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The Validation of the Body Image Acceptance and Action Questionnaire: Exploring the Moderator Effect of Acceptance on Disordered Eating

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Abstract

The Body Image-Acceptance and Action Questionnaire measures cognitive flexibility and acceptance relatively to body image. This paper presents the factorial structure and psychometric properties of the Portuguese version of the Questionnaire in a sample from the general population (*n*= 679). This version maintains a one-factor structure, similar to the original version of the instrument, which accounts for 63.36% of the variance. It presents high internal consistency (.95), test-retest reliability, and correlates (contrastingly) with self-compassion, body image dissatisfaction, eating disorders symptomatology, social comparison, and depression, anxiety, and stress. The Questionnaire discriminates between a clinical sample with a diagnosed eating disorder (*n*= 46) and a comparable general population sample (*n*= 51). Results show that body image acceptance is a significant predictor of eating pathology, and it seems able to lessen the impact of body image dissatisfaction on the engagement on pathological restrictive behaviours and thinness seeking.
Key words: body image flexibility, acceptance, eating disorders, moderator effect.

Resumen

El *Body Image-Acceptance and Action Questionnaire* mide la flexibilidad cognitiva y la aceptación de la imagen corporal. Este trabajo presenta la estructura factorial y propiedades psicométricas de la versión portuguesa del cuestionario en una muestra de la población general (*n*= 679). Esta versión mantiene una estructura de un solo factor, similar a la versión original del instrumento, por medio del cual es posible explicar 63,36% de la varianza. Presenta una alta consistencia interna (.95), fiabilidad test-retest, y correlaciona (en contraste) con la auto-compasión, la insatisfacción con la imagen corporal, sintomatología de trastornos de la alimentación, la comparación social, y con la depresión, la ansiedad y el estrés. El cuestionario discrimina entre una muestra clínica con un diagnóstico de trastorno de la alimentación (*n*= 46) y una muestra comparable de población general (*n*= 51). Los resultados revelan que la aceptación de la imagen corporal es un factor predictivo significativo de patología alimentaria, y parece capaz de reducir el impacto de la insatisfacción con la imagen corporal en las conductas patológicas restrictivas y de búsqueda de la delgadez.
Palabras clave: teoría de la selectividad sociemocional, perspectiva de futuro, envejecimiento, bienestar, Encuesta Social Europea.

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Body image can be defined as the individual experience of the physical self (Cash, 2004). For Thompson (1996) it encompasses three dimensions: the perceptual, which is related to the perception of one's physical appearance and that involves an estimate of one's weight, size and body shape; the subjective (cognitive, affective), that concerns aspects such as satisfaction or worry and anxiety relatively to appearance; and the behavioural dimension, that refers to the avoidance of some situations of body exposure that cause anxiety and discomfort. In a broad sense, body image is an important aspect of self-conceptualization, either concerning individual development, and the definition of quality of life (e.g. Cash, 2004; Fisher & Cleveland, 1958), namely for women, for whom it becomes a central self-evaluation dimension (Ferreira, Pinto Gouveia, & Duarte, 2011). Research shows that the perceived discrepancy between one's evaluated actual body image and an image seen as an ideal one can generate considerable levels of body image dissatisfaction. This process can precede dieting (Higgins, 1987), which, in turn, is considered one of the main precipitants to eating disorders (Stice, 2001). For such reasons, this construct has been a particular field of theoretical and empirical interest, namely in what concerns its impact as a risk factor for eating disorders.

The classic cognitive-behavioural perspectives on body image and its negative impact in people's life (e.g. eating disorders) focus their interventions in the analysis of the accuracy and validity of the negative evaluations about one's body, and the irrational beliefs about the importance and meaning of physical appearance, changing them to include more positive or accurate thoughts and emotions, promoting an adaptive behaviour change (Cash, 1997; Rosen, 1997). However, their less satisfactory outcomes, on one hand, and the fact that the investment in body image is an important relapse factor in eating disorders (Fairburn, Jones, Peveler, Hope, & O'Connor, 1993; McFarlane, Olmsted, & Trottier, 2008), on the other hand, contributed for the development of new perspectives where the emphasis shifts from the validity of certain thoughts or beliefs, to the inflexibility with which such cognitions are held (e.g. Hayes, 2004).

Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999) is a new psychotherapeutic modality, scientifically supported (Ruiz, 2010), based on the central conception that it is not the content of the beliefs that is problematic and generates suffering, but the rigid and inflexible adherence to one's cognitions and the struggle to control or eliminate negative thoughts, referred to as experiential avoidance. According to Hayes, Wilson, Gifford, Follette and Strosahl (1996, p. 1154), "experiential avoidance is the phenomenon that occurs when a person is unwilling to remain in contact with particular private experience (e.g. bodily sensations, emotions, thoughts, memories, behavioural predispositions) and take steps to alter the form or frequency of these experiences or the contexts that occasion them". The immediate effects of experiential avoidance are apparently positive by reducing the avoided event (e.g. through cognitive distraction; Hayes *et al*., 2004). However, the attempt or efforts to suppress or eliminate negative thoughts, emotions or bodily sensations lead, many times, to the increase of their frequency and intensity and to the adoption of behaviours that regulate such experiences, which can become highly resistant to adaptive behavioural change (Gross, 2002). Thus, experiential avoidance has been pointed as one of the major sources of human suffering. In fact, there is been a rising number of studies that

enlighten this process contribute to psychopathology (e.g. Hayes *et al*., 1999). In fact, in clinical and non-clinical samples, experiential avoidance is highly correlated with general psychopathology measures (Hayes *et al*., 2004) and with specific measures of anxiety and depression (e.g. Marx & Sloan, 2005; Roemer, Salters, Raffa, & Orsillo, 2005; Ruiz, 2010; Tull, Gratz, Salters, & Roemer, 2004).

Contrary to experiential avoidance is the adaptive attitude of psychological acceptance, which comprises the ability of keeping in touch, aware and nonjudgmentally, with private events (e.g. thoughts, feelings or bodily experiences), without undertaking efforts to manipulate or follow them, or escape or avoid them, responding to the actual experienced events as they occur (Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Hayes *et al*., 2004; Hayes *et al*., 1996). In sum, ACT, a contextual and functional therapy, is based in acceptance and in mindfulness strategies, and its aim is, therefore, to promote psychological flexibility, defined as the ability to contact with the present moment and be willing to change or persist with functional behavioural classes, in accordance to chosen values (Hayes, 2004; Páez Blarrina, Gutiérrez Martínez, Valdivia Salas, & Luciano, 2006).

Most of the patients suffering with disordered eating and other related disturbances (e.g. intense body image dissatisfaction) present high levels of experiential avoidance. They often describe their internal experience (e.g. thoughts, feelings, bodily sensations, urges, or memories) as intolerable and adopt actions to avoid or lessen its frequency and intensity (Sandoz, Wilson, & DuFrene, 2010). Applied specifically to body image disturbance, ACT addresses the psychological inflexibility related to physical appearance, which comprises the rigid cognitive patterns (i.e. control) and the rigid behavioural patterns (i.e. avoidance) that seem to generate greater psychological distress and be more disruptive to life. From this point of view, the invalidation is reduced not by trying to change or eliminate negative thoughts and feelings about one's body, but through the construction of greater flexibility, increasing body image acceptance. That refers to the ability to accept or to be willing to experience perceptions, sensations, feelings, thoughts and beliefs about one's body, in a total and intentional way, without attempts to change their intensity, frequency or form, while pursuing effective actions in other life domains (Sandoz, *et al*., 2009).

According to this perspective, the body image (in)flexibility cannot be assessed by the existent classical measures for body image disturbance, need to control or body image avoidance, since those have been focusing on the formal properties of cognition or behaviour. For ACT, such processes need to be functionally assessed and defined, because they are not characterized by the content of thoughts (e.g. "what I look like is an important part of who I am"; Cash, Melnyk, & Hrabosky, 2004) or by one's behaviours (e.g. "I wear baggy clothes"; Rosen, Srebnik, Saltzberg, & Wendt, 1991), but through the way body image has an impact in one's life (e.g. "When I start thinking about the size and shape of my body, it becomes hard to do anything" or "Before planning something important, I need to feel better about my body"; Sandoz & Wilson, 2006).

To assess general psychological flexibility Hayes and colleagues (2004) developed a new measure that encompasses experiential avoidance and acceptance, the Acceptance and Action Questionnaire, which has been widely used in their various versions (e.g.

Hayes *et al*., 2004). However, researchers have been pointing out the importance of using modified versions of the AAQ to target specific areas, when such instrument is used as a measure of processes of change (e.g. AAQW; Lillis & Hayes, 2008). Thus, the Body Image–Acceptance and Action Questionnaire was developed by Sandoz *et al*. (2009) with the aim of measuring cognitive flexibility in this specific domain. The development of such measure seems to be a particularly important contribution for the research of how certain mechanisms, such as body image acceptance, promote changes or prevent disruptive behaviours, such as disordered eating.

The present study sets out to translate and adapt to Portuguese the BI-AAQ and examine its factorial structure and psychometric properties in a general population sample, with both genders and with a wide range of ages. Additionally, we aimed at exploring the moderator effect of body image acceptance on the relationship between body image dissatisfaction and disordered eating. That is, we tested if the ability to stay in touch with the ongoing private inner experience related to body image, not trying to avoid or alter it, influences the empirically acknowledge effect of feeling dissatisfied with one's body on the endorsement of the importance of thinness (worrying about loosing weight and fear of gaining it) and consequent disruptive behaviours (e.g. dieting and excessive caloric restriction).

METHOD

Participants

Participants in this study were 679 subjects from general population, with 110 (16.2%) males, and 569 (83.8%) females. They present ages ranging from 13 to 50. The mean age is 19.5 (*SD*= 5.56). The years of education varies between 6 and 22; the mean is 12.14 (*SD*= 2.6). 75.2% of the sample have a calculated Body Mass Index (BMI; from self-reported weight and height) within normal range (18.5 kg/m^2 < BMI < 25 kg/m^2), with 12.7% classified as "underweight", 10.1% classified as "overweight" and 0.8% classified as "obese" (WHO, 1995).

Additionally, to study the scale ability to discriminate between a normal and a clinical sample, we used a convenience sample of 46 patients with the confirmed diagnosis of an eating disorder. They present a mean age of 24.7 (*SD*= 8.03) and a mean of 11.98 (*SD*= 2.96) years of education. In this sample, 35.6% of the patients have a calculated BMI equal or inferior to 17.5; 26.1 % a BMI within normal range; 8.7% are classified as "overweight" and 17.4% are classified as "obese". In what concerns their diagnosis, 35.6% present the diagnosis of Anorexia Nervosa, 37.8% Bulimia Nervosa, and 26.6% EDNOS (DSM-IV-TR; American Psychiatric Association, 2000). A second convenience sample of the general population (*n*= 51) with demographic characteristics that were comparable to the clinical sample was selected from the original sample. They present a mean age of 24.08 (*SD*= 8.06), with a mean of 12.29 (*SD*= 3.41) years of education. The two samples do not significantly differ in what concern the demographic variables of age ($t_{(95)}$=.377; *p*= .707) and years of education ($t_{(95)}$=.484; *p*= .629); and the BMI mean values ($t_{(95)}$=.856; *p*= .394).

Measures

Body Image-Acceptance and Action Questionnaire (BI-AAQ; Sandoz *et al*., 2009). This scale was designed to measure body image acceptance, "the extent to which an individual actively contacts perceptions, thoughts, beliefs, and feelings about his or her body without directly attempting to change their intensity, frequency or form" (Sandoz *et al*., 2009, p. 8). The original BI-AAQ item pool included 46 items adapted from three versions of the Acceptance and Action Questionnaire (Bond & Bunce, 2003; Bond *et al*., in press; Hayes *et al*., 2004). Sandoz and colleagues (2009) rewrote the items in order to adapt them to body-related contents, specifically on body image issues related to weight and shape, as opposed to psychological experiences in general. The participants are asked to rate the truth of each statement as it applies to them. Items are rated in a 7-point Likert scale from 1 ("Never true") to 7 ("Always true").

The factorial analysis of the original BI-AAQ revealed two factors, in which 29 items loaded on one factor, and 17 items loaded on both factors. Since all the items loading on the second factor were worded in the direction of "lack of acceptance" and such loading could derive from wording issues, the analysis were repeated and a single factor extracted that accounted for 34.4% of the variance. Were retained 26 items that loaded above .40, and finally, in order to produce a briefer measure, the authors retained 12 items with factor loadings above .65. The BI-AAQ was shown to be internally consistent (α= .93), demonstrated good concurrent validity assessed by the correlations with general measures of mindfulness and acceptance and self-report instruments of body shape concerns and disordered eating behaviours, and good criterion-related validity, with participants identified as having disordered eating tendencies exhibiting significantly lower BI-AAQ scores than the remainder of the sample (Sandoz *et al*., 2009).

For the Portuguese version and adaptation of the BI-AAQ a bilingual translator translated it into Portuguese. Furthermore, the research group adapted some ambiguous items to native Portuguese and the comparability of content was verified through stringent back-translation procedures.

Self-Compassion Scale (SCS; Neff, 2003; Portuguese version of Castilho & Pinto-Gouveia, 2011). This is a 26-item self-report measure consisting of six subscales: *Self-Kindness* (extending kindness and understanding to one's self); *Common Humanity* (the ability to see one's experience as part of the larger human condition); *Mindfulness* (the ability to remain aware of one's painful experiences without becoming absorbed in them); *Self-judgment* (being harshly judgmental and critical of one's self); *Isolation* (seeing one's self as separate and isolated from others); and *Overidentification* (the tendency to overidentify with painful experiences). Items are rated on a 5-point Likert scale ranging from 1 (almost never) to 5 (almost always). In this study we used the subscales Self-Kindness, Common Humanity, and Mindfulness, in which higher scores reflect greater self-compassion. The Portuguese version of the scale (Castilho & Pinto-Gouveia, 2011) shows good internal consistency: .84 for Self-Kindness (.78 in the original version), .77 for Common Humanity (.80 in the original version), and .73 for Mindfulness (.75 in the original version). In this study, the Cronbach's alpha values were respectively of .85, .79, and .75.

*Figure Rating Scal*e (FRS; Fallon & Rozin, 1985; Thompson & Altabe, 1991; translated and adapted to Portuguese by Ferreira, 2003) is a measure of body image disturbance composed by a series of nine schematic figures of varying size, ranging from thinner silhouettes to increasingly larger silhouettes, in proportion to the number (1-9). The

respondents are asked to select the image that best indicates their current body image and size, and their ideal body image and size. The discrepancy between the actual and the ideal body image gives a measure of body image dissatisfaction. This scale shows good test-retest reliability and convergent and divergent validity (Thompson & Altabe, 1991).

Eating Disorder Inventory (EDI; Garner, Olmsted, & Polivy, 1983; Portuguese version of Machado, Gonçalves, Martins, & Soares, 2001). EDI corresponds to a self-evaluation comprehensive methodology of the behavioural and psychological traits in eating disorders. It is one of the most used scales for this purpose and can be used as a diagnostic measure. It is a 64-item self-report questionnaire that comprises 8 subscales assessing weight, shape and eating related attitudes and behaviours, and psychological characteristics common in patients with eating disorders. Using a 6-point Likert scale (ranging from "Always" to "Never") respondents rate how much the item applied to them. The most extreme eating disorder answer is scored as 3, the intermediate response as 2, the next as 1; and the other remain 3 responses receive no score. Several studies have established the reliability and validity of the EDI (see, Garner (1990) for a review). In the current study, we focused on the *Drive for Thinness*, *Bulimia*, and *Body Dissatisfaction* subscales because they are most clearly linked to eating disorders symptoms. The Portuguese version presents good to very good internal consistency for the three subscales (.91; .81; .91, respectively, Machado *et al*., 2001). The Cronbach's alphas for this sample were .83, .77, and .89, respectively.

Depression, Anxiety and Stress Scales (DASS42; Lovibond & Lovibond, 1995; Portuguese version of Pais-Ribeiro, Honrado, & Leal, 2004). This scale includes three subscales (of 14 items each) designed to measure levels of Depression, Anxiety, and Stress. The point is to obtain an estimate of how much the subjects experienced each symptom during the previous week in a 4-point scale. Higher results indicate higher levels of emotional distress. The Cronbach's alpha of the Portuguese version (Pais Ribeiro *et al*., 2004) resembles the original ones: .93 for Depression (.91 in the original version), .83 for Anxiety subscale (.84 in the original version), and finally .88 for Stress subscale (.90 in the original version). In the present study the Cronbach's alpha values were of .96, .93 and .94, respectively.

Social Comparison through Physical Appearance Scale (SCPAS; Ferreira *et al*., 2011). SCPAS is a 12-item self-report measure that assesses the respondents' perceptions of self-ranking when they compare physically with others. It has two parts: in the first one the evaluation is done concerning friends, colleagues or other known girls; whilst the second concerns models, actresses or other celebrities. It uses a semantic differential methodology according to which the subject is asked to rate himself on a 10-point scale with each item ranging between two opposed descriptors (e.g. "Inferior-Superior, Undesirable-More Desirable). Originally this scale showed good temporal stability, convergent and discriminant validity, and internal reliability coefficients of .94 for the Peers subscale and of .96 for the Models subscale (Ferreira *et al*., 2011). In this study the Cronbach's alpha obtained were also high (.94 and .96 for the subscales Peers and Models, respectively).

Eating Disorder Examination 16.0D (EDE 16.0D; Fairburn, Cooper, & O'Connor, 2008; translated and adapted to Portuguese by Ferreira, Pinto-Gouveia & Duarte, 2010). EDE 16.0D is a standardized interview that can be used for diagnosing eating disorders, and allows the assessment of the frequency and intensity of behavioural and psychological aspects of eating disorders, such as restriction habits, eating concerns, and weight and shape concerns. It is considered a precise evaluation method with high values of

internal consistency, of test-retest reliability and discriminant and concurrent validity (for a review see Fairburn, 2008).

Body Mass Index. We calculated participant's BMI dividing weight (in kg) by height squared (in m) (i.e., Wt/Ht2).

Procedure

The participants were students recruited from middle and high schools, and also from the University of Coimbra, Portugal; and subjects with diverse professions recruited in different public institutions and private corporations (e.g. professors, school and hospital staff). The involved institutions' boards were contacted, the research aims were clarified and authorization was obtained so that the subjects could voluntarily participate. The clinical sample was recruited in the University of Coimbra Hospitals, Portugal, with the previous consent of the respective Ethics Committee, and in private clinics. The diagnoses were established by EDE 16.0 (Fairburn *et al*., 2008), which was administered by experienced therapists and researchers with previous training and supervision. Patients in denial of their clinical condition were excluded because of possible answer bias.

All participants were given a battery of self-report questionnaires that assess psychological flexibility, body image dissatisfaction, disordered eating, social adjustment and general psychological difficulties. They received previous clarification about the procedures, the study's general goals, and that their answers were confidential and gave their informed consent to participate in the study.

To examine the retest reliability, 62 participants were randomly selected from the original sample to complete the retest version of the BI-AAQ after a three to four week interval.

Analytic Strategy

We used the Version 18.0 of the SPSS (Statistical Package for the Social Sciences) to analyse the factorial structure of the BI-AAQ and to perform descriptive and inferential analyses. The software AMOS (v.18, SPSS Inc. Chicago, IL) was further used to assess the confirmatory factorial structure of the BI-AAQ.

For the study of the dimensional structure of the Portuguese version of the questionnaire we used the same procedure as the authors of the original Body Image -Acceptance and Action Questionnaire (Sandoz *et al*., 2009), proceeding to a Principal Component Analysis. A Confirmatory Factor Analysis was further conducted to confirm the structure of BI-AAQ. The internal reliability of the scale was examined through the Cronbach's alpha coefficient and item-total correlation. Concurrent and divergent validity of the BI-AAQ was assessed by computing Pearson product-moment correlation coefficients. Retest reliability was analysed by t-Tests for Dependent Samples comparing the first and second administration mean values of the scale, and by Pearson product-moment correlations. The results for each of the clinical and non-clinical samples were compared using t-Tests for Two Independent Samples.

Finally, in the moderator analysis multiple hierarchical regression analyses were used to test the effects of the moderator (body image acceptance, as measured by the BI-AAQ) on the relationship between the independent (body image dissatisfaction, as measured by the FRS) and the dependent variable (drive for thinness, as measured by EDI).

RESULTS

In the Principal Component Analysis we began by confirming the suitability of the data for posterior analysis using the Kaiser Meyer-Olkin test (.954) and the Bartlett's sphericity test ($\chi^2(66)=6195.989$; $p= .000$). We used Kaiser-Guttman criteria, and also the Catell's scree test, that indicated the decision of retaining a single factor, as theoretically expected (Sandoz et al., 2009). Every item presented communalities values superior to .3. All items present high factor loadings, varying from .554 (Item 6: "If I start to feel fat, I try to think about something else") to .854 (Item 9: "To control my life, I need to control my weight") (see Table 1). The one-dimensional structure explains a total of 63.36% of the variance.

To confirm the previous proposed BI-AAQ one-factor structure we conducted a CFA, which assesses the discrepancy between the theoretical proposed model and our data. This procedure was conducted using the WLSMV (Weighted least square parameter using a diagonal weight matrix with robust errors and means), since our observed variables could be considered ordinal variables in a 7-point response scale, with each latent variable representing a continuous variable.

Since we used Maximum Likelihood Estimation to estimate the model parameters, it was necessary to evaluate the multivariate normality assumption. Skewness and Kurtosis values did not presented a serious bias to normal distribution ($SK < |3|$ and $Ku < |10|$) (Kline, 1998), and although some cases presented Mahalanobis Distance (DM2) values indicating the existence of outliers, we opted to maintain them because its removal would diminish the variability associated to the factor in study and would constrict possible interpretation that might be of interest in these analyses.

CFA uses multiple goodness-of-fit indices to confirm a factor structure, because they have different strengths and weaknesses in assessing the goodness-of-fit between the hypothetical model and the actual model. First we used the chi-square goodness-of-fit, which measures the discrepancy between the predicted model and the data. Thus, non-significant results indicate that the data are consistent with the model and significance in this test indicates that the data are inconsistent with the model. However, this index is very sensitive to sample size. Therefore, as recommended, we further used other global fit indices: Goodness-of-fit index (GFI), because it measures the amount of variance and covariance explained by the model and, contrary to the chi-square goodness-of-fit, it is not affected by the sample size. (Saris & Stronkhorst, 1984); the Comparative Fit index (CFI) which quantifies the relative improvement in fit of the hypothesized model over that of a null model according to which all indicators are uncorrelated; and the Tucker and Lewis Index (TLI) that should be interpreted as the CFI. These indexes

Table 1. Factor analysis, factorial loadings, means, standard deviations, and reliability

Items	Factor Analysis 1	Factor Analysis h^2	Factorial loadings STR	Factorial loadings SMC	M	SD	Corrected Item-total correlation	α if item deleted
9. To control my life, I need to control my weight.	.854	.730	.840	.706	5.35	1.76	.817	.938
10. Feeling fat causes problems in my life.	.848	.720	.836	.698	5.23	1.90	.811	.938
3. I shut down when I feel bad about my body shape or weight.	.848	.719	.836	.699	4.89	1.72	.808	.938
11. When I start thinking about the size and shape of my body, it's hard to do anything else.	.839	.704	.827	.684	5.61	1.62	.798	.939
1. Worrying about my weight makes it difficult for me to live a life that I value.	.834	.696	.824	.679	5.35	1.67	.790	.939
4. My thoughts and feelings about my body weight and shape must change before I can take important steps in my life.	.828	.686	.809	.655	5.36	1.65	.785	.939
5. Worrying about my body takes up too much of my time.	.820	.673	.803	.645	5.54	1.53	.775	.940
2. I care too much about my weight and body shape.	.804	.647	.789	.623	4.58	1.77	.757	.940
12. My relationships would be better if my body weight and/or shape did not bother me.	.797	.635	.777	.603	5.37	1.83	.748	.940
7. Before I can make any serious plans, I have to feel better about my body.	.775	.601	.735	.540	5.10	1.68	.736	.941
8. I will have better control over my life if I can control my negative thoughts about my body.	.698	.488	.654	.427	4.66	1.89	.649	.944
6. If I start to feel fat, I try to think about something else.	.554	.307	.507	.258	5.13	1.74	.503	.948
Eigenvalue	7.604							

h^2: communalities values.
STR: Standardized Regression Weights.
SMC: Squared Multiple Correlations.

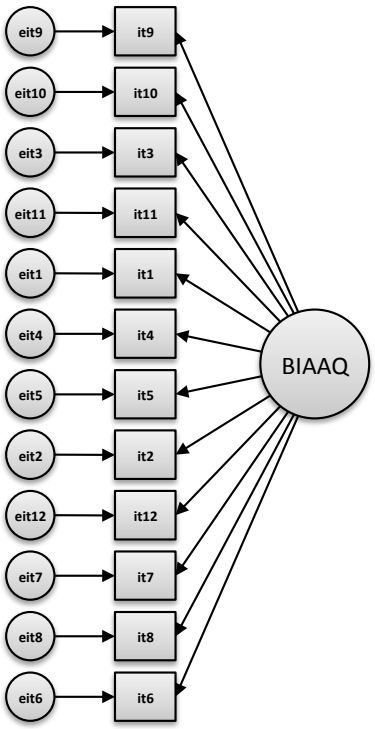

Figure 1. Graphic representation of the BI-AAQ factorial structure.

vary between 0 (no fit) -1 (perfect fit) with values ≥ 0.9 indicating adequate fit (Byrne, 2010). Aditionally, we used the PCFI (Parsimony Normed Comparative Fit Index), a parsimony adjusted fit measure, in which values between 0.6 and 0.8 indicate a good fit (Maroco, 2010).

Figure 1 shows the graphic representation of the hypothesized model that is to be tested to see how well it fits de observed data (12 observed variables comprising a single factor). For the one-factor model, the chi-square goodness-of-fit was significant (χ^2= 490.652; *df*= 54, *p* <.001), a result that, as mentioned above, is typically found with large sample sizes. However, the CFI (.929), the TLI (.914) and the PCFI (.760) all met the criteria standards for adequacy of fit. The GFI (.884) was close to the recommended standards. Thus, these results indicated a good fit between the model and the observed data. In addiction to fit, the quality of the measurement model was assessed by examining the error variances, correlations, individual factor loadings, and standard errors.

The standardized regression weights ranged from .507 (item 6) to .840 (item 9), and all the path values were statistically significant (*p*= .000) (see Table 2). The squared multiple correlations (SMC) values indicate the reliability of the measurement: item 6 (.258) and item 9 (.706), have the lowest and the highest, respectively (Table 1).

No post-hoc modifications were indicated from the analysis because the good-fit-indexes, and the residual analysis did not indicate any problems.

Table 1 presents the means, standard deviations and the internal reliability coefficients for the Portuguese BI-AAQ. Results show a very good internal reliability with an alpha of .945. All items of the scale present item-total correlation coefficients about .8, with the exception of the items 8 and 6 with values of .649 and .503, respectively. These results show the quality and suitability of the items for this scale. In fact, were obtained values that vary between .503 (item 6) and .817 (item 9).

Analyses were conducted to examine the associations between BI-AAQ and other measures. First, correlational analyses were conducted to examine the relationships between body image acceptance and potential covariates. The relationship between BMI and Body Image Acceptance was significant with a low magnitude, such that higher BMI was associated with lower Body Image Acceptance (r= -.247; p= .000). Also, the relationship between age and body image acceptance was positive and significant, with a very low magnitude (r= .179; p= .000). For this reason, BMI and age were controlled for in subsequent analyses.

To evaluate concurrent and divergent validity of the BI-AAQ Pearson product-moment correlation coefficients were calculated between Body Image Acceptance and Self-Compassion (SCS), Body Image Dissatisfaction (FRS), eating disorders symptoms -Drive for Thinness, Bulimia and Body Dissatisfaction (EDI); Social Comparison through Physical Appearance with Peers and Models (SCPAS) and Depression, Anxiety and Stress symptoms (DASS42), after controlling for BMI and age.

The results given in Table 2 show that the BI-AAQ positively correlates with other measures that comprise psychological flexibility such as self-compassion dimensions, Self-Kindness, Common Humanity and Mindfulness. BI-AAQ positively correlates to Social Comparisons with Peers and Models, using physical appearance as a reference. It negatively correlates with psychopathology measures -Depression, Anxiety and Stress.

Table 2. Partial Correlations between BI-AAQ and SC, FRS, EDI, SCPAS, and DASS42, after controlling for BMI and age

	r
SC – Self Kindness	.229**
SC – Common Humanity	.182**
SC - Mindfulness	.171**
FRS - Body Image Dissatisfaction	-.356**
EDI -Drive for Thinness	-.663**
EDI – Bulimia	-.293**
EDI – Body Dissatisfaction	-.582**
SCPAS – Peers	.417**
SCPAS - Models	.421**
DASS42 - Depression	-.452**
DASS42 - Anxiety	-.375**
DASS42 - Stress	-.386**

** p <.001; SC: Self Compassion Scale; FRS: Figure Rating Scale; EDI: Eating Disorder Inventory; SCPAS: Social Comparison through Physical Appearance Scale; DASS42: Depression, Anxiety and Stress Scales.

In what concerns the eating disorders symptomatology, the scale shows negative correlations with Body Image Dissatisfaction and, with higher magnitudes, with Drive for Thinness and Body Dissatisfaction (EDI subscales).

The scale presents good test-retest reliability (r= .823; p= .000). Additionally the t value was .451 (p= .654), which confirms the temporal stability of the instrument.

We found statistically significant difference between genders (t= 2.149; p= .032), with males presenting higher scores in comparison to females (M= 65.25; SD= 15.38 vs. M= 61.59; SD= 16.56, respectively). Such results replicate those by Sandoz *et al* (2009) that also found statistically significant differences between genders, with males reporting higher body image acceptance than females.

To study the BI-AAQ ability to discriminate eating disorders patients, we compared a convenience sample of the general population (n= 51) and a clinical sample constituted by 46 patients diagnosed with an eating disorder with similar demographic characteristics. The patients' BI-AAQ scores mean was 31.43 (SD= 11.79), whilst the general population participants' mean was 67.39 (SD= 12.04). The t value was 14.835 (p= .000) showing that there is a statistically significant difference between the groups, with the patients with an eating disorder reporting lower body image acceptance than the normal population participants.

In order to further explore the importance of Body Image Acceptance for eating disorders, we conducted a series of hierarchical multiple regression analyses predicting the tendency to diet and restrict eating (a central symptom in such disorders). We considered that disordered eating tendencies are distributed according to a gravity continuum between general and clinical population with eating disorders. So, in this section we opted to gather the nonclinical and the clinical sample together (total sample N= 725). The visual inspection of the distributions showed that the total sample did not create a bimodal distribution. Furthermore, although the Kolmogorov-Smirnov test confirmed that the distribution was biased from normal curve, Skewness values ranged from -.74 and 1.47, and Kurtosis values between -.353 and 3.46. Such values, according to Kline (1998), are acceptable and do not represent a serious bias. Additionally, we analysed the suitability of the current data for regression analyses. The normal distribution, linearity and homoscedasticity of residuals were confirmed through the analysis of residuals scatter plots. Also, the independence of the errors was analysed and validated through graphic analysis and the value of Durbin-Watson (values ranged between 1.963 and 1.991). We found no evidence of multicollinearity or singularity amongst the variables. Variance Inflation Factor (VIF) values indicated the absence of β estimation problems (VIF <5). Overall, such results show the adequacy of the data for regression analyses.

We conducted a hierarchical multiple regression analysis predicting Drive for Thinness (EDI) from Body Image Dissatisfaction (FRS) and BI-AAQ scores, after controlling for BMI, and with BI-AAQ added last. As indicated in Table 3 the predictor variables produced a significant model accounting for 56.4% of the variance in Drive for Thinness. Additionally, BI-AAQ scores remained a significant predictor of Drive for Thinness even after controlling for BMI and Body Image Dissatisfaction scores, with each variable having a significant and an independent contribution on the prediction of Drive for Thinness.

Table 3. Hierarchical multiple regression using BMI, Body Image Dissatisfaction (FRS) and Body Image Acceptance (BI-AAQ) to predict Drive for Thinness (EDI; criterion variable; *N*= 725)

Model	Predictors	β	*t*	*p*	*R*	R^2	*F*	*p*
Step 1					.187	.035	25.899	.000
	BMI	.187	5.089	.000				
Step 2					.488	.238	191.624	.000
	BMI	-.102	-2.629	.009				
	Body Image Dissatisfaction	.535	13.843	.000				
Step 3					.751	.564	535.032	.000
	BMI	-.092	-3.156	.002				
	Body Image Dissatisfaction	.261	8.273	.000				
	Body Image Acceptance	-.631	-23.131	.000				

Given the previous findings we sought to explore the impact of Body Image Acceptance on the relationship between Body Image Dissatisfaction and Drive for Thinness. In order to analyse such moderator effect of the Body Image Acceptance, we conducted a multiple hierarchical regression analysis considering the interaction of a continuous predictor (Cohen, Cohen, West, & Aiken, 2003). In this procedure, in an attempt to reduce the error associated with multicollinearity, we have used a standardized procedure, centring the values of the two predictors (Body Image Dissatisfaction and Body Image Acceptance) and then obtained the interaction product by multiplying the two created variables (Aiken & West, 1991).

Therefore, we verified that the three steps of the model are statistically significant (Table 4). On step one, we entered Body Image Dissatisfaction as a predictor and on step two we further included Body Image Acceptance as a predictor variable. In both

Table 4. Hierarchical multiple regression using Body Image Dissatisfaction (FRS) to predict Drive for Thinness (EDI) having Body Image Acceptance (BI-AAQ) as a moderator (N=725)

Model	Predictors	β	*t*	*p*	*R*	R^2	*F*	*p*
Step 1					.480	.231	216.735	.000
	Body Image Dissatisfaction	.480	14.722	.000				
Step 2					.748	.559	538.223	.000
	Body Image Dissatisfaction	.211	7.717	.000				
	Body Image Acceptance	-.633	-23.200	.000				
Step 3					.762	.581	38.096	.000
	Body Image Dissatisfaction	.164	5.925	.000				
	Body Image Acceptance	-.616	-22.989	.000				
	Body Image Dissatisfaction x Body Image Acceptance	-.159	-6.172	.000				

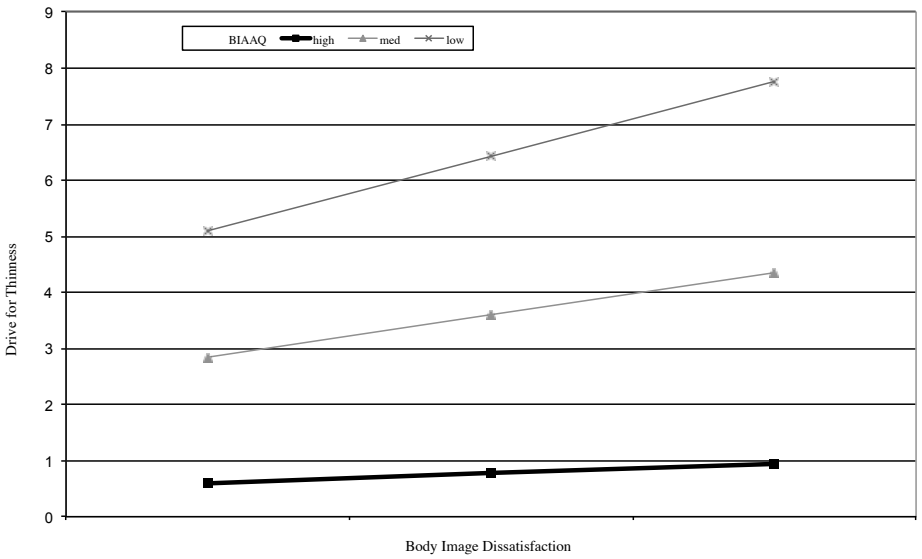

Figure 2. Graphic for the relation between Body Image Dissatisfaction (FRS) and Drive for Thinness (EDI) with different levels of Body Image Acceptance (BI-AAQ).

steps the predictors entered produced statistically significant models. The third step, where the interaction terms were entered, presents a R^2 of .581 ($F_{(1, 721)}$= 38.096; p= .000). Thus, there was a significant interaction of Body Image Acceptance and Body Dissatisfaction on predicting Drive for Thinness.

From the regression coefficients analysis (Table 4) we can see that both Body Image Dissatisfaction and Body Image Acceptance are statically significant predictors, in all steps of model. The interaction between these two variables points out to the existence of a moderator effect of Body Image Acceptance on the relation between Body Image Dissatisfaction and Drive for Thinness (β= -.159; $t_{(720)}$= -6.172; p= .000).

To better understand the relation between Body Image Dissatisfaction and Drive for Thinness with different levels of Body Image Acceptance we plotted a graphic (Figure 2) considering one curve for each of the three Body Image Acceptance (BI-AAQ) levels (low, medium and high). This procedure is recommended to highlight this relation and can be done with centred and uncentred variables (Aiken & West, 1991; Cohen *et al*., 2003). We opted for the centred variables. To proceed with this representation, and since we did not have theoretical cut points, we plotted the three curves taking into account the following cut-point values of BI-AAQ variable on the x axis: one standard deviation below the mean, the mean and one standard deviation above the mean, following Cohen and colleagues (2003) recommendation.

Individuals with lower levels of Body Image Acceptance show a positive and high relation with Drive for Thinness comparing to those who have medium and high values. In these two cases the relation is less expressive, being noteworthy that individuals who have high levels of Body Image Acceptance and high levels of Body Image Dissatisfaction only show a small to moderate relation with dieting and restrictive behaviours.

Discussion

The purpose of this study was to present and validate the Portuguese version of the Body Image-Acceptance and Action Questionnaire (BI-AAQ: Sandoz *et al*., 2009), an instrument developed to measure the ability to accept and experience perceptions, thoughts, beliefs, and feelings relative to one's body without attempting to change their intensity, frequency, or form. Furthermore, we aimed to study the existent relation between this body image dimension and the dysfunctional attitudes toward body and eating, exploring if such ability would moderate the empirically known effect of body image dissatisfaction in the endorsement of the importance of being thin and engagement in disruptive behaviours such as severe dieting.

The validation of the Portuguese version of this questionnaire was performed in a sample from general population constituted by 679 subjects, from both genders, with an ample age range. The use of this sample pretended to answer some limitations pointed by Sandoz and colleagues (2009) in what concerns the original validity study of the Body Image-Acceptance and Action Questionnaire that used a sample constituted only by college students (n= 182), with a restrict age range and BMI diversity.

In the psychometric analysis of the BI-AAQ we opted to follow the procedures of the authors of the original version of the questionnaire (Sandoz *et al*., 2009). The factorial analysis indicated a one-dimensional factor structure constituted by 12 items, identical to the original one, and as theoretical expected (Sandoz *et al*., 2009), that explains 63.36% of the variance. Furthermore, the factorial structure of the BI-AAQ was confirmed by a CFA. As expected the chi-square goodness-of-fit index was significant, given the large sample size. Nevertheless, the other goodness-of-fit indexes considered in this analysis were overall adequate, taking into account the recommended standards (Byrne, 2010).

Overall, the BI-AAQ was shown to be internally consistent, with a Cronbach alpha of .945, and it also presents item-total correlation values that vary between .503 and .817. Such findings corroborate the quality and adequacy of the items to what this questionnaire measures.

This study also confirms that the BI-AAQ presents a good convergent and divergent validity, and points to the same direction as the results reported by Sandoz and colleagues (2009). Therefore, it was possible to corroborate the previous hypothesis that this measure of acceptance in the specific domain of body image positively relates to other general psychological flexibility and acceptance measures, and negatively relates to general psychopathology indices and, with higher magnitude, to measures related to body image and eating disturbance. In fact, in our study, BI-AAQ was positive and significantly related to the self-compassion dimensions, Self-Kindness, Mindfulness and Common Humanity (SCS; Neff, 2003; Castilho & Pinto-Gouveia, 2011), and, with higher magnitude values, to favourable social comparisons through physical appearance either with peers, or with superior targets representing the socially idealized body image (SCPAS; Ferreira *et al*., 2011). Contrastingly, BI-AAQ presented significant negative associations with Depression, Anxiety and Stress (DASS42; Lovibond & Lovibond,

1995; Pais-Ribeiro *et al*., 2004), with a measure of Body Image Dissatisfaction (FRS; Fallon & Rozin, 1985; Thompson & Altabe, 1991), and, with higher magnitudes, with the measures that translate greater vulnerability to eating pathology (EDI; Garner *et al*., 1983; Machado *et al*., 2001). These results add to the findings that acceptance is negatively related with psychological symptoms and positively related with quality of life and general health measures (Hayes *et al*., 2006), and specifically corroborate that body image acceptance is negatively related with body image dissatisfaction and eating pathology measures (Sandoz *et al*., 2009).

Even though the validation study of the Portuguese version of the questionnaire used a general population sample, we also aimed at contributing for a greater knowledge about the clinical utility of this instrument. We explored therefore the existence of a differential pattern among genders relatively to body image acceptance. Additionally, we analysed the discriminative capacity of this instrument in what concerns the diagnostic categories (e.g. eating disorders) for which it is meant. First, we verified that this measure reveal a differential pattern considering the gender, which is in accordance with the results by Sandoz *et al*. (2009). These set of results suggest that physical appearance is experienced with higher flexibility and have a lower impact in someone's life, among men, in comparison to women. Secondly, we concluded that, in fact, there are statistically significant differences between a non-clinical and a clinical group, with patients with an eating disorder presenting lower scores of acceptance of their body image. These findings seem to indicate that this higher psychological inflexibility related to physical appearance is associated to eating disorders and might translate in a higher invalidation of effective actions towards life values (Hayes *et al*., 2004).

Similarly to Sandoz *et al*. (2009) we also found that BI-AAQ was a significant predictor of disordered eating behaviour. Moreover, and given the previous findings, we also predicted that body image acceptance would have a moderator effect on the relationship between Body Image Dissatisfaction and Drive for Thinness. Thus, we conducted a hierarchical multiple regression analysis to test the effect of the interaction between Body Image Dissatisfaction and Body Image Acceptance on Drive for Thinness. Analyses revealed that when the interaction terms were entered on the regression model, they produced a significant increase in the model prediction, and also showed an expressive and significant effect upon Drive for Thinness. Our findings show, therefore, that it seems that in those individuals with a lower ability of keeping in touch, accepting the ongoing stream of internal events related to body image issues, a perception of greater dissatisfaction with their own body, tend to endorse the importance of being thin and adopting behaviours such as an excessively restrictive eating pattern, that might contribute to the development of an eating disorder (Stice, 2001). Given such results, it seems that the body image acceptance is an important mediator in the process of body image and eating disturbances that should be further explored in future studies.

These results need to be evaluated taking into account some limitations. Our study allowed us to confirm that the BI-AAQ keeps its one-dimensional factorial structure in a Portuguese sample. This enabled us to consider that the proposed model to assess body image acceptance is plausible. However, to ensure the plausibility and parsimony of the model further studies should test its invariance in other samples.

Also, our study used a measure of self-compassion to study the scale convergent validity with other measures of psychological flexibility. We think that future research should address this relation more specifically verifying if there is a distinct correlational pattern between a BI-AAQ and a general psychological flexibility measure (e.g. AAQ) and other specific measures (e.g. mindfulness).

Other limitation in this study is the constitution of the sample. In order to best represent the general Portuguese population and take more robust conclusions, the sample genders should be more equally distributed. Nonetheless, this study constitutes a first approach and it seems important that future studies replicate the scale structure in a larger clinical sample with eating disorders, in order to ensure a continuity of the work focusing on the validity of this instrument. Similarly, and considering the singularity of this measure and its importance for the study of the change processes among disordered eating and patients with eating disorders, research should further investigate differences between distinct types of such eating disorders pathologies, and other Axis I pathologies (e.g. mood and anxiety disorders).

Nonetheless, this study confirms that BI-AAQ in its Portuguese version is a robust and reliable instrument and adds to the previous knowledge and research into the role of psychological flexibility and acceptance on body image and eating difficulties. Thus, it significantly contributes for the eating disorders research field and for the clinical practice.

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