]Department of Social Sciences and Education, Sport University of Tirana, Tirana, Albania

ABSTRACT

Values are responsible for our attitudes, behaviours, and beliefs. They guide our thoughts and define who we are. The main purpose of this study was to establish the validity and reliability of the questionnaire "Attitudes of Children towards Values in Physical Education (ACHV-PE)" into the Spanish language. A total of eight hundred and two (N = 802) student, age 10-15 years old, between the 6th and 8th grade, participated in this study. The process of validity was based on translation and back-translation of the questionnaire, pilot-testing it to a group of students and the Factor Analysis. The Exploratory Factor Analysis showed five factors with the Eigenvalues of 6.24 and 1.06, accounting for 60.28 % of the variance. Confirmatory Factor Analysis demonstrated a good fit for the five-factor solution. Regarding the results obtained, we can conclude that the questionnaire ACHV-PE can be considered valid and reliable for measuring and evaluating the attitudes of children towards values in Physical Education classes in Spanish speaking countries.
Keywords: Validity; Questionnaire; Physical education.

INTRODUCTION

In recent years, Physical Education (PE) and sport are getting special attention because of the benefits they offer to a person. PE and sport go beyond motor skills development and has the potential to develop areas within the psycho-social domains. These areas include character building, strategic and analytical thinking, leadership skills, goal setting, and risk-taking (Ghildiyal, 2015). Doty (2006) stated that people today practice sport and get involved with physical activity for many reasons like health, fitness, relaxation, socialization, and character development. Even though the term "sports build character" is in an ongoing debate with researchers that agree, and others disagree. However, the involvement of children and young people within the sport settings can have a positive impact on their character (Doty, 2006).

Lubans et al. (2016) are of the opinion that the involvement of children and adolescent in physical activity has a very good impact on their physical well-being; and it also has a strong influence on their mental health (Janssen and LeBlanc, 2010). PE can be an appropriate area, which deals with the "problem" of physical inactivity.

Moreover, a positive relationship of children and young people with PE might develop a lifelong involvement of them with physical activity. (Redelius, Fagrell, and Larsson, 2009; Wright and Laverty, 2010) cited by Metcalfe, (2018).

Attached to PE and sport experiences, other important benefits can be taught and learned. In PE classes children get involved with sport and physical activity, and they learn how to collaborate with teammates, how to show respect and care for others, and how to be more social and disciplined (Laker, 2001; Bailey, 2006; Bailey et al., 2009). Therefore, PE can be the right area for children to learn and achieve several values that will lead their behaviours, attitudes, and beliefs during their life (Rokeach, 1973; Schwartz, 1992; Schwartz, 2006).

At the present time, sport is getting more competitive, and commercialism is playing an important role. Players do not only take part, but they also play to win, and the winning at all cost sometimes is associated with negative behaviours from them. Children are sensitive to these examples; they act like their favourite players, and most of the time they play only to win. The learning process above all is based on imitation, observation, and motivation (Bandura 1971, 1977).

Clifford and Feezell (2010) are at the opinion that good examples of sportsmanship are no longer demonstrated to children and young players, and there is an urgent need to reclaim moral values. Throughout this study, we will try to establish the validity and reliability of a questionnaire that measures and evaluates the attitudes of children towards values in their PE classes.

MATERIAL & METHOD

The main aim of this study was to establish the validity and reliability of *"Attitudes of Children towards Values in Physical Education (ACHV-PE)"* questionnaire into the Spanish language.

The process of validity was based firstly on translating the questionnaire into the Spanish language and then proceeding with the back translation. This process was made from experts of the field and the language.

After establishing the translation and the adaptation into the Spanish language, the questionnaire was pilot tested to a group of 6th grade students, age between 10 to 11 years old (the youngest group involved in the study). This process was made in order to evaluate students 'understandability, before the general distribution.

Lastly, Factor Analysis was used as a statistical method. The Exploratory Factor Analysis (EFA) to assess the relationship among variables and to identify the number of factors. Cronbach's Alpha (α) coefficient to test the internal consistency of the items grouped into one factor, and Confirmatory Factor Analysis (CFA) to confirm the factor solution suggested from the EFA.

The software's, IMB, SPSS version 24, and IBM, SPSS, AMOS version 25 were used to run the Factor Analysis.

Sample
Eight hundred and two (*N* = 802) students (male = 387, female = 415) grade 6 through 8, from Murcia Region and Community of Madrid, were recruited for this study. All participant completed the questionnaire anonymously, and the method used was random/convenience (fifty schools were randomly selected from the Murcia Region and Community of Madrid). All schools were firstly contacted by e-mail, and then a phone call was made. The schools that were willing to distribute the questionnaire in that time (April-May 2018) were involved in the study.

The total sampling was used for three main purposes: Firstly, twenty-eight (N = 28) 6th grade students (male = 13, female = 15) age 10-11 years old, from La Ñora, Murcia Region, were involved for the pilot-testing. Secondly, two hundred seventy-four (N = 274) students (male = 130, female = 144), (mean age = 12.59 yrs., SD = .89 yrs.) from Murcia Region, were engaged to run the EFA and Cronbach's α. Lastly, five hundred (N = 500) students (male = 244, female = 256) (mean age = 13.37, SD = .86) from Community of Madrid were involved to develop the CFA.

Instrument
The "*Attitudes of Children towards Values in Physical Education class (ACHV-PE)*" questionnaire was used for this study (Buzi, Jarani, Türegün, Macaro, and Isidori, 2019). The questionnaire aims to measure and evaluate the attitudes that children show towards values in their PE classes, and it is based on five values (Team Building, Respect, Fairness, Inclusion, and Discipline). It contains 17 items, from which 11- items are positively phrased, and 6- items are negatively phrased. All items are constructed in a 5- point Likert scale, detecting the level of agreement, (1 = strongly disagree, 5 = strongly agree).

RESULTS

Exploratory Factor Analysis
The EFA yielded five factors (without fixing the number of the components), with the Eigenvalues of 6.24 and 1.06, accounting for 6.28 % of the variance, as shown in Scree Plot on Figure 1. The sampling adequacy of items was determined by using Kaiser-Meyer-Olkin (KMO) measure, and Bartlett's sphericity. The KMO for our data was .820, and Bartlett's sphericity was significant (χ2 (136) = 1292.725, p < .001). Additionally, all items were loading on the correspondent factor on the values between .314 to .811, displayed in Table 1.
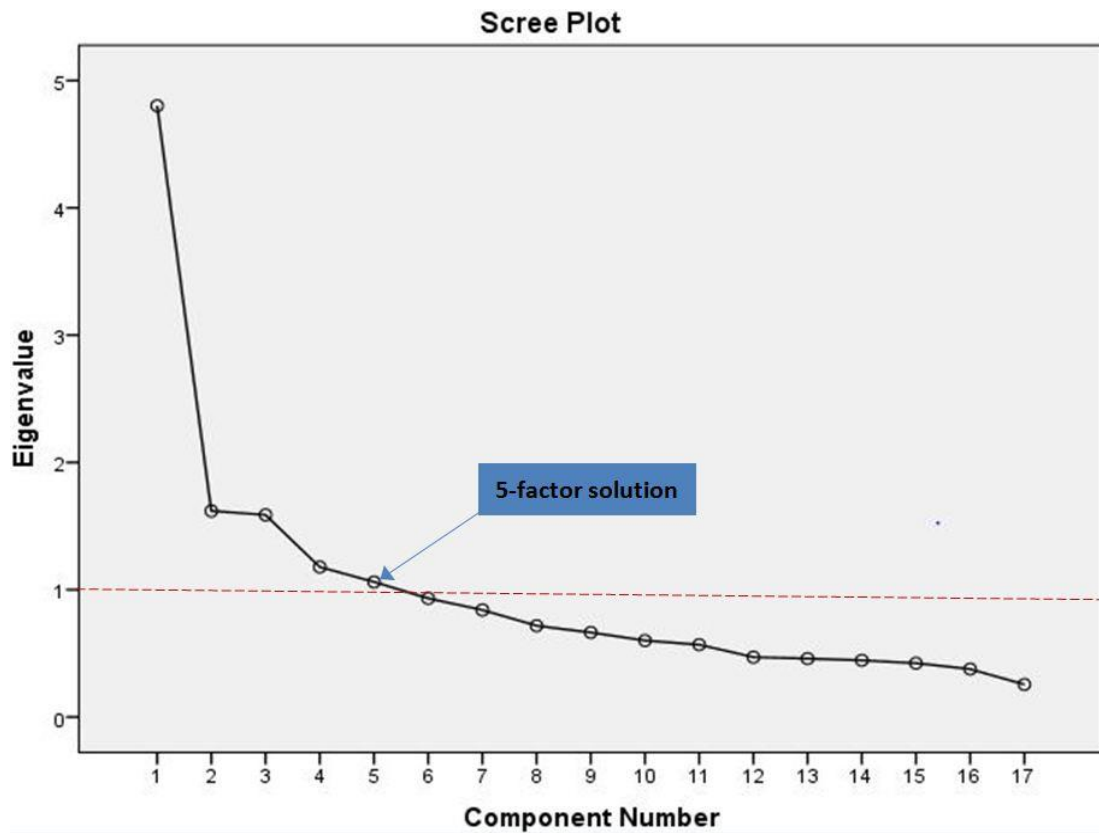
Figure 1. Screen Plot based on Eigenvalues (the dashed line indicates an Eigenvalue > than 1).

Table 1. Factor loading of the Attitudes of Children towards Values in Physical Education class (ACHV-PE) questionnaire.

Items/Factors	F1	F2	F3	F4	F5
Respect					
Item 1	.712				
Item 10	.807				
Item 14	.771				
Inclusion					
Item 5*		.719			
Item 9*		.729			
Item 13		.639			
Item 17*		.684			
Team Building					
Item 3			.645		
Item 7			.695		
Item 11			.727		
Item 15			.625		
Fairness					
Item 2*				.694	
Item 8*				.707	
Item 12*				.757	

Discipline

Item 4	.314
Item 6	.811
Item 16	.623

Note: (*) indicate reverse order from the Likert scale (when answer scored points "5" will be assigned "1" point (and 1 = 5; 2 = 4; 4 = 2); answers that scores "3", will remain unchanged.

Cronbach's α coefficient

The internal consistency was measured by using Cronbach's *α* coefficient, displayed in Table 2.

Table 2. Cronbach's α coefficient for ACHV-PE.

Factors	Nr. Items	Cronbach's α	Cronbach's α Based on Standardized Items
Respect	3	.778	.776
Inclusion	4	.735	.734
Team building	4	.681	.684
Fairness	3	.671	.678
Discipline	3	.510	.539

Confirmatory Factor Analysis

The five-factor solution has demonstrated to be adequate to assess the fit indices model. This CFA has a proper fitting with a chi-square of 267.264 and degrees of freedom of 109 (χ^2/df = 2.452). The fit indices are shown in Table 3, and in Figure 2 the CFA for ACHV-PE questionnaire with the error of variances is displayed.

Table 3. Fit indices for ACHV-PE.

Fit indices	Values
χ^2	267.264 (p < .001)
Df	109
χ^2/df	2.452
CFI	.944
NFI	.91
IFI	.945
TLI	.931
GFI	.940
AGFI	.916
RMSEA	.054
SRMR	.486

Note. χ^2- Chi-square; df - degrees of freedom; χ^2/df- Chi-square/degrees of freedom; CFI- Comparative Fit Index; NFI- Normed Fit Index; IFI- Incremental Fit Index; TLI- Tucker-Lewis Index; GFI- Goodness of Fit Index; AGFI- Adjusted Goodness of Fit Index; RMSEA- Root Mean Square Error of Approximation; SRMR- Standardized Root Mean Square Residual.
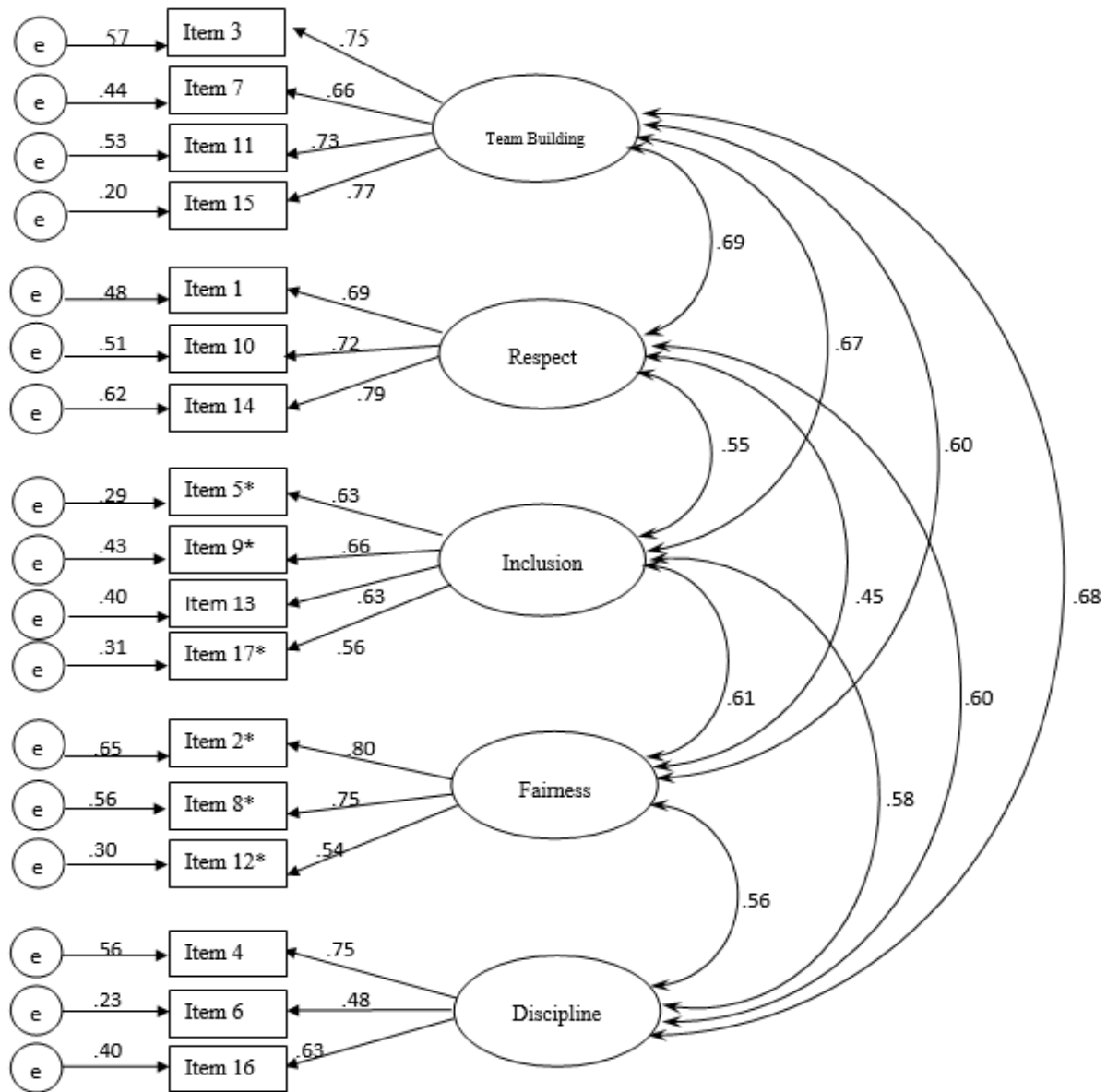
Figure 2. CFA and error of variance.

DISCUSSIONS

The purpose of this study was to establish the validity and reliability of the ACHV-PE questionnaire into the Spanish language. To set up the questionnaire, as mentioned above, the work firstly consisted of translating the questionnaire into the Spanish language from the English version, and then back-translating it. Experts of the field and the English language carried out this process. Regarding the back-translation, there were only different synonyms used in the back translation compared with the original English version.

Secondly, to evaluate students understanding, the questionnaire was distributed to a group of 6th-grade students. The 6th graders did not show any difficulty in understanding and completing all the items. Therefore, there were no changes made and this was a very important step for us before the general distribution.

Lastly, the process of validity was based on statistical analysis by using Factor Analysis. The EFA was used to seek the relationship among variables and to identify the number of factors that are described by a group of variables (Brown, 2006). Cronbach's α coefficient was used to test the internal consistency of the items (Cronbach, 1951). The CFA was used, as a confirmatory technique, to confirm the factor structure suggested from the EFA (Hatcher 1996, Loehlin, 2004).

The EFA showed five factors with the Eigenvalues of 6.24 and 1.06 that explain a cumulative 6.28 % of the variance. Sampling adequacy of items was determined by using KMO measure and Bartlett's sphericity when the KMO value needs to be < .5 and Bartlett's sphericity < .005 (Kaiser 1974; Armstrong and Soelberg, 1968). The KMO for our data was .820, and Bartlett's sphericity was significant (χ^2 (136) = 1292.725, p < .001), that was a good indicator that EFA could be performed. All items were loading on the correspondent factors with the values between .314 and .811. The Cronbach's α for the internal consistency of the items were: Inclusion α = .735, Respect α = .778, Team building α = .681, Fairness α = .671, Discipline α = .51. According to George and Mallery (2003), values > .9 are considered excellent, and the values < .5 unacceptable. However, this depends even on the number of items, because if the number of items in a scale increases α will increase (Vaske, Beaman, and Sponarski, 2017).

Reporting the CFA model fit, the most used indices are; Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Normed Fit Index (NFI), Tucker-Lewis Index (TLI), and Incremental Fit Index (IFI) (Hu and Bentler, 1999; Schreiber, Nora, Stage, Barlow, and King, 2006). From our data the fit indices were CFI = .95, TLI = .93, IFI = .95, NFI = .91, GFI = .94, AGFI = .91, RMSEA = .05, SRMR = .05 which indicates a good model fit (Marsh, Hau, and Grayson, 2005).

Evaluating all the process, we can conclude the validity and reliability of ACHV-PE questionnaire into the Spanish language.

CONCLUSIONS

Throughout this study, a valid and reliable questionnaire into the Spanish language was established. PE teachers in all Spanish speaking countries may find this questionnaire valuable and applicable in their classes. They could evaluate their students' attitudes and consider values achievements throughout their work. Moreover, this tool may stimulate empirical researches in the PE area for all Spanish speaking countries, being that the Spanish language is one of the most spoken languages in the world.

AUTHOR CONTRIBUTIONS

Eridiola Buzi[abcd], Juan Antonio Larraz Domínguez[bd], Mehmet Türegün[cd], Juel Jarani[d], Emanuele Isidori[de].

(A - Study Design, B - Data Collection, C- Statistical Analysis, D - Manuscript Preparation, E - Founds Collection).

SUPPORTING AGENCIES

DISCLOSURE STATEMENT

No potential conflict of interest was reported by the authors.

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APPENDIX

Original English version of the *"Attitude of Children towards Values in Physical Education- (ACHV-PE) questionnaire".*

1.   It is important for me to congratulate my opponent even when I lose the game.
2.   I think that it is a good idea to make your opponents angry.
3.   It is important to help teammates to reach common goals.
4.   It is important to behave well in PE class.
5.   I think that students with disabilities could be an obstacle in the game.
6.   In the PE class, teachers should use "strategies" to correct misbehaviour.
7.   I can encourage my teammates' to play with good effort.
8.   It is acceptable to make your opponents angry during the game.
9.   I do not need to accept students with disabilities in games.
10.   It is important to shake hands with your opponents when the game finishes.
11.   In the game, you have to collaborate with your teammates.
12.   I think it is ok to provoke my opponents as long as I do not break the rules.
13.   I can help students with disabilities in PE class.
14.   It is important to shake hands with your opponent regardless if I win or lose.
15.   It is important to have support between teammates.
16.   I respect the opinions of the teacher even when I do not agree.
17.   If we include students with disabilities in the game, we are not going to have fun.

Total/ 5 = Score.
Teambuilding – Items 3, 7, 11, 15;
Respect – Items 1, 10, 14:
Inclusion – Items 5*, 9*, 13, 17*;
Fairness – Items 2*, 8*, 12*;
Discipline – Items 4, 6, 16.
(*) The score assigned for these items will be in reverse order from the Likert scale. For example, answer scored points "5" will be assigned "1" point (and 1 = 5; 2 = 4; 4 = 2); answers that scores "3", will remain unchanged.

Spanish version of the "Attitude of Children towards Values in Physical Education- (ACHV-PE) questionnaire".

1. Es importante felicitar a mis adversarios incluso cuando pierdo el juego.
2. Pienso que es buena idea enfadar a mis adversarios.
3. Es importante ayudar a mis compañeros de equipo para alcanzar los objetivos comunes.
4. Es importante comportarse bien en clase de Educación Física.
5. Creo que los estudiantes con discapacidad podrían ser un obstáculo en el juego.
6. En clase de Educación Física, los profesores deben usar estrategias que corrijan la mala conducta.
7. Puedo animar a mis compañeros a jugar con esfuerzo.
8. Es aceptable enfadar a mis oponentes durante el juego.
9. Prefiero no incluir en el juego compañeros con discapacidad.
10. Es importante darle la mano al oponente cuando el juego termina.
11. En el juego, debes colaborar con tus compañeros de equipo.
12. Creo que está bien provocar a mis oponentes sin incumplir las reglas.
13. Puedo ayudar a los estudiantes con discapacidad en clase de Educación Física.
14. Es importante darle la mano a mi oponente independientemente si gano o pierdo.
15. Es importante tener apoyo entre los compañeros del equipo.
16. Respeto las opiniones del profesor incluso cuando no estoy de acuerdo.
17. Si incluimos a estudiantes con discapacidad en el juego, no nos vamos a divertir.

Trabajo en equipo: Ítem 3, 7, 11, 15;
Respeto: Ítem 1, 10, 14;
Inclusión: Ítem 5*, 9*,13, 17*;
Justicia: Ítem 2*, 8*, 12*;
Disciplina: Ítem 4, 6, 16.

(*) La puntuación asignada para estos ítems estará en orden inverso a la escala Likert. Por ejemplo, a la respuesta que obtuvo "5" puntos se le asignará "1" punto (y 1 = 5; 2 = 4; 4 = 2); las respuestas que puntúan "3" permanecerán sin cambios.