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Analysing the structure, validity and reliability of the physical educators' attitude toward teaching individuals with Disabilities III – Peatid III

Autor(es): Campos, Maria J.; Ferreira, José P.; Block, Martin E.

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**ANALYSING THE STRUCTURE,
VALIDITY AND RELIABILITY OF THE
PHYSICAL EDUCATORS' ATTITUDE
TOWARD TEACHING INDIVIDUALS WITH
DISABILITIES III – PEATID III**

Maria J. Campos¹, José P.Ferreira¹, Martin E. Block²

First author contact:

Faculdade de Ciências do Desporto e Educação Física

Estádio Universitário de Coimbra, Pavilhão 3

3040-156 Coimbra PORTUGAL

mjcampos@fcdef.uc.pt

Tel. + 351 239 802770

Fax+ 351 239 802779

mjcampos@fcdef.uc.pt; jpl.ferreira.2010@gmail.com; meb7u@eservices.virginia.edu

ABSTRACT

The attitudes that teachers hold in relation to teaching students with disabilities is a key factor in the successful inclusion in regular school settings. In order to get a reliable insight on the teacher's perceptions of inclusion possibility, it is crucial the use of valid instruments. This study intends to test the validity and reliability of the *Physical Educators' Attitude toward Teaching Individuals with Disabilities III* - PEATID III (Rizzo, 1993), using a Portuguese version. Although this questionnaire is one of the most popular instruments to assess attitudes of Physical Education teachers regarding the inclusion of students with disabilities in mainstream Physical Education classes, its psychometric properties have never been fully assessed using confirmatory factor analysis.

The participants in this study were 413 Portuguese physical educators, 253 males and 160 females, aged between 21 and 58 years old ($M=32.43$; $SD=9.01$).

Our findings suggest that the PEATID III exhibits poor goodness of fit and does not provide a valid and a reliable scale to measure attitudes of physical educators toward the inclusion of students with disabilities in their classes.

Key-words: PEATID III, validity, reliability, attitudes, physical education teachers

¹ Laboratório de Psicologia do Desporto e do Exercício – Centro de Investigação do Desporto e da Actividade Física - Universidade de Coimbra, Estádio Universitário de Coimbra, Pavilhão III, Santa Clara, 3040-156 Coimbra, Portugal

² Kinesiology Program, University of Virginia - 210 Emmet St., S., Box 400407, Charlottesville, VA 22904-4407, United States of America

INTRODUCTION

Following international demands (e.g. Standard Rules on Equalization of Opportunities for Persons with Disabilities - UNESCO, 1993; Salamanca Statement and Framework for Action - UNESCO, 1994; United Nations Convention on the Rights of Persons with Disabilities - UNESCO, 2006) governments of the signing nations are supposed to eliminate legislative and constitutional barriers to inclusive education and ensure that the national school system educates all children. These concerns have become a central interest to educational researchers worldwide.

The Salamanca Statement (UNESCO, 1994) became an important guideline for policies in inclusive education and social services in many countries, including Portugal. However, these legal mandates for inclusion are not guarantee that all children will be accepted and treated equitably (Marks, 1997). Moreover, the European Agency for Development in Special Needs Education (Meijer, 2001) recognizes that inclusion largely depends on teachers' attitudes toward pupils with different needs and on the resources available to them, hence this topic has advanced as a decisive factor toward more inclusive schools. For these reasons, as international policies demand for new pedagogical approaches, schools must prepare themselves for the challenges of inclusion, being the teacher's responsibility to ensure that children with disabilities are accepted and challenged as learners (Marks, 1997). In the particular case of physical educators they should become proactive agents of change so that programs remain consistent with the intent of inclusion mandates (Kozub & Lienert, 2003).

Teachers are authority figures who hold the power to facilitate acceptance or rejection of children with disabilities and by the attitudes they model in the classroom (Marks, 1997). Favorable attitudes of teachers and students are seen as key factors for a successful inclusion (Conatser, Block & Lepore, 2000) and therefore they are of great interest for research. According to Block and Obrusnikova (2007), the key to achieve positive results in inclusion is not only placing pupils with special needs in PE, but also teacher's attitude in promoting positive social interactions and developing cooperative activities as well as promoting positive attitudes in pupils without disabilities. Block (2007) extends this argument suggesting that PE offers valuable opportunities for social acceptance and interaction between students with and without disabilities because of its unique instructional setting. It is also consensual that the teaching training of these physical educators should focus on the development of intentions, beliefs and positive attitudes toward inclusion of students with disabilities (Kowalski & Rizzo, 1996).

In order to assess teacher's perceptions toward inclusion, the use of valid and reliable instruments is crucial. According to Kobuz and Lienert (2003), attitude's studies in adapted physical education have mainly used two instruments to assess the physical educators' attitudes toward teaching students with disabilities: the *Physical Educators Attitude Toward Teaching the Handicapped* - PEATH (Rizzo, 1984), including modifications of the instrument (*Physical Educators' Attitude Toward Teaching Individuals With Disabilities III* - PEATID III, Rizzo, 1993) and the *Attitudes Toward Disabled Persons Scales* (Yuker, Block, & Young, 1966).

Tripp and Sherrill (1991) refer that Rizzo's survey has a theoretical foundation, whereas many other studies (instruments) do not have that theoretical foundation. More recently, two other surveys were developed: *Attitudes toward Teaching Individuals with Physical Disabilities in Physical Education* – ATIPDPE (Kudlacek, Valkova, Sherrill, Myers & French, 2002) and the *Physical Education Teachers' Beliefs and Intentions toward Teaching Students with Disabilities* (Block & Jeong, 2011). Despite these new options, the PEATID III seems to be the most popular and used survey worldwide.

According to Folsom-Meek and Rizzo (2002) the PEATID III measures the psychological construct of teacher's attitudes toward teaching students with disabilities in a regular physical education setting. Based on a principal dimensions' analysis, PEATID III measures three psychological properties (of the beliefs about teaching students with disabilities). These three properties are (a) outcomes of teaching students with disabilities in regular classes, (b) effects on student learning, and (c) the need for more academic preparation to teach students with disabilities. The PEATID III seems to measure beliefs about teaching students with disabilities in regular classes. Beliefs, according to the theory of reasoned action (Ajzen & Fishbein, 1980), are the basis of attitudes toward teaching students with disabilities.

According to Folsom-Meek and Rizzo (2002) due to the increasing use of the PEATID III, it is crucial to prove its construct validity and reliability in order to give credibility to research examining attitudes toward teaching students with disabilities. Although widespread, the survey was criticized for its lack of theoretical completeness and robustness (Kozub & Lienert, 2003). Previous studies have reported construct validity of the first version of the instrument (Rizzo, 1988) and in 2002, Folsom-Meek and Rizzo examined the construct validity of the PEATID III only for future professionals. They defended that further research needs to address construct validity of PEATIDIII containing other disabilities and that the next step in research is to establish concurrent validity of the PEATID III (Folsom-Meek & Rizzo, 2002).

Although some studies demonstrated the reliability of Rizzo's instruments, none has been published with confirmatory factor analysis for PE teachers. As such, the main purpose of the present study is to assess the validity and reliability of the survey *PEATID III* (Rizzo, 1993) using the Portuguese version. Additionally, it also focus on its psychometric properties using confirmatory factor analysis to assess the goodness-of-fit for the original three factors model.

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METHOD

Participants

The participants of this study were 413 physical educators, age ranging from 21 to 58 years old ($M=32.43$; $SD=9.01$), 253 male ($M=33.00$; $SD=8.92$) and 160 female ($M=31.53$;

SD=8.12). Participants ranged from 1 to 36 years of experience ($M = 8.43$; $SD 8.28$). From the sample, 237 PE teachers had experience in teaching students with disabilities and 176 had never taught students with disabilities in their PE classes.

Participants were recruited in elementary, middle and high schools from the central part of Portugal. All schools were inclusive, that is, students with different types of disability such as physical or mild intellectual disability attended regular PE classes in an inclusive environment. Participants were recruited from different backgrounds (public/ private schools; elementary, middle and secondary PE teachers) in order to assure the maximum representativeness of the target population.

Instruments

The Portuguese version of the *Physical Educators Attitude toward Teaching Individuals with Disabilities – III (PEATID-III)* (Rizzo, 1993) was used to measure the attitude of physical education teachers toward inclusion in PE. According to Folsom-Meek and Rizzo (2002) PEATID III is useful to allow researchers to specify disability types and the number of disabilities they want to assess. This instrument also allows researchers to assess attributes they believe may contribute to or account for variance in attitudes toward teaching students with disabilities. It is straightforward in its purpose and versatile enough to assess attitudes of future professionals as well as teachers with many years of experience (Folsom-Meek & Rizzo, 2002). This questionnaire allows researchers to determine if a linear hierarchical structure of beliefs and attitudes toward teaching students with disabilities exists in regular class settings. However, results are generalizable only when PEATID III contains the following disabilities: behavioral disorders, mild intellectual disabilities, and learning disabilities (Folsom-Meek & Rizzo, 2002). In the present study, four disability conditions were present – intellectual disability, physical disability, hearing impairment and visual impairment.

The PEATID III consists of two sections. The first section assesses attitudes toward teaching students with disabilities in PE by measuring beliefs. The second section assesses attributes (demographic and descriptive) of participants - gender, age, years of experience, previous experience, academic preparation in adapted physical education and special education, perceived competence and perceived quality of experience. The first section of the PEATID III consists of 12 statements and after each of the 12 statements, labeled disability conditions are listed along with a 5–point Likert scale (i.e., 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, 5 = strongly agree). Respondents are instructed to mentally insert the appropriate label into the blank when answering a given item. Six items are positively phrased and six are negatively phrased. Computer software used in the statistical analyses converted negatively worded questions to positive scores. For PEATH II and PEATID III, a table of random numbers was used to order the statements of the questionnaire. Scale

scores are derived from the items, one for each disability condition and a total score. Scale mean scores are based on the sum of the item scores for each scale divided by the number of items within the scale so that they are interpreted with reference to the original 5-point Likert scale. To derive proper scale means, the scores for statements that are negatively phrased are reversed (i.e., 5, 6, 7, 8, 9, and 10). Rizzo (1983, 1984, 1988) repeatedly used this scoring system model to show the utility of PEATID III.

The original survey, PEATH (Rizzo, 1983, 1984) was subjected to content and construct validation procedures. According to Folsom-Meek and Rizzo (2002) only one study examined the construct validity of the first version of the PEATID III (Rizzo, 1988) and its results presented at a national convention, but the complete findings were never published formally in a journal. Reliability estimates on overall attitude score for teachers yielded an alpha coefficient of .85 for the PEATH (Rizzo, 1988). The instrument was revised using principal dimensions analysis with varimax and oblique solutions after rotation with Kaiser normalization. Data were analyzed using composite scores for each question (sum of scores for the disabilities). Accordingly, the PEATH II (Rizzo, 1986, 1988) consisted of 12 rather than 20 belief items and changes in labels from learning/cognitive and physical disabilities to behaviorally disordered, educable mentally retarded and learning disabled. For the third revision of the questionnaire, the PEATH II was modified as the *Physical Educators' Attitude toward Individuals with Disabilities III* - PEATID III (Rizzo, 1993). This revision was necessary to reflect the current terminology describing individuals with disabilities, including person-first language, replacement of the word handicapped with disabilities, and changing educable to mild intellectual disability (Folsom-Meek & Rizzo, 2002).

The validity of PEATID III was assessed only with future PE professionals (Folsom-Meek & Rizzo, 2002) where construct validity was obtained through principal dimensions analysis. The Portuguese version of the PEATID III used was adapted and translated by two English speaking APA professionals following the procedures suggested by Vallerand (1989), using back translation (Banville & Desoriers, 2000) by a professional English teacher for the trans-cultural validation of the psychological instrument.

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Procedures

A sample of elementary, middle and high schools was randomly selected, i.e., every school had an equal chance of being chosen to take part on the study (Bordens & Abbott, 2008). The purpose of the study was discussed with the principals and formal consent was obtained. The purpose of the study and the administration procedures were explained to the participants before filling in the questionnaire. Approximately one week after the initial administration, a follow-up personal or by phone reminder was made to participants. Questionnaires were collected after an additional week period, when data collection formally ceased.

Data analysis

Descriptive statistics were computed for every item and for the three subscales of the PEATID III, including the mean and standard deviation values.

To assess the validity and reliability of the PEATID III, the analysis followed Rizzo's (1988) protocol for principal dimensions analysis, composite mean scores for each question (sum of scores for each of the four disabilities), with 20 being the highest possible composite mean score.

Alpha coefficient (Cronbach, 1951) was used to assess internal consistency of the three subscales. An acceptable reliable value was set at .70 (Bryman, 2004). Test retest reliability using 15 PE teachers was assessed to measure the temporal stability, using the intra class correlation coefficient (ICC). ICCs were classified as follows: 'excellent' ($\geq .81$), 'good' (.61 -.80), 'moderate' (.41 -.60), 'poor' ($\leq .40$) (Bryman, 2004).

Confirmatory factor analysis (CFA) is a statistical technique used to verify the factor structure of a set of observed variables and allows the researcher to test the hypothesis that a relationship between observed variables and their underlying latent constructs exists. CFA relies on several statistical tests to determine the adequacy of model fit to the data (Hu & Bentler, 1999). Hair et al. (2010) recommend the following goodness of fit indices to be reported for both measurement model and structural model fit: Chi square, degrees of freedom, one absolute fit index (e.g. goodness of fit index (GFI)), one incremental fit index (e.g. normed fit index (NFI)), and one badness of fit index (e.g. root mean square error of approximation (RMSEA)). In the present study five goodness-of-fit indices were calculated in order to assess global fit of the model. These indices include: chi-square (χ^2) and its subsequent ratio with degrees of freedom (χ^2/df); goodness-of-fit index (GFI); adjusted GFI; comparative fit index (CFI) and root mean square error of approximation (RMSEA).

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RESULTS

Descriptives

Table 1 shows the description of the 12 Items on the PEATID III with means and standard deviations.

Table 1 – Means and standard deviations for the three dimensions of PEATID III

	M	SD
Outcomes of teaching students with disabilities in regular classes (5, 6, 7, 9, 10, 12):	13.31	3.13
mean_item5	16,40	4,006

mean_item6	14,31	4,321
mean_item7	9,32	4,433
mean_item9	9,33	4,175
mean_item10	15,33	4,366
mean_item12	15,17	4,225
Effects on student learning (1, 2, 3, 4):	13.51	3.56
mean_item1	14,02	4,139
mean_item2	11,72	4,710
mean_item3	13,87	4,205
mean_item4	14,42	3,891
Need for more academic preparation to teach students with disabilities (8, 11):	10.30	3.89
mean_item8	12,34	5,118
mean_item11	8,25	4,196

Means and standard deviation values derive from composite scores for each question (sum of scores for each of the four disability conditions) with 20 being the highest possible composite mean score. According to Rizzo (1993) and Folsom-Meek & Rizzo (2002), the first component *outcomes of teaching students with disabilities in regular classes* contained six outcome beliefs. These belief items, with regard to students with disabilities, were: (a) would not be accepted by peers, (b) would disrupt harmony of the class, (c) would cause an unfair burden on teachers, (d) would cause more work for the teacher, (e) should not be taught in regular classes as require too much teacher time, and (f) should be taught in a regular class whenever possible, presented a mean value of 13.31 ± 3.13 . The second dimension, *effects on student learning*, contained four items: (a) both groups of students work together, (b) working together motivates students without disabilities, (c) students with disabilities will learn more rapidly in classes with peers, and (d) students with disabilities will have more positive self-concept as a result of being successful in regular classes. The items represent students with varying abilities learning together in physical education. Our results indicated a mean value of 13.51 ± 3.56 . The third dimension, *need for more academic preparation to teach students with disabilities*, includes just two items both related to the need for additional coursework and academic preparation. Results showed a mean value of 10.30 ± 3.89 .

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Reliability

The Portuguese version of the PEATIDIII showed a good internal consistency (Hair et al., 2010) with a total Cronbach Alpha coefficient value of .89. The *outcomes* and the *effects* subscales showed a good internal consistency, $\alpha=.83$ and $\alpha=.86$ respectively, however the *need for more academic preparation* subscale revealed a poor value of $\alpha=.55$. The Test-retest reliability values were excellent for the *outcomes* dimension ($ICC=.91$), good for *need for more academic preparation* ($ICC=.72$) and moderate for the *effects* dimension ($ICC=.53$) over a 16 day period.

Confirmatory factor analysis (CFA)

The goodness-of-fit for the factorial model was assessed using CFA to identify the three factor model in order to estimate the model parameters with a sample of 413 PE teachers. Figures 1 represents the factorial structure for PEATID III with the three dimensions defined by Rizzo (1993, 2002).

Figure 1 – Three factors structure for the PEATID III

The covariance values in the factorial structure of PEATID III with three unobserved variables, ranged from.53 to.80 for “outcomes of teaching students with disabilities in regular classes”, from.67 to.84 for “effects on student learning” and from.41 to.96 for “need for more academic preparation to teach students with disabilities”.

Table 2 shows CFA absolute fit indices results for the PEATID III original model tested with a Portuguese PE teacher’s sample.

Table 2 – CFA results for the Portuguese version of PEATID III

Model	Sample size	χ^2	df	P	χ^2/df	CFI	GFI	AGFI	SRMR	RMSEA
12 items	413	575,96	51	.000	11,29	.80	.79	.68	1.41	.16

The χ^2 value obtained (575.96) differs significantly from the independence model ($p<.001$). CFI, GFI and AGFI index values were.80,.79 and.68 respectively, showing a poor model fit (Hu & Bentler, 1999). χ^2/df value, a ratio value used to assess the level of adjustment to the model was higher than 3.0 ($\chi^2/df=11.29$) showing a poor adjustment (Joreskog, 1969) for this specific criteria. Additionally, SRMR index showed a cut-off value higher than 0.08 (SRMR=1.41) and RMSEA a cut-off value higher then 0.06 (RMSEA=0.16) providing further evidence model fit adjustment problems.

DISCUSSION

This study aimed to assess the validity and reliability of the *Physical Educators’ Attitude toward Teaching Individuals with Disabilities III* - PEATID III (Rizzo, 1993) using a sample of Portuguese physical educators.

To determine internal consistency Cronbach’s alpha coefficient was used and the scale showed a good internal consistency ($\alpha=.89$). In a previous study Folsom-Meek and Rizzo (2002) reported a value of.85 for the total score. Although *outcomes* and *effects* subscales showed a good internal consistency ($\alpha=.83$ and $\alpha=.86$, respectively), the *need for more academic preparation* subscale revealed poor Alpha values ($\alpha=.55$). Having only two items in this subscale is problematic in reliability terms.

Test-retest was assessed using repeated administration over a 16 day period, with ICC ranging from moderate.53 (*effects*) to excellent.91 (*outcomes*). The *need for more academic preparation* subscale revealed a ICC value of.72. Overall, the PEATID III showed to be a reliable inventory.

The three-factor correlated model showed standardized factor loadings ranging from.41 to.96. The χ^2 value obtained (575.96) differs significantly from the independence

model ($p < .001$). χ^2/df value, a ratio value used to assess the level of adjustment to the model was higher than 3.0 ($\chi^2/df = 11.29$) showing a poor adjustment (Joreskog, 1969) for this specific criteria. CFI, GFI and AGFI indices values were .80, .79 and .68 respectively, showing a poor model fit (Hu & Bentler, 1999). These values demonstrate important limitations of the structure of the three-factor model tested, reflecting a poor model fit. Additionally, SRMR index showed a cut-off value higher than 0.08 (SRMR = 1.41) and RMSEA showed a cut-off value higher than 0.06 (RMSEA = 0.16), providing evidence of two a cut-off index value that clearly contributes to an higher type II error rate and doesn't provide good support for the model fit (Hu & Bentler, 1999) among the physical educators. Folsom-Meek & Rizzo (2002) established construct validity and subsequently reliability of the PEATID III using the principal dimensions analysis and attested that it was a reliable survey for future professionals; however the present study showed that the psychometric properties are not supporting the original model when using the instrument with PE teachers with a range of experience varying from 1 to 36 years. Furthermore, results from the confirmatory factor analysis revealed structure problems that require further in-depth analysis.

CONCLUSIONS

In the last decades many studies had been conducted using the PEATID-III with PE teachers, as no previous published study reported any factor analysis to this specific questionnaire. Despite its dissemination worldwide, the psychometric properties of the PEATID III have not been assessed with physical education teachers.

The results of this study indicate that the questionnaire is not a satisfactory self-reported measure to assess PE teachers' attitudes toward inclusion of students with disabilities. As such, the present study does not support the usefulness of the PEATID III as a brief and psychometrically sound scale for measuring attitudes among physical educators in relation to inclusion of students with disabilities.

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