Consistency of the Buss and Perry Aggression Questionnaire in Peruvian female university nursing students

Consistencia del Cuestionario de Agresión de Buss y Perryen estudiantes universitarias peruanas de Enfermería

Consistência do Questionário de Agressão de Buss e Perry em estudantes universitárias peruanas de Enfermagem

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ABSTRACT

Introduction: aggressive behavior is part of the disruptive impulse control and behavioral disorders established in The Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition (DSM-V). **Objective:** to evaluate the consistency of the Buss and Perry Aggression Questionnaire (short version) in Peruvian university nursing students. **Method:** an observational, descriptive and cross-sectional psychometric instrumental study was carried out in a population of 374 university students. 175 students were included by simple random sampling. The BPAQ was used as an instrument, adapted to Spanish and validated in university students from the city of Medellín (Colombia) by Castrillón. Cronbach's alpha, Kaiser-Meyer-Olkin and Bartlett's sphericity tests were calculated and exploratory and confirmatory factor analyzes were performed. **Results:** the 15-item model with two dimensions (D1=1,2,3,4,5,6,7; D2=8,9,10,11,12,13,14,15) presented SRMR and CFI values equal to 0.081 and 0.993, respectively, but with high error values in items 9 to 11, while the model that includes items 13 and 14 in D1 maintained adequate fit indices, but with reduced error values, in addition to having factor loadings greater than 0.7 in all items and adequate reliability (α=0.92 for D1 and α=0.90 for D2). **Conclusions:** the 15-item aggression questionnaire (short version) is reliable for its application in young Peruvian university students.

Keywords: aggression; reliability; violence; aggressive behavior; surveys; questionnaires; women; BPAQ aggression questionnaire

RESUMEN

Introducción: la conducta agresiva forma parte de los trastornos disruptivos del control de impulsos y de la conducta establecidos en The Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition (DSM-V). **Objetivo:** evaluar la consistencia del Cuestionario de Agresión de Buss y Perry (versión corta) en estudiantes universitarias peruanas de Enfermería. **Método:** se realizó un estudio instrumental psicométrico de tipo observacional, descriptivo y transversal en una población de 374 universitarias. Se incluyeron 175 estudiantes por muestreo aleatorio simple. Se empleó como instrumento el BPAQ, adaptado al español y validado en estudiantes universitarios de la ciudad de Medellín (Colombia) por Castrillón. Se calcularon las pruebas alfa de Cronbach, Kaiser-Meyer-Olkin y esfericidad de Barlett y se realizaron los análisis factoriales exploratorios y confirmatorios. **Resultados:** el modelo de 15 ítems con dos dimensiones (D1=1,2,3,4,5,6,7; D2=8,9,10,11,12,13,14,15) presentó valores de raíz cuadrada de la media de residuos cuadrados (SRMR) y ajuste comparativo (CFI) iguales a 0,081 y 0,993, respectivamente, pero con elevados valores de error en los ítems 9 a 11, mientras que el modelo que incluyó los ítems 13 y 14 en D1 mantuvo índices de ajuste adecuados, pero con reducción de los valores de error, además de tener cargas factoriales superiores a 0,7 en todos los ítems y adecuada confiabilidad (α=0,92 para D1 y α=0,90 para D2). **Conclusiones:** el cuestionario de agresión de 15 reactivos (versión corta) es confiable para su aplicación en jóvenes universitarias peruanas.

Palabras clave: agresión; confiabilidad; violencia; conducta agresiva; encuestas; cuestionarios; mujeres; cuestionario de agresión BPAQ

RESUMO

Introdução: o comportamento agressivo faz parte do controle disruptivo de impulsos e dos transtornos comportamentais estabelecidos no Manual Diagnóstico e Estatístico de Transtornos Mentais – Quinta Edição (DSM-V). **Objetivo:** avaliar a consistência do Questionário de Agressão de Buss e Perry (versão curta) em estudantes universitários de enfermagem peruanos. **Método:** estudo instrumental psicométrico observacional, descritivo e transversal, realizado em uma população de 374 estudantes universitários. Foram incluídos 175 estudantes por amostragem aleatória simples. Como instrumento foi utilizado o BPAQ, adaptado para o espanhol e validado em estudantes universitários da cidade de Medellín (Colômbia) por Castrillón. Foram calculados os testes alfa de Cronbach, Kaiser-Meyer-Olkin e esfericidade de Bartlett e realizadas análises fatoriais exploratórias e confirmatórias. **Resultados:** o modelo de 15 itens com duas dimensões (D1=1,2,3,4,5,6,7; D2=8,9,10,11,12,13,14,15) apresentou valores de SRMR e CFI iguais a 0,081 e 0,993, respectivamente, mas com altos valores de erro nos itens 9 a 11, enquanto o modelo que inclui os itens 13 e 14 em D1 manteve índices de ajuste adequados, mas com valores de erro reduzidos, além de apresentar cargas fatoriais superiores a 0,7 em todos os itens e confiabilidade adequada (α=0,92 para D1 e α=0,90 para D2). **Conclusões:** o questionário de agressão de 15 itens (versão curta) é confiável para sua aplicação em jovens universitários peruanos.

Palavras-chave: agressão; confiabilidade; violência; comportamento agressivo; pesquisas; questionários; mulheres; questionário de agressão BPAQ

INTRODUCTION

Aggressive behavior is part of the disruptive impulse control and conduct disorders established in The Diagnostic and Statistical Manual of Mental Disorders - Fifth Edition (DSM-V).[1]

This behavioral disorder can appear in childhood or adolescence and it is linked to several psychiatric disorders, so it can be part of the clinical picture of attention deficit hyperactivity disorder in children and adolescents and dementia in older adults, as well as domestic violence in adults.[2,3] Moreover, it can be a predictor of possible episodes of violence, so its study is important in the health field due to the wide range of possible negative outcomes for public health, the use of medical resources and the deleterious effects it brings with it.[2]

Different studies have shown that aggressive behavior is present in both sexes, however, women are more likely to perform this action indirectly, increasing its frequency as age increases.[4,5] Likewise, the fear of being harmed would act as a powerful inhibitor of direct aggression in women.[5]

One of the most widely used scales adapted to Spanish for the screening of aggressive behavior is the Buss and Perry Aggression Questionnaire (BPAQ) which, in its original version, it is composed of 40 items grouped into four dimensions: physical aggression, verbal aggression, anger and hostility.[6] The reduced version has shown adequate consistency[7], even in the Peruvian adolescent population.[8]

Due to the importance of the evaluation of aggressive behavior in the female population and the absence of studies demonstrating the reliability of a short version in this population segment, the present study was proposed with the aim of evaluating the consistency of the Buss and Perry Aggression Questionnaire (short version) in Peruvian university nursing students.

METHOD

An observational, descriptive and cross-sectional psychometric instrumental study was conducted through secondary analysis of data from the study "Aggressive behavior associated with premenstrual dysphoric disorder in female university students" approved by the Universidad Nacional San Luis Gonzaga de Ica, Peru.

The population consisted of 324 female university students from the Faculty of Nursing of the Universidad Nacional San Luis Gonzaga. The sample included 175 enrolled students attending on-site classes, whose ages ranged from 18 to 29 years (mean: 21.99; standard error: 0.18), selected by simple random sampling.

The instrument used was the BPAQ(6), adapted to Spanish and validated in university students in the city of Medellín (Colombia) by Castrillón, et al. (9) It consists of 19 statements based on psychosocial attributes, such as physical aggressiveness, verbal aggressiveness, anger and hostility; rated on a Likert scale (5=completely TRUE for me; 4=quite TRUE for me; 3=neither TRUE nor FALSE for me; 2=quite FALSE for me; 1=completely FALSE for me).

The analysis included the calculation of the summary measures (mean and standard deviation) of the items that form part of the scale, as well as the intercorrelations between items with the global scale. The consistency of the instrument was assessed by Cronbach's alpha of the global scale and with item deletion using the 'psych' and 'Rcmdr' packages of the R program.

The overall scale and the scale with item deletion that provided the best reliability were subjected to exploratory and then confirmatory factor analysis. Previously, Kaiser-Meyer-Olkin and Barlett's sphericity tests were performed. The former to determine the adequacy of the sample data when performing the factor analysis and the latter to determine whether the items were interrelated in order to test the statistical hypothesis. The exploratory factor analysis was performed with the IBM SPSS v.25 program, while the confirmatory factor analysis was performed using the R program and the 'Rcmdr', 'lavaan' and 'semPlot' packages.

The exploratory factor analysis with the 15-item scale was performed using the principal component analysis as the extraction method and the Oblimin extraction method with the Kaiser normalization. This analysis resulted in two models, each with two dimensions, which were subjected to confirmatory factor analysis. The robustness of the model was determined by means of the absolute (root mean square residuals - SRMR) and incremental (comparative fit - CFI) fit indices with the unweighted least squares method using a matrix of polychoric correlations. Finally, the reliability of the scale dimensions was determined using Cronbach's alpha.

RESULTS

The analysis using the correlation matrix (https://zenodo.org/records/14816792) determined that items 18 and 19 did not correlate with all the other items of the questionnaire. Item 18 only correlated with questions 3, 7 and 15, while item 19 only correlated with items 16, 17 and 18.

These items also presented low correlation with the total score. Likewise, the scale reliability analysis determined that the questionnaire improved consistency if items 16, 18 and 19 were deleted (Table 1).

Table 1: Variation of summary measures of item-total correlation and
reliability of the scale according to item deletion

Item	Mean if item is eliminated	Total variance if item is eliminated	Item correlation - total corrected	Cronbach's alpha if item is eliminated
P1	37,25	125,73	0,57	0,89
P2	37,41	126,06	0,63	0,89
P3	37,50	127,80	0,59	0,89
P4	37,65	129,27	0,61	0,89
P5	37,50	127,52	0,58	0,89
P6	37,60	127,16	0,69	0,88
P7	37,68	128,98	0,68	0,89
P8	36,82	121,83	0,70	0,88
P9	36,59	124,46	0,58	0,89
P10	36,81	122,57	0,65	0,88
P11	36,45	122,31	0,64	0,88
P12	37,18	123,41	0,68	0,88
P13	37,30	123,85	0,74	0,88
P14	37,29	125,70	0,67	0,88
P15	37,03	123,03	0,69	0,88
P16	36,06	130,26	0,27	0,90
P17	36,05	126,62	0,44	0,89
P18	36,13	133,70	0,18	0,90
P19	36,23	135,34	0,07	0,91

The Barlet ($p<0.001$) and Keiser-Meir-Olkin (KMO=0.915) sphericity tests showed that the sample data allowed exploratory factor analysis, so we proceeded to factor analysis.

In the 19-item single-factor model, the lowest factor loadings (0.106;0.231; 0.039 and 0.012) corresponded to items 16, 17, 18 and 19, with a poor absolute fit index (SRMR=0.135), despite having an adequate incremental fit index (CFI=0.941). When these items were deleted, the 15-statement single-factor model maintained similar fit indices (SRMR=0.118; CFI=0.970) with slightly low factor loadings on items 9, 10 and 11.

However, the 15-item model with two dimensions (D1=1,2,3,4,5,6,7; D2=8,9,10,11,12,13,14,15) presented SRMR=0.081 and CFI=0.993 values, but with high error values in items 9 to 11, while the model that included items 13 and 14 in D1 maintained adequate fit indices, but with reduced error values, in addition to having factor loadings above 0.7 in all items (Figure 1).
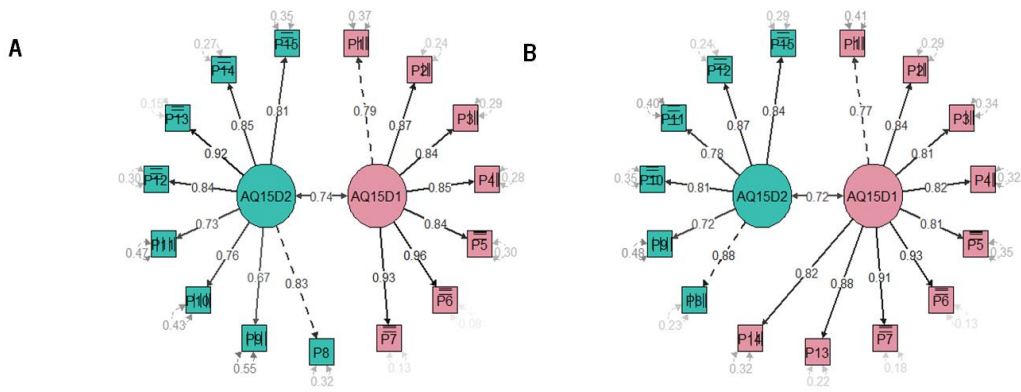
A: Modelo de 15 ítems con dos dimensiones (D1=1,2,3,4,5,6,7; D2=8,9,10,11,12,13,14,15; SRMR=0,081; CFI=0,993)
B: Modelo de 15 ítems con dos dimensiones (D1=1,2,3,4,5,6,7,13,14; D2=8,9,10,11,12,15; SRMR=0,081;

Fig. 1: Factor loadings of two 15-item models with two dimensions.

Table 2 shows that the reliability of the scale with 19 items was adequate (α=0.89), improving when items 18 and 19 were deleted (α=0.92). This result remained almost unchanged when items 16 and 17 were deleted (α=0.93) due to the low factor loadings they presented.

Table 2: Reliability of the scale with 19, 17 and 15 items

Number of items	Item deleted	Scale summary measures		Cronbach's alpha	
		Mean	**DE**	**Est.**	**IC 95%**
19	None	39,03	11,84	0,89	0,87 – 0,91
17	18 y 19	33,33	11,44	0,92	0.90 – 0,94
15	16, 17, 18 y 19	27,38	10,32	0,93	0,91 – 0,94

Similarly, the two dimensions (D1=1,2,3,4,5,6,7,13,14; D2=8,9,10,11,12,15) that presented better results in the confirmatory factor analysis (15-item version) had adequate reliability (α=0.92 for D1 and α=0.90 for D2 (Table 3).

Table 3: Peruvian version of the aggressiveness questionnaire with two dimensions for young women

Dimension	N°	Item	Cronbach's alpha (IC 95 %)
Self-control of aggressive behavior	1	Occasionally I can't control the urge to hit another person.	0,92(0,90 - 0,94)
	2	If I am sufficiently provoked, I can hit another person.	
	3	Some people provoke me to the point where we hit each other.	
	4	I have threatened people I know	
	5	Sometimes I can't control the urge to hit someone.	
	6	Some people annoy me so much that we hit each other.	
	7	I have physically threatened other people.	
	13	Some of my friends think I am an impulsive person.	
	14	I often argue with others.	
Perception of external hostility	8	I know my friends criticize me behind my back.	0,90(0,88 - 0,92)
	9	Sometimes I feel like people are laughing at me behind my back	
	10	I know my friends are talking about me behind my back	
	11	Sometimes I feel that people criticize me behind my back.	
	12	My friends say I argue a lot	
	15	Some of my friends think I get angry easily.	

DISCUSSION

The analysis supports the short version of 15 items with a two-dimensional structure, with adequate overall consistency and for each of the dimensions. In addition, they reflect that their premises are sufficient to differentiate the answers given by the students evaluated. Likewise, its formulation would be culturally accepted, allowing it to be solved by the majority of the population under study. Thus, this abbreviated version can be used as a screening instrument in clinical research settings to detect at-risk groups.

However, the results of the exploratory factor analysis show a regrouping of items into two dimensions, unlike the original scale and the various abbreviated versions, but without losing overall consistency or consistency by dimensions.

Unlike the original version, the short version of the Aggression Questionnaire validated by Castrillón, et al.[9] only included 19 items grouped into five factors (deficit in self-control of physical aggression, perception of external hostility, deficit in self-control of verbal aggression, distrust and non-aggression). Several items were eliminated because they did not saturate significantly in any of the factors; most of them were part of the irascibility factor in the original questionnaire.

The Peruvian version obtained through this study eliminates the items related to distrust and non-aggression; however, the confirmatory factor analysis determines a new regrouping in two dimensions, unlike the three factors of the Medellín version[9], where the items that remained in the questionnaire are inserted.

These two factors would be reporting: self-control of aggressive behavior (items 1,2,3,4,5,6,7,13 and 14) and the perception of external hostility (items 8, 9, 10, 11, 12 and 15); that is, the internal and external aspects that would propitiate the expression of aggressive behavior from the point of view of the person evaluated. This variation in the grouping and naming of the dimensions was also proposed in the study by Castrillón, et al.[9] A Brazilian study[10] also reduced the number of questionnaire items (12 items) grouped in the classic four dimensions.

The reading of the results obtained for this scale, which makes it possible to screen aggressive behavior, must consider the diversity of concepts and variables that revolve around these in order to establish them in different spaces and cultures.[4,11,12,13] The physical dimension may be a mandatory element in some, but not in others. In other cases, only the presence of uncontrolled anger is sufficient, others only require the destruction of objects, and others must affect people; in some cases, the legal space is used for its definition.[13]

CONCLUSIONS

This study is the first to explore the reliability of the aggression questionnaire in young Peruvian university students and has made it possible to establish a short version of 15 items with high consistency.

Further research is needed to develop instruments for detecting aggressive behavior that are applicable to individual cultural contexts and specific populations, such as children, the elderly, and the prison population, among others.

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Conflicts of interest:
The authors declare that there are no conflicts of interest.

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Complementary file (Open Data):
Análisis de la matriz de correlaciones empleada