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# Body checking and eating cognitions in Brazilian outpatients with eating disorders and non psychiatric controls

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ABSTRACT

*Objective:* Compare inadequate eating behaviors and their relationship to body checking in three groups: patients with anorexia nervosa (AN), patients with bulimia nervosa (BN) and a control group (C).
*Methods:* Eighty three outpatients with eating disorders (ED) and 40 controls completed eating attitudes and body checking questionnaires.
*Results:* The overall relationship between the eating attitude and body checking was statistically significant in all three groups. The worse the eating attitude, the greater the body checking behavior. However, when we look at each group individually, the relationship was only statistically significant in the AN group ($r = .354$, $p = 0.020$).
*Discussion:* The lower the desired weight and the worse the eating attitude, the more people check themselves, although in the presence of an ED the relationship between body checking and food restrictions is greater. In patients displaying the AN subgroup, body checking is also related to continued dietary control.


## 1. Introduction

Eating disorders (EDs) are characterized by severely disturbed eating-related behaviors, misperceptions of body shape and consequent pathological weight control. These patients normally judge themselves almost exclusively on their physical appearance, with which they are always dissatisfied (Claudino & Borges, 2002; Saikali, Soubhia, Scalfaro, & Cordás, 2004). In order to evaluate themselves, patients with EDs normally engage in compulsive and obsessive body checking behaviors, many times a day (Fairburn, Cooper, & Shafran, 2003).

Body checking may include constantly weighing oneself, checking specific body parts in the mirror, using dress size to assess weight, pinching the skin, etc. (Walker, Anderson, & Hildebrandt, 2009). These body checking behaviors may be associated with low-self esteem, over-valuation of the body, food restrictions, diet failure and excessive concern with weight loss (Garner & Garfinkel, 1979; Walker et al., 2009).

ED patients report that checking affects how they are and how they eat. The cognitions related to body checking differ between the clinical and non-clinical population, and disease severity is directly linked to the frequency of body checking (Kachani, Brasiliano, Cordás, & Hochgraf, 2013; Mountford, Haase, & Waller, 2006; Shafran, Fairburn, Robinson, & Lask, 2004). For patients with EDs, body checking fosters a perception of imperfection, and serves as reinforcement to continue to be concerned with weight and a feeling of loss of control, thus helping keep them on dietary restrictions (Reas, Whisenhunt, Netemeyer, & Wiliamson, 2002; Waller, Sines, Meyer, & Mountford, 2008).

Considering the importance of body checking as a factor that can precipitate or sustain EDs (Kachani, 2012), this work aims to assess how body checking influences the eating behavior of Brazilian women, with and without EDs, and more specifically: (a) if body checking is related to Body Mass Index (BMI) and desired weight; (b) if body checking influences the decision of what to eat; and (c) if body checking helps not to lose control of what is eaten.

## 2. Method

### 2.1. Participants

Eighty-three females meeting the American Psychiatric Association (APA) (1994) criteria for clinical eating disorders participated in this study. All of the patients included in the study were under treatment at the Eating Disorders Clinic (AMBULIM) of the Institute of Psychiatry, University of São Paulo School of Medicine (IPQ-HC-FMUSP) in 2009, having undergone in-depth psychiatric evaluation. Forty-three met

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the diagnostic criteria for anorexia nervosa (AN) and 40 for bulimia nervosa (BN). The control group was made up of 40 randomly selected patients from the gynecology clinic at the Hospital das Clínicas associated with this same medical school. Controls and subjects (C) were matched by age and level of education to ensure matched study groups. Exclusion criteria for controls included having an ED or other psychiatric disorders, the use of psychoactive drugs, pregnancy, and clinical impediments such as pain or post-operative status. All the participants signed an informed consent form. This study complies with the National Board of Health and was approved by the Ethics and Research Committee at HC-FMUSP (Protocol No. 0029/09).

### 2.2. Measurements and procedures

A Ph.D. student took all of the anthropometric measurements used to calculate participant BMIs. All participants completed the following questionnaires:

- Personal information form: information about age, level of education, duration of treatment and desired weight.
- Body Checking and Avoidance Questionnaire (BCAQ): measures the presence and severity of body checking behaviors in specific body parts in patients with and without EDs (Shafran et al., 2004). The BCAQ has been culturally adapted and validated for the present sample, exhibiting an internal consistency with Cronbach's $\alpha = .94$ (Kachani et al., 2011).
- The Body Checking Cognitions Scale (BCCS): evaluates four cognitions: (1) objective verification; (2) reassurance; (3) safety beliefs; and (4) body control (Mountford et al., 2006). The BCCS has been translated, adapted and validated for the present sample, exhibiting an internal consistency with Cronbach's $\alpha = .94$ (Kachani et al., 2011, 2013). Only questions 1 and 6 (Q1 and Q6) were used for this study: "Checking my body today gives me subsidies to decide how much I can eat tomorrow" and "checking my body today doesn't let me loss control of what I eat".
- The Eating Attitudes Questionnaire (EAT-26) (Garner & Garfinkel, 1979; Nunes et al., 1994): assesses attitudes and behaviors typical of patients with anorexia nervosa (Garner & Garfinkel, 1979). A score of 20 or more is indicative of a high risk for eating disorders (Garner & Garfinkel, 1979). Internal consistency reliability, measured by Cronbach's alpha was .90.

### 2.3. Statistical analysis

Fisher's Exact Test was used to assess the homogeneity of the groups in terms of marital status, parity, sexual orientation, schooling, occupation, and diet. The difference between groups in terms of age, BMI, and duration of treatment (for the AN, BN and control groups) was checked using ANOVA. Non-parametric Kruskal–Wallis tests were performed where the assumption of normality was not fulfilled. When differences were statistically significant, Tukey's multiple comparison procedure was used to detect the nature of these differences.

To check the association between body checking and EAT using BCCS Q1 and Q6, the descriptive measurements of BCAQ and EAT were calculated per response category in terms of mean, standard deviation, median, minimum and maximum. The regression model was adjusted using the group and the categories in BCCS questions 1 and 6 as the explanatory variables.

All statistical analyses were performed using MINITAB for Windows, version 16.0 and R PROGRAM, version 2.14. Significance was set at $p = .05$ or 5%.

## 3. Results

Table 1 lists the socio-demographic characteristics of the groups while Table 2 shows quantitative data.

Considering all groups, there was no relationship between age ($r = -.119$, $p = .190$) and BMI ($r = .163$, $p = .071$) and body checking behaviors, but the lower the desired weight, the higher the BCAQ score ($r = -.336$, $p < .001$). But in the control group, we did not see the positive relationship between desired weight and checking behaviors ($r = .180$, $p = .266$) that we did in the groups AN ($r = -.445$, $p = .003$), and BN ($r = -.327$, $p = .042$).

The relationship between attitude towards eating and body checking was statistically significant if we consider all groups ($r = .504$, $p < 0.001$): the worse the attitude towards food, the more intense the body checking behavior, but separately, only in the AN group it was statistically significant ($r = .354$, $p = 0.020$).

There was an association between the amount of body checking, the cognition of deciding what to eat (Q1) and the intent to maintain control over what one eats (Q6). Although they are different in each of the groups, they grow proportionately in response to the intensity of the response to the question. The interaction between group and

**Table 1**
Comparison of the socio-demographic characteristics of the anorexia nervosa, bulimia nervosa and control groups.

| | | Group | | | | | | p-Value* |
|---|---|---|---|---|---|---|---|---|
| | | AN | | BN | | Control | | |
| | | (n = 43) | % | (n = 40) | % | (n = 40) | % | |
| Marital status | Single | 40 | 93.0 | 28 | 70.0 | 30 | 75.0 | 0.015 |
| | Married | 3 | 7.0 | 12 | 30.0 | 10 | 25.0 | |
| Parity (children borne) | Nullipara | 35 | 81.4 | 30 | 75.0 | 30 | 75.0 | 0.768 |
| | Para | 8 | 18.6 | 10 | 25.0 | 10 | 25.0 | |
| Sexual orientation | Heterosexual | 37 | 86.0 | 38 | 95.0 | 40 | 100.0 | 0.110 |
| | Homosexual | 4 | 9.3 | 1 | 2.5 | 0 | 0.0 | |
| | Bisexual | 2 | 4.7 | 1 | 2.5 | 0 | 0.0 | |
| Schooling | Complete primary | 2 | 4.7 | 0 | 0.0 | 0 | 0.0 | 0.281 |
| | Complete secondary | 20 | 46.5 | 10 | 25.0 | 15 | 37.5 | |
| | Incomplete secondary | 1 | 2.3 | 5 | 12.5 | 4 | 10.0 | |
| | University degree | 9 | 20.9 | 11 | 27.5 | 9 | 22.5 | |
| | Incomplete university studies | 11 | 25.6 | 14 | 35.0 | 12 | 30.0 | |
| Occupation | Student | 11 | 25.6 | 10 | 25.0 | 9 | 22.5 | 0.753 |
| | Employed | 18 | 41.9 | 13 | 32.5 | 18 | 45.0 | |
| | Housewife | 2 | 4.6 | 4 | 10.0 | 4 | 10.0 | |
| | Unemployed | 12 | 27.9 | 13 | 32.5 | 8 | 20.0 | |
| | Medical leave | 0 | 0.0 | 0 | 0.0 | 1 | 2.5 | |
| Diet | No diet | 19 | 44.2 | 20 | 50.0 | 36 | 90.0 | <0.001 |
| | On diet | 24 | 55.8 | 20 | 50.0 | 4 | 10.0 | |

AN = anorexia nervosa; BN = bulimia nervosa.
* Fisher's Test.