

# Internal validity, dimensionality and performance of the Body Shape Questionnaire in a group of Brazilian college students

## Validade interna, dimensionalidade e desempenho da escala Body Shape Questionnaire em uma população de estudantes universitários brasileiros

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### Abstract

**Objective:** To adapt the Body Shape Questionnaire for use in the Brazilian population; to study the internal validity and the dimensionality of the scale when used in a non-clinical Brazilian population. **Method:** A cross-sectional study was accomplished comprising 164 students in the first 3 years of the School of Medicine conveniently selected at the Universidade Federal de São Paulo. The 34-item Body Shape Questionnaire version and a questionnaire to assess demographic and anthropometric information were used. **Results:** The internal consistency of the Body Shape Questionnaire measured by Cronbach's alpha was 0.97, indicating that the questions of the scale converge to the same construct. The factor analysis of the scale resulted in a four-dimension solution accounting for 66.4% of the total data variability. Regarding the final score of Body Shape Questionnaire, the mean score was  $58.7 \pm 25.1$  for men and  $89.7 \pm 31.3$  for women. **Discussion:** We found statistically significant gender differences in the means of the Body Shape Questionnaire scores. Women showed higher dissatisfaction than did men as to their appearance as measured by the Body Shape Questionnaire. The adapted version of the scale seems to maintain the characteristics of the original scale.

**Descriptors:** Body image; Personality factor questionnaire; Form perception; Students; Validity of tests

### Resumo

**Objetivo:** Adaptar a escala Body Shape Questionnaire para uso no Brasil; estudar a validade interna e a dimensionalidade da escala quando usada em uma população não clínica brasileira. **Método:** Um estudo de corte transversal foi realizado envolvendo uma população selecionada por conveniência de 164 estudantes dos três primeiros anos do curso de Medicina da Universidade Federal de São Paulo. Foram usados a versão de 34 itens do Body Shape Questionnaire e um questionário adicional para informação demográfica e antropométrica. **Resultados:** A consistência interna do Body Shape Questionnaire, medida através do alfa de Cronbach, foi de 0,97, o que indica que as questões da escala convergem para um mesmo construto. A análise fatorial da escala resultou em uma solução de quatro dimensões que responde por 66,4% da variabilidade total dos dados. Em relação aos escores Body Shape Questionnaire, sua média foi de  $58,7 \pm 25,1$  para os homens e  $89,7 \pm 31,3$  para as mulheres. **Discussão:** Encontramos uma diferença estatisticamente significativa entre os gêneros na média dos escores do Body Shape Questionnaire. As alterações de imagem corporal, medidas pelo Body Shape Questionnaire, mostram uma grande insatisfação com a aparência em mulheres quando comparadas aos homens. A versão adaptada da escala parece manter as características da escala original.

**Descritores:** Imagem corporal; Questionário de fatores de personalidade; Percepção de forma; Estudantes; Validade dos testes

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## Introduction

The concept of "body image" as a psychological phenomenon was initially set forth in 1935 by the German writer Schieler as being the image we have of our own bodies in our minds, which can explain the way in which our body is presented to ourselves. Slade expanded on this concept by defining it as a mental image we have of the size, shape and contour of our own bodies, as well as of our feelings regarding these characteristics and the parts that constitute our bodies. Therefore, the body image has two main components: a perceptive and an attitudinal one<sup>1,2</sup>.

Alterations in body image can be found in both neurological and psychiatric disorders, being part of the DSM IV (Diagnostic and Statistical Manual of Mental Disorders, 4<sup>th</sup> edition) for Anorexia Nervosa, Bulimia Nervosa and Body Dimorphic Disorders<sup>3</sup>.

Dissatisfaction with body shape or appearance is considered to be frequent particularly among young women.<sup>4</sup> Studies show that men can also be excessively concerned with their body images<sup>5,6</sup>.

Concern with body shape is frequent among Western women, and is the core issue when we focus on eating disorders. Until 1987 there were no instruments that would satisfactorily measure these concerns, and Cooper and collaborators developed the Body Shape Questionnaire (BSQ) with this purpose. It is a self-administered 34-item questionnaire that refers to the condition of the respondent in the prior 4 weeks and was originally validated in a population of English women from the community (n = 535) compared to a group of bulimic patients (n = 38)<sup>4</sup>. In the construction of the instrument, the items resulted empirically both from the eating disorders and the non-clinical groups.

The objective of this study was to adapt the 34-item BSQ scale to be used in Brazil and to study its internal validity and dimensionality in a non-clinical Brazilian population.

## Method

### 1. Sample

One hundred and sixty-four (164) students of both genders were conveniently selected, while in their first three years at the Medical School of the Universidade Federal de São Paulo. The number of students corresponded to 48.5% of the total number of students enrolled on those years.

### 2. Instruments

The BSQ was used in its 34-question original version of Cooper et al.<sup>4</sup> The following scores were taken into account to quantify concerns with body image, according to standards of the original study:

**No concern**, when the total score was lower than or equal to 110 (which corresponds to the mean score of the non-clinical population of the original version of Cooper et al. plus one standard deviation).

**Mild**, when the total score was higher than 110 and lower than or equal to 138 (equivalent to the range between the totals of one and two standard deviations from the mean score of the non-clinical population).

**Moderate**, when the total score was higher than 138 and lower than or equal to 167 (corresponding to the range between the mean

score of the non-clinical population surveyed plus two standard deviations and the same mean plus three standard deviations).

**Severe**, when the total score is higher than 167 (corresponding to values higher than the mean score of this population plus three standard deviations)<sup>7</sup>. Parallel to this, we have elaborated an initial questionnaire to investigate demographic and anthropometric data. This information enabled us to calculate the BMI (Quetelet's index of body mass) by dividing the weight in kilograms by the height square in meters. Based on the BMI, interviewees were divided into the following categories: below normal weight (BMI < 18.5); healthy weight range (BMI between 18.5-24.9); overweight (BMI between 25.0-29.9); obese (BMI ≥ 30)<sup>8,9</sup>.

### 3. Procedures

The BSQ was adapted through a translation and a back-translation, aiming at ensuring a reliable and valid adaptation into Portuguese. Unfortunately it was not possible to contact the author of the original scale.

Students answered the questionnaires in the classroom, where they were told the aim of this study. Participants were requested to sign an informed consent that explained that data obtained would be fully confidential according to the standards of the Research Ethics Commission of the Universidade Federal de São Paulo.

### 4. Statistical analysis

The measure of internal consistency was the Cronbach's alpha. The corrected item-total correlation coefficients were calculated for each item of the scale. Data were subjected to a factor analysis with the principal component method of parameter estimation, since this method does not require normal distribution of data. Questionnaire items loading at 0.35 or above were included in the final factor solution. A derived matrix by varimax rotation was obtained to meet Thurstone's requirements. The number of factors to be retained was that of Kaiser's criterion. Analytical procedures were accomplished with the Statistical Package for the Social Sciences (SPSS).

## Results

Compared results of medical students divided by gender are displayed below on Table 1.

The coefficient of internal consistency for the BSQ was 0.97. None of the questions displayed low item-total correlation coefficients (CITC), demonstrating that all items proved to be important components of the composite.

Principal component analysis of the composite resulted in a four factor dimension.

Of the 34 questions of the scale, questions 04, 02, 21, 17, 24, 28, 22, 23, 30, 14, 03, 06, 34, 16, 09, 05, 11, 10, 01, 33, 15, and 19 made up the first factor corresponding to a dimension that, given its content, could be called "self perception of body shape". Questions 31, 20, 29, 12, and 25 are grouped in a second factor that would correspond to a "comparative perception of body image", while

**Table 1 - Comparison of the means and standard deviations (SD) in the differences between the present weight and the ideally desired weight, Body Mass Index (BMI) and Scores on the Body Shape Questionnaire (BSQ) in university students, according to gender**

Variable	Male	Female	p value
Difference present and desired weight – mean (SD)	0.6 (6.9)	2.7 (2.7)	< 0.01
BMI – mean (SD)	23.5 (3.1)	21 (1.9)	< 0.01
BSQ scores – mean (SD)	58.7 (25.1)	89.7 (31.3)	< 0.01
N (number of subjects)	93	71	
Mean age (years)	19.7 (1.4)	19.6 (1.6)	
Below normal weight (percentage)	1.1	8.6	
Normal weight (percentage)	75.3	87.1	
Overweight (percentage)	21.5	4.3	
Obese (percentage)	2.2	None	
Mean score	58.7	89.7	< 0.01
Score range (%)			
	No alteration	92.5	78.9
	Mild alteration	5.3	11.2
	Moderate alteration	2.2	9.9
	Severe alteration	None	None

questions 32, 26, 07, 18, and 13 were grouped in a factor we have called "attitude concerning body image alteration". Finally, questions 08 and 27 corresponded to a last dimension, which refers to "severe alterations in body perception".

### Discussion

The importance of identifying alterations in body image is crucial for the early diagnosis of Eating Disorders and Body Dysmorphic Disorder, as isolated symptoms of these disorders precede their full manifestation. This observation reaffirms the importance of having a questionnaire such as the BSQ adapted to the Brazilian culture.

In this study, the internal consistency of the BSQ measured by Cronbach's alpha was of 0.97, indicating that the questions of the scale converge to the same construct. Although these results could suggest that some items might be redundant, a preliminary analysis does not support this hypothesis. A study of validation and reliability of the BSQ performed by Rosen and collaborators in 1995 found a reliability coefficient of 0.88<sup>10</sup>.

Another study in the year 2001, with a 14-item reduced version of the scale, validated by Dowson and collaborators in a population of 75 women with psychogenic low weight and a history of total or partial anorexia nervosa, found an internal reliability coefficient of 0.93<sup>11</sup>.

The factor analysis of the scale structure in our study resulted in a four-dimensional solution referring to distinct components of the phenomenon. Overall, most of the BSQ questions maintained an adequate performance, including in terms of the factor solution that refers to the psychopathological dimensions of body image disorders.

As a limitation of the study we could mention that a sample of medical students may not be representative of the Brazilian general population. Another point to be argued is the use of the students referred weight and not that actually measured. The lack of existence of objective diagnostic criteria that could be considered as a "gold standard" to characterize body image disorder represents an obstacle to develop a study about the criterion validity of the BSQ.

### ANNEX I

Data: \_\_\_/\_\_\_/\_\_\_

Nome: \_\_\_\_\_

Idade: \_\_\_\_\_ anos      Peso: \_\_\_\_\_ kg      Altura: \_\_\_\_\_ cm      IMC: \_\_\_\_\_

#### BODY SHAPE QUESTIONNAIRE – BSQ

Adaptado e validado para uso no Brasil por Mônica Cristina Di Pietro, Evelyn Doering Xavier e Dartiu Xavier da Silveira  
PROAD / Departamento de Psiquiatria – UNIFESP / EPM

Responda as questões abaixo em relação à sua aparência nas últimas 4 semanas. Usando a seguinte legenda:

- |              |                   |                         |
|--------------|-------------------|-------------------------|
| 1. Nunca     | 3. Às vezes       | 5. Muito frequentemente |
| 2. Raramente | 4. Frequentemente | 6. Sempre               |

01.	Sentir-se entediada(o) faz você se preocupar com sua forma física?	1	2	3	4	5	6
02.	Sua preocupação com sua forma física chega ao ponto de você pensar que deveria fazer uma dieta?	1	2	3	4	5	6
03.	Já lhe ocorreu que suas coxas, quadril ou nádegas são grandes demais para o restante do seu corpo?	1	2	3	4	5	6
04.	Você tem receio de que poderia engordar ou ficar mais gorda(o)?	1	2	3	4	5	6
05.	Você anda preocupada(o) achando que o seu corpo não é firme o suficiente?	1	2	3	4	5	6
06.	Ao ingerir uma refeição completa e sentir o estômago cheio, você se preocupa em ter engordado?	1	2	3	4	5	6
07.	Você já se sentiu tão mal com sua forma física a ponto de chorar?	1	2	3	4	5	6
08.	Você deixou de correr por achar que seu corpo poderia balançar?	1	2	3	4	5	6
09.	Estar com pessoas magras do mesmo sexo que você faz você reparar em sua forma física?	1	2	3	4	5	6
10.	Você já se preocupou com o fato de suas coxas poderem ocupar muito espaço quando você senta?	1	2	3	4	5	6
11.	Você já se sentiu gorda(o) mesmo após ingerir uma pequena quantidade de alimento?	1	2	3	4	5	6
12.	Você tem reparado na forma física de outras pessoas do mesmo sexo que o seu e, ao se comparar, tem se sentido em desvantagem?	1	2	3	4	5	6
13.	Pensar na sua forma física interfere em sua capacidade de se concentrar em outras atividades (como, por exemplo, assistir televisão, ler ou acompanhar uma conversa)?	1	2	3	4	5	6
14.	Ao estar nua(nu), por exemplo, ao tomar banho, você se sente gorda(o)?	1	2	3	4	5	6
15.	Você tem evitado usar roupas mais justas para não se sentir desconfortável com sua forma física ?	1	2	3	4	5	6
16.	Você já se pegou pensando em remover partes mais carnudas de seu corpo?	1	2	3	4	5	6
17.	Comer doces, bolos ou outros alimentos ricos em calorias faz você se sentir gorda(o)?	1	2	3	4	5	6
18.	Você já deixou de participar de eventos sociais (como por exemplo, festas) por se sentir mal com relação à sua forma física?	1	2	3	4	5	6
19.	Você se sente muito grande e arredondada(o)?	1	2	3	4	5	6
20.	Você sente vergonha do seu corpo?	1	2	3	4	5	6
21.	A preocupação frente à sua forma física a(o) leva a fazer dieta?	1	2	3	4	5	6
22.	Você se sente mais contente em relação à sua forma física quando seu estômago está vazio (por exemplo, pela manhã)?	1	2	3	4	5	6
23.	Você acredita que sua forma física se deva à sua falta de controle?	1	2	3	4	5	6
24.	Você se preocupa que outras pessoas vejam dobras na sua cintura ou estômago?	1	2	3	4	5	6
25.	Você acha injusto que outras pessoas do mesmo sexo que o seu sejam mais magras do que você?	1	2	3	4	5	6
26.	Você já vomitou para se sentir mais magro(a)?	1	2	3	4	5	6
27.	Quando acompanhada(o), você fica preocupada(o) em estar ocupando muito espaço (por exemplo, sentada(o) num sofá ou no banco de um ônibus)?	1	2	3	4	5	6
28.	Você se preocupa com o fato de estar ficando cheia(o) de "dobras" ou "banhas"?	1	2	3	4	5	6
29.	Ver seu reflexo (por exemplo, num espelho ou na vitrine de uma loja) faz você sentir-se mal em relação ao seu físico?	1	2	3	4	5	6
30.	Você belisca áreas de seu corpo para ver o quanto há de gordura?	1	2	3	4	5	6
31.	Você evita situações nas quais as pessoas possam ver seu corpo (por exemplo, vestiários e banheiros)?	1	2	3	4	5	6
32.	Você já tomou laxantes para se sentir mais magra(o)?	1	2	3	4	5	6
33.	Você fica mais preocupada(o) com sua forma física quando em companhia de outras pessoas?	1	2	3	4	5	6
34.	A preocupação com sua forma física leva você a sentir que deveria fazer exercícios?	1	2	3	4	5	6

Nenhuma:	≤ 110
Leve:	> 110 e ≤ 138
Moderada:	> 138 e ≤ 167
Grave:	> 167

## Disclosures

Writing group member	Employment	Research grant <sup>1</sup>	Other research grant or medical continuous education <sup>2</sup>	Speaker's honoraria	Ownership interest	Consultant/ Advisory board	Other <sup>3</sup>
Monica Di Pietro	UNIFESP	---	---	---	---	---	---
Dartiu Xavier da Silveira	UNIFESP	---	---	---	---	---	---

\* Modest

\*\* Significant

\*\*\* Significant. Amounts given to the author's institution or to a colleague for research in which the author has participation, not directly to the author.

Note: UNIFESP = Universidade Federal de São Paulo.

For more information, see Instructions for authors.

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