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The Brief Body Avoidance and Checking Scale for physically active men development and initial validation

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The aim of this study was to develop and examine the psychometric properties of the Brief Body Avoidance and Checking Scale (BBACS) for physically active men. The BBACS is designed to assess the frequency of body checking and avoidance behaviors common among users of gyms and health clubs. Following development of an initial pool of items and content judgment, data from 325 men were collected from gym users and participants in organized sporting events. Confirmatory factor analysis showed a good fit for a model with two factors and 12 items. Satisfactory evidence of construct validity and internal consistency was also generated through analysis of factor loadings, t-values, correlations with drive for muscularity and body satisfaction measures, group differences, Cronbach's alpha, and construct reliability tests. The BBACS appears to be a valid and reliable scale for assessing the frequency of body checking and body avoidance behaviors among physically active men.

KEY WORDS: Avoidance behavior, Checking behavior, Psychometric properties.

Introduction

Body avoidance behavior is a response to the thoughts and emotions related to events and actions that bring a sense of devaluation or dissatisfaction with the body. A number of methods perpetuate dissatisfaction, includ-

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ing anti-social behavior, hiding one's body from public exposure, limiting the use of short or tight-fitting clothing, and refraining from close contact with others (Cash, 2002). Body checking behavior is also associated with negative body evaluations and, in turn, is associated with comparisons with others and compulsive evaluations concerning one's size, weight, and shape (American Psychiatric Association, 2000; Reas, Whisenhunt, Netemeyer & Williamson, 2002; Shafran, Fairburn, Robinson & Lask, 2004). Body avoidance and checking behaviors are known to be expressions of corporeal experiences, including body image functionality, the development of eating disorders, body dysmorphic disorder, and muscle dysmorphia (Menzel, Krawczyk, & Thompson, 2011).

There is a small amount of research covering body checking and body behaviors using male samples. A few studies indicate that, for obese men, body checking can magnify perceived bodily imperfections, resulting in body dissatisfaction. As such, these men may be susceptible to the development of eating disorders (Grilo et al., 2005). For those in weight loss programs, avoidance and checking behaviors are related, and are associated with fear of being fat, body dissatisfaction, and lower self-esteem (Latner, 2008). For men with a normal body weight, body checking has been found to be associated with perfectionism, obsessive-compulsive behavior, shape and weight concern, a desire to increase muscle size and strength, negative beliefs about appearance, body concern, and the use of appearance and performance enhancing drugs (Walker, Anderson, & Hildebrandt, 2009). Body checking predicts body dissatisfaction and muscle dysmorphic disorder and, in turn, is predicted by negative affect and obsessive-compulsive symptoms (Vartanian & Grishan, 2011). Body comparison, a specific behavior of the body checking construct, has been associated with a drive for attitudes and behaviors concerned with muscle development (Karazia & Crowther, 2010). Drive for muscularity, in turn, predicts both general and muscularity-related social comparisons (McCreary & Sasse, 2009).

Most body checking and body avoidances measures (e.g., Reas et al. 2002; Rosen, Srebnik, Saltzberg & Wendt, 1991) focus on concerns and feelings related to body fat. For male samples, these measures do not include a muscularity component, and, as such, may overlook an important component of the physical experiences of men. Hildebrandt, Walker, Alfano, Delinsky, and Bannon (2010) produced an advance in male body checking measurement research with the Male Body Checking Questionnaire (MBCQ), which was developed based on BCQ items. An attitudinal measure that encompasses specific muscularity avoidance behavior is still lacking. More-

over, a measure for body checking and avoidance for use in gyms and sports centers is also absent from the literature.

In the present study, we sought to add to the growing body of literature examining body checking and body avoidance behaviors among physically active men. We did so by developing the Brief Body Avoidance and Checking Scale (BBACS).

The Present Study

The Brazilian context is useful for examining issues related to men's body image. It has been suggested that Brazil is experiencing a "cult of the body" by placing extreme importance on a well-shaped body figure alongside the normalization of body modification strategies and behaviors (Dorneles de Andrade, 2010; Edmonds, 2007; Goldenberg, 2002; Swami et al., 2011). A lean and muscular male appearance is highly valued in Brazil, as an aesthetic ideal, a symbol of social status and ascent, a way of establishing respect among peers, and as a means of attracting prospective partners (Goldenberg, 2002; Iriart, Chaves, & Orleans, 2009).

The items of the BBACS were developed primarily with this "cult of the body" cultural scenario in mind, since they were generated in a focus group with Brazilian physical educators, the authors' professional experiences as physical educators, and observations of male behavior at gym and sports centers. However, we also considered literary evidence covering men's body checking and avoidance behavior, generated mostly in the United States (Grilo et al., 2005; Hildebrandt et al., 2010; Karazia & Crowther, 2010; Latner, 2008; Vartanian & Grishan, 2011; Walker, Anderson, & Hildebrandt, 2009). The combination of these techniques to generate the BBACS items proved to be advantageous, in the face of the few studies that are concerned with male body checking and, specifically, body avoidance behaviors.

To cover the absence of a body checking and avoidance behavior measures for physically active men, the BBACS was primarily developed for use in gyms and sports centers. The new measure captures specific behaviors, exemplified in such statements as, "I compare the supplements that I take with the supplements that others take," or "I look in the mirror to check if my muscles are symmetrical". This specificity is the key difference between MBCQ and BBACS body checking items, since items from the former are more general, such as "I compare the size of my chest with others." In addition, the BBACS has a particular item, namely, "At the gym, I compare the weight I lift on the bench press with the weight that others lift", which

addresses a distinct aspect of body checking related to body function (i.e. the capacity of weight-lifting), a concept that is absent in the MBCQ. Finally, considering the environment and the dynamics of a gym, this new scale can concurrently assess body checking and body avoidance quickly and easily, which may encourage response effectiveness.

Finally, for the present study, as part of construct validation, using a nomological network approach, it was hypothesized that:

1 – *BBACS factors will be associated with DMS factors.* Higher levels of drive for muscularity have been consistently associated with negative feelings and behaviors, such as low self-esteem, greater incidence of depression, greater social physique anxiety, negative affect, abuse of anabolic steroids, and exercise dependence (Cafri, Strauss & Thompson, 2002; Chittester & Hausenblas, 2009, McCreary, 2011). Also, an association between body comparison and drive for muscularity has been previously reported (Karazia & Crowther, 2010; McCreary & Saucier, 2009).

2 – *BBACS factors will be associated with exercise practice indicators (intensity, frequency, and length).* Exercise is one of the first choices to change body appearance when men are concerned with their body, including Brazilian men (Smith, Handley, & Eldredge, 1998; Tavares, Campana, & Moraes, 2012; Tiggemann & Williamson, 2000). This hypothesis is supported by the gathered data and by the argument that the impact of the changes made by the exercise could trigger body avoidance and body checking behavior, a pattern similar to that which occurs with weight-loss dieting among women (Reas et al., 2002).

3 – *BBACS factors will be different among dieters and non-dieters.* Body appearance changes observed during weight-loss diet programs can trigger an increase in body checking behaviors and the avoidance of body exposure, particularly in cases where appearance is not believed to be good enough (Latner, 2008).

4 – *BBACS factors will be different among weight-gain dieters and weight-loss dieters.* In general, being overweight is perceived as being undesirable for men, but it is even more undesirable to be skinny or insufficiently muscular (Labre, 2002), which is particularly true in Brazil (Goldenberg, 2002). Skinny men tend to adopt a weight gain diet, to achieve a larger body, and they are more concerned with, and attentive to, muscle enhancement. On the other hand, those trying to lose weight generally focus more on body fat changes.

5 – *BBACS factors will be different among single and romantically involved men.* This hypothesis was formulated based on two arguments: the

muscular body ideal is more prominent among single men, compared with dating men (Giles & Close, 2008) and, in Brazil, a muscular body is considered more physically attractive in a prospective partner (Goldenberg, 2002). Thus, single men could be more vigilant concerning their bodies and avoid public exposure when they perceive their body to be undesirable.

Methods

Brief body avoidance and checking scale (BBACS) development

The initial item pool of the BBACS consisted of 18 items, focused on body checking and avoidance behaviors that occur in gyms and sports clubs. Seven experts (5 body image researchers, 1 psychoanalyst, and 1 psychologist) judged the content adequacy of each item and its relevance as an observed variable to the body avoidance and body checking constructs. They rated how appropriate the items were to evaluate body checking and body avoidance in gyms and sports clubs, using a 3-point scale (1 = *Appropriate content*, 2 = *Moderately appropriate content*, and 3 = *Inappropriate content, delete item*). A total of 16 items had more than 80% agreement concerning their adequacy and relevance.

On the basis of this expert agreement, a pre-test with 14 participants, all gym users, was conducted to determine the pertinence and comprehension of the scale for the target population (i.e., physically active men). We followed three steps at the pre-test: (1) each participant completed the pre-test scale, (2) each took part in an interview to verify item and instruction comprehensibility, lay-out adequacy, and congruence between desired answer and indicated answer (which was especially important for negative and double negatives items), (3) each participant was asked if any of the situations illustrated in the scale was not true for them (for example, for those that never took supplements) and how they managed to answer. Regarding this point, approximately 90% of the participants answered that they chose the answer "never": the implicit logic being that if they never engaged in a listed behavior, the option "never" in the scale would be the most adequate.

Theoretically, the BBACS was proposed with a bi-dimensional structure: Muscle and Fat Checking factors (items 1-10) and Body Avoidance factors (items 11-16). The former captures the behaviors dealing with control over the body, comparison, measures, and rituals related to muscle definition, muscularity size enhancement, and body fat reduction, in order to show a lean body. The latter factor captures behaviors related with efforts to hide the body, self-social exclusion, and avoidance of physical intimacy. The items were rated on a 5-point Likert-type scale (1 = *Never*, 5 = *Always*).

Participants

A non-probabilistic sample of 325 men was recruited from gyms and two track and field events from two different Brazilian cities. The mean age of the participants was 23.00 years (SD = 6.64), and the mean self-reported body mass index (BMI) was 23.56 kg/m^2 (SD = 2.66). Most participants described themselves as single (87.4%), were not on any specific diet

(72.9%), and exercised with heavy intensity (75.4%) three or more times per week (72.3%), for 30 minutes or more on each occasion (89.8%).

Other measures

Drive for Muscularity Scale (DMS, McCreary & Sasse, 2000; Brazilian version: Campana, Tavares, Swami, & Silva, 2013). The DMS is a 15-item scale, developed to evaluate muscularity concerns and muscle enhancement behaviors. Items were rated on a 6-point scale (1 = *Always*, 6 = *Never*). The Brazilian Portuguese version of the DMS was transculturally adapted following the five-step guideline supported by the Institute for Work and Health (Beaton, Bombardier, Guillemin & Bosi-Ferraz, 2002). The original model, with 12 items (items 7, 9, and 10 were dropped) in two factor categories, Muscularity-Oriented Body Image (items: 1, 11, 13, 14 and15) and Muscularity-Oriented Behavior (items: 2, 3, 4, 5, 6, 8 and 12) showed best adherence, RMSEA = .067, GFI = .99, AGFI = .99, NFI = .99, CFI = .99, NNFI = .99, along with adequate evidences of internal consistency and convergent and discriminant validity. For the present sample, Cronbach's alpha was .88 for Muscularity-Oriented Body Image and .79 for Muscularity-Oriented Behavior.

Masculine Body Ideal Distress Scale (MBIDS; Kimmel & Mahalick, 2004; Brazilian version: Campana et al., 2013). The MBIDS is an 8-item scale, developed to evaluate the level of distress associated with failing to achieve the ideal muscular, masculine body. Items were rated on a 4-point scale (1 = *Not distressing at all*, 4 = *Very distressing*). The Brazilian Portuguese version of the MBIDS (Campana et al., 2013) was also transculturally adapted, following the Institute for Work and Health five-step guideline (Beaton et al., 2002). The one-dimensional structure was replicated in the MBIDS Brazilian version, RMSEA = .053, GFI = 1, AGFI = .99, NFI = 1, CFI =1, NNFI =1. However, items 5 and 8 were excluded in this version. Adequate evidence of internal consistency and construct validity was provided (Campana et al., 2013). For the present sample, Cronbach's alpha was .82.

Demographics. Participants self-reported their age, weight, height, marital status, dietary habits, and the level of physical activity with the Kasaris Fit Index Scale, in which participants are asked to self-reported their physical activity practices in terms of frequency (1 = *< once a month*, 5 = *> 6 times per week*), intensity (1 = *Light aerobic exercise*, 5 = *High intensity activities*), and duration (1 = *< 10 minutes per session*, 5 = *>30 minutes per session*) (Heyward & Stolarczyk, 1996).

Procedures

Ethical approval for the present study was obtained from the relevant university ethics committee. The researchers visited gyms and two organized sporting events in two cities in the states of São Paulo and Minas Gerais, Brazil, and invited participants to take part in a study on men's health. A consent form explained the procedures and objectives of the research study, and was read and signed by all volunteers. The scales were answered in a tent during the sporting events and in a room at the gyms, specially organized for data collection, in order to give privacy to the participants. Each volunteer took approximately 10 minutes to complete the survey. Participants were not remunerated and were debriefed following the study. Participation was voluntary.

Data analysis

Confirmatory Factor Analysis (CFA) was used to confirm the theoretical factor structure of BBACS, and to evaluate construct validity and reliability (through construct reliability test). The listwise deletion criterion was adopted for missing data and, due to the lack of multivariate normality, the Unweighted Least Square method of extraction was used (Garson, 2006). In the adjustment of the model, the following indices were considered: Goodness-of-Fit Index (GFI), Adjusted Goodness-of-Fit Index (AGFI), Non-Normed Fit Index (NNFI), and Comparative Fit Index (CFI). These indices should be equal to or above .90. Also considered were the Root Mean Square Error of Approximation (RMSEA), the value of which should be below .08, and the standardized chi-square, the values for which should be less than 3. Factor loadings and item residuals were considered for further adjustments of the model (Hair, Anderson, Tatham, & Black 2009).

For internal reliability, Cronbach's alpha and construct reliability were evaluated. Construct reliability was computed from the squared sum of factor loadings (λ_j) and the sum of error variance (E_j) for each factor, as we see in the formula:

$$Construct\ reliability = (\sum_j)^2 / (\sum_j)^2 + \sum E_j$$

For both tests, values greater than or equal to 0.70 suggest good reliability (Hair et al. 2009). Convergent and discriminant validity were also evaluated. For the former, *t*-values and the factorial loads of each item were analyzed. *T*-values greater than or equal to 1.96 were considered acceptable and factor loadings greater or equal to .50 are desirable (Hair et al., 2009). Based on our hypothesis for this present study, correlations among BBACS factors and drive for muscularity measures (DMS and MBIDS) and physical activity components (intensity, frequency and length) were tested. Regarding discriminant validity, BBACS factors were compared between dieters and non-dieters, weight-gain dieters and weight-loss dieters and between single and romantically involved men.

Results

BBACS factorial structure

In order to confirm the two-factor theoretical model, we ran the cfa with our BBACS data. initial adjustments showed satisfactory results (RMSEA = .078, CFI = .95, NNFI = .95, AGFI = .95, GFI = .96, $\chi^2/df = 2.98$). However, during the analysis of factor loadings and item residuals, to consider further adjustments, we saw that items 5 ($\lambda = .19$), 7 ($\lambda = .21$) and 11 ($\lambda = .30$) had low factor loadings and item 1 showed large associated residuals. We eliminated four items: 1, 5, 7, and 11. After the elimination of each item, we reran the CFA and reanalyzed the measurement parameters, factor loadings, and residuals. following these procedures, a better fit was achieved (RMSEA = .069, CFI = .98, NNFI = .97, AGFI = .96, GFI = .97, $\chi^2/df = 2.56$) and for the model with the best fit, the avoidance factor is composed of the original

items 12, 13, 14, 15, and 16, and for muscle and fat checking the original items 2, 3, 4, 6, 8, 9, and 10 are the observational variables.

Internal consistency

Internal consistency, measured with Cronbach's alpha for Muscle and Fat Checking ($\alpha = .72$) and Body Avoidance ($\alpha = .71$) were satisfactory. The construct reliability test also generated good values of internal consistency for both factors (Muscle and Fat Checking: CR = .77; Body Avoidance: CR = .74).

Convergent and discriminant validity

The results of the CFA report also produced data to analyze convergent validity. It showed that all item *t*-values were above 1.96. Moreover, all factor loadings were acceptable, with items 3 ($\lambda_i = .40$), 12 ($\lambda_i = .40$), and 14 ($\lambda_i = .48$) having the lowest— though still acceptable— loadings (see Table 1). These parameters give evidence of convergent validity (Garver & Mentzer, 1999; Hair et al., 2009).

Using the nomological network approach, we analyzed the hypotheses to generate additional evidence of convergent and discriminant validity. Regarding the former, Spearman's correlations were calculated for both of the BBACS factors, the DMS factors, MBIDS, intensity, frequency and length of physical exercise, and age. Scores for the Muscle and Fat Checking factor were correlated with Muscularity-Oriented Body Image ($r_s = .46$, $p < .001$), Muscularity-Oriented Behavior ($r_s = .59$, $p < .001$) MBIDS ($r_s = .36$, $p < .001$), exercise intensity ($r_s = .26$, $p < .001$) and frequency ($r_s = .16$, $p < .001$). The Body Avoidance factor showed lower, though still significant, correlations with Muscularity-Oriented Body Image ($r = .25$, $p < .001$), Muscularity-Oriented Behavior ($r = .17$, $p < .001$), and MBIDS ($r = .22$, $p < .001$).

Concerning discriminant validity, dieters ($n = 86$, mean rank = 197.58) scored significantly higher than the non-dieter sub-sample ($n = 237$, mean rank = 149.09) on the Muscle and Fat Checking factor, $U = 7131$, $p < .001$, $ES = .22$, but not on the Body Avoidance factor, $U = 9049$, $p = .12$, $ES = .08$. The same pattern occurred between weight-gain dieters and weight-loss dieters, since the former ($n = 44$, mean rank = 52.64) scored higher than weight-loss dieters ($n = 42$, mean rank = 33.39) on the Muscle and Fat Checking factor, $U = 522$, $p < .001$, $ES = .33$; only the scores on the Body Avoidance factor, $U = 5879.5$, $p = .69$, $ES = .04$, were statistically similar.

TABLE I

Item	*Mdn*	*R*	*Skewness*	*Kurtosis*	Muscle and Fat Checking factor,			Body Avoidance factor		
			s		λ	R^2	T-Value	λ	R^2	T-Value
1 – I measure the width of my arm	**2**	**1-5**	**.60**	**-.38**			**Eliminated: residuals**			
2 – At the gym, I compare the weight I lift on the bench press with the weight that others lift	2	1-5	.38	-1.06	.57	.32	14.99			
3 – I pinch my stomach to measure the amount of fat	3	1-5	.29	-.99	.40	.16	11.37			
4 – I look in the mirror to check if my muscles are symmetrical	3	1-5	-.06	-.86	.78	.61	.19,12			
5 – I weigh myself	**3**	**1-5**	**-.14**	**-.65**			**Eliminated: low factor loading**			
6 – I measure my muscles to check whether they are proportional	2	1-5	.78	-.24	.58	.34	15.53			
7 – I control the food that I eat	**3**	**1-5**	**-.04**	**-.98**			**Eliminated: low factor loding**			
8 – I look in the mirror to check whether my muscles have gotten bigger	3	1-5	-.05	-.87	.76	.58	18.75			
9 – I compare the supplements that I take with the supplements that others take	1	1-5	1.37	.94	.55	.30	14.83			
10 – I look in the mirror to see if I have a "six-pack"	3	1-5	.09	-1.02	.59	.65	15.76			
11 – I try to exercise when the gym is empty	**3**	**1-5**	**.33**	**-1.14**			**Eliminated: low factor loading**			
12 – I use baggy clothes to hide my body	1	1-5	2.15	4.75				.40	.16	.9.42
13 – I avoid changing clothes in locker rooms	1	1-5	1.87	3.09				.80	.64	14.62
14 – I avoid taking my T-shirt off in public places (at the beach, swimming pool, sauna or club)	1	1-5	1.99	3.95				.48	.23	10.91
15 – I avoid physical intimacy	1	1-5	1.57	1.82				.57	.33	12.46
16 – I avoid showering in locker rooms	1	1	1.12	.25				.73	.5	14.04

Finally, a Mann-Whitney test indicated that there were no significant differences between single (n = 151) and romantically-involved men (n = 171) on the Muscle and Fat Checking factor scores, U = 711468, p = .08, ES = .09. However, for the Body Avoidance factor, romantically-involved men (mean rank = 142.79) scored significantly lower than single men (mean rank = 182.69), U = 9711.5, p < .001, ES = .22).

Discussion

This new scale was developed to specifically assess behaviors that typically occur in gyms and sports clubs and its content was judged adequate for that purpose. The scale has two factors, namely, Muscle and Fat Checking and Body Avoidance. The first factor captures control over the body, made by external comparisons and ritualistic measures. The second factor measures the tendency to avoid personal contact, to avoid bodily exposure, and the efforts made to hide the body.

The BBACS showed adequate evidence of reliability and construct validity. CFA confirmed this theoretical model, based on previous research and the two factors consisting of 12 items were retained from the initial pool of 16 items. Additionally, the factor loadings of the items, for both factors, were very close to (for items 3, 12 and 14) or higher than .50, indicating that the observed variables retained in BBACS are pertinent to explain the latent variable. Even after the exclusion of four items, each factor of BBACS has more than three items, which would be the minimum number of observed variables (Hair et al., 2005; Hershberger, Marcoulides, & Parramore, 2003).

The results from the nomological network approach added more evidence of BBACS validity. The comparison of the score between dieters and non-dieters suggests that only the Muscle and Fat Checking factor of BBACS discriminates these groups, as well as weight-gain dieters and weight-loss dieters. These results partially confirmed our hypothesis that diet, and more specifically a weight-gain diet, though not the first choice for changing body appearance for men, impacts body image, specifically triggering body-checking behavior. It should be kept in mind that individuals participating in any kind of diet give up the essential pleasure of eating freely, a pleasure connected with basic life needs (Maslow, 1943). The higher levels of body checking could be viewed as expected behavior, since the expectation of achieving a lean body and, therefore, eating normally again may stimulate a person to collect information on the progress of the effort. The rationale is that individuals rely on ritualistic measures and external comparisons in order to eval-

uate whether they are achieving progress toward a lean, muscular, and more physically attractive body (Davis & Cowles, 1991).

On the other hand, only the Body Avoidance factor of BBACS discriminated single and romantically involved men, giving evidence to partially confirm our hypothesis that body image behavior is different between romantically involved and single men. Romantically involved men had lower body avoidance scores, the rationale being that having a significant other, someone who chose him over other men, decreases the man's sense of devaluation, and hence, the need to hide body imperfections and to avoid social contact and physical intimacy (Cash & Fleming, 2002).

It appears that body comparison is not the only factor associated with a drive for muscularity, as showed in previous research (Karazia & Crowther, 2009, McCreary & Saucier, 2009). Ritualistic measures, mirror watching, and reassurance of muscle strength had strong-to-moderate associations with drive for muscularity attitudes, muscularity enhancement behavior, and muscularity body ideal distress in this study. In addition, intensity and frequency of physical activity had weaker but also significant positive associations with the Muscle and Fat checking factor. The rationale for these last associations is the existence of a feedback system where the efforts for achieving a perfectly muscular and lean body could magnify body surveillance, as well as increase commitment to a physical exercise routine. This evidence also suggests that professionals involved in physical exercise should closely follow the drive for muscularity and body checking behaviors during physical practice, especially since the highest levels of these constructs were associated with negative outcomes, including exercise dependence and anabolic steroid use (Cafri, Strauss & Thompson, 2002; Chittester & Hausenblas, 2009; McCreary, 2011; Vartanian & Grishan, 2011). Regarding the fact that body avoidance behavior showed weaker correlations with drive for muscularity attitudes, behavior and body ideal distress should not be neglected since they play an important role in an individual's social life (Rosen et al., 1991).

Regarding the scale reliability, the results found for both tests of internal consistency, Cronbach s alpha and construct reliability, were above .70, providing evidence to support the conclusion that the new scale is able to produce stable and consistent results (Hair et al. 2009).

As a whole, the results of this study suggest that the BBACS is a valid and reliable scale to measure specific body avoidance and body checking behavior among physically active men. Still, a number of limitations of this work should be noted. This was the first psychometric study of its kind, and it is limited to a non-probabilistic Brazilian sample. Future work in different

countries and cultures will help develop a better understanding of the dynamic of body checking and avoidance behaviors among physically active men. Also, time stability, predictive validity, and further evidence of construct validity should be investigated in future research. Associations with related constructs, such as social physique anxiety, anabolic steroid acceptance and use, food supplement use, and excessive exercising, should also be investigated. Finally, our opportunistic method of recruitment means that our sample cannot be considered representative. Nevertheless, this study provides a brief scale for assessing body image behaviors among physically active men, giving a unique approach for this target population. At this point, we should mention that BBACS was not developed to be a psychological test. It is an attitudinal measure to be used on a group level, allowing researchers in the fields of sports psychology and body image to achieve a further understanding of the factors related with these behaviors, as well the variables that are predicted by and that predict them.

Despite the limitations and the need for more studies to better understand the role of body checking and body avoidance behaviors in men, this study provided satisfactory initial evidence of the psychometric validity of the BBACS in Brazil. This is important due to the limited quantity of psychometric validated scales for body image investigation for Brazilian research (Campana & Tavares, 2009). The brief length of the BCCAS is a possible advantage for researchers, since it can encourage gyms users and athletes to participate in scientific studies. This, in its turn, could increase the quality and quantity of the evidence concerning body image in men.

REFERENCES

American Psychiatric Association (2000). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: American Psychological Association.

Beaton, D. E., Bombardier, C., Guillemin, F., & Ferraz, M. B. (2002) *Recommendations for the cross-cultural adaptation of healthy status measures*. Chicago, IL: American Academy of Orthopedic Surgeons/Institute for Work & Health.

Cafri, G., Strauss, J. & Thompson, J. K. (2002). Male body image: Satisfaction and its relationship to well-being using the Somatomorphic Matrix. *International Journal of Men's Health, 1*, 215-231. doi:10.3149/jmh.0102.215

Campana, A.N.N.B, Tavares, M.C.G.C.F, Swami, V., & Silva, D. (2013). An examination of the psychometric properties of Brazilian Portuguese translations of the Drive for Muscularity Scale, the Swansea Muscularity Attitudes Questionnaire, and the Masculine Body Ideal Distress Scale. *Psychology of Men & Masculinity, 14*, 376-388. doi: 10.1037/a0030087

Cash, T. F. (2002). *The body image workbook: An 8 step program for learning to like your looks*. New York, NY: New Harbinger Publications.

Cash, T. F., & Fleming, E.C. (2002). Body Image and Social Relations. In.: T.F. Cash & T. Pruzinsly (Eds), *Body image: A handbook of theory, research and clinical practice* (pp. 277-286) New York, NY: Guilford Press.

Chittester, N. I. & Hausenblas, H. A. (2009). Correlates of Drive for Muscularity: the role of anthropometric measures and psychological factors. *Journal of Health Psychology, 14,* 872-877. doi: 10.1177/1359105309340986

Cronbach, L. J.(1984). *Essentials of psychological testing.* New York: Harper.

Dorneles de Andrade, D. (2010). On norms and bodies: Findings from field research on cosmetic surgery in Rio de Janeiro, Brazil. *Reproductive Health Matters, 18,* 74-83. doi:10.1016/S0968- 8080(10)35519-4

Edmonds, A. (2007). 'The poor have the right to be beautiful': Cosmetic surgery in neoliberal Brazil. *Journal of the Royal Anthropological Institute, 13,* 363-381. doi:10.1111/j.1467-9655.2007.00427.x

Garson, G. D. (2006). *PA765 – Statnotes: An online textbook.* Retrieved March 13, 2011, from NC State University, College of Humanities and Social Science Web site: http://faculty.chass.ncsu.edu/garson/PA765/structur.htm

Giles, D. C. & Close, J. (2008). Exposure to 'lad magazines' and drive for muscularity in dating and non-dating young men. *Personality and Individual Differences. 44,* 1610-1616. doi:10.1016/j.paid.2008.01.023

Goldenberg, M. (2002). *Nu & Vestido* [Naked and dressed]. Rio de Janeiro; Record.

Grilo, C. M., Reas, D. L., Brody, M. L., Burke-Martindale, C. H., Rothschild, B. S., & Masheb, R. M. (2005). Body checking and avoidance and the core features of eating disorders among obese men and women seeking bariatric surgery. *Behavior Research and Therapy, 43,* 629-637. doi:10.1016/j.brat.2004.05.003

Hair, Jr., J. F., Black, W. B, Babin, B., Anderson, R. E., & Tatham, R. L (2009). *Multivariate data analysis.* Upper Saddle River, NJ: Prentice Hall.

Hershberger, S.L., Marcoulides, G.A. & Parramore, M.M. (2003) Structural Equation Modeling: an introduction. In: B.H. Pugesek, A. Tomer & A.V. Eye (Eds). Structural *Equation Modeling: applications in ecological and evolutionary biology.* (pp. 3- 41) Cambridge: Cambridge University Press.

Heyward,V. H. & Stolarczyk L. M. (1996). *Applied body composition assessment.* Champaign, IL: Human Kinetics.

Hildebrandt, T., Walker, D. C., Alfano, L., Delinsky, S., & Bannon, K. (2010). Development and validation of a male specific body checking questionnaire. *International Journal of Eating Disorders, 43,* 77-87. doi: 10.1002/eat.20669

Iriart, J. A. B., Chaves, J. C. & Orleans, R. G. (2009). Body cult and use of anabolic steroids by bodybuilders. *Caderno de Saúde Pública, 25,* 773-782. doi:10.1590/S0102-311X2009000400008

Karazia, B.T., & Crowther, J.H. (2010). Sociocultural and Psychological links to men's engagement in risky body change behaviors. *Sex Roles, 63,* 747-856. doi: 10.1007/s11199 - 0109802-6

Kimmel, S. B., & Mahalik, J. R. (2004). Measuring masculine body ideal distress: development of a measure. *International Journal of Men's Health, 3,* 1-10. doi:10.3149/ jmh.0301.1

Labre, M.P (2002). Adolescent boys and the muscular male body ideal. *Journal of Adolescent Health, 30,* 233–242. doi: 10.1016/S1054-139X(01)00413-X

Latner, J. D. (2008). Body checking and avoidance among behavioral weight-loss participants. *Body Image, 5,* 91-98. doi:10.1016/j.bodyim.2007.08.001

Luciano, L. (2001). *Looking good: Male body image in modern America.* New York, NY: Hill and Wang.

Maslow, A.H. (1943) A Theory of Human Motivation. *Psychological Review, 50*, 370-396

McCreary, D. R. (2007). The Drive for Muscularity Scale: Description, psychometrics, and research findings. In J. K. Thompson, & G. Cafri (Eds.), *The muscular ideal: Psychological, social, and medical perspectives* (pp. 87-106). Washington, DC: American Psychological Association.

McCreary, D. R. (2011). Body image and muscularity. In T. Cash, & L. Smolak (Eds.), *Body image: A handbook of science, practice, and prevention* (pp. 198-205). New York, NY: Guilford Press.

McCreary, D. R., & Sasse, D. K. (2000). An exploration ot the drive for muscularity in adolescent boys and girls. *Journal of American College Health, 48,* 297-304. doi:10.1080/07448480009596271

McCreary, D. R. & Saucier, D. M. (2009). Drive for muscularity, body comparison, and social physique anxiety in men and women. *Body Image, 6*, 24-30. doi:10.1016/j.bodyim.2008.09.002

Menzel, J. E, Krawczyk, R., & Thompson, J. K (2011). Attitudinal assessment of body image for adolescents and adults. In T. Cash, & L. Smolak (Eds), *Body image: A handbook of science, practice and prevention* (pp. 154-172). New York, NY: Guilford Press.

Morrison, T. G., Morrison, M. A. & McCann, L. (2006). Striving for bodily perfection? An overview of the drive for muscularity. In. M. Kindes (Ed), *Body image: New research.* (pp. 1-34). Columbus, New York: Nova Science.

Rosen, J. C, Srebnik, D., Saltzberg, E., & Wendt, S. (1991). Development of a body image avoidance questionnaire. *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 3*, 32-37.

Reas, D. L., Whisenhunt, B. L., Netemeyer, R., & Williamson, D. A. (2002). Development of the body checking questionnaire: a self-report measure of body checking behaviors. *International Journal of Eating Disorders*, 31, 324-333. Doi: 10.1002/eat.10012

Shafran, R., Fairburn, C. G., Robinson, P., & Lask, B. (2004). Body checking and its avoidance in eating disorders. *International Journal of Eating Disorder,* 35, 93-101. Doi: 10.1002/eat.10228

Smith, B.L., Handley, P., & Eldredge, D.A. (1998). Sex differences in exercise motivation and body-image satisfaction among college students. *Perceptual and Motor Skills, 86,* 723 - 732. doi: 10.2466/pms.1998.86.2.723

Swami, V., Campana, A. N. N. B., Ferreira, L., Barret, S., Harris, A. S., & Tavares, M. C. G. C. F. (2011). The Acceptance of Cosmetic Surgery Scale: Initial examination of its factor structure and correlates among Brazilian adults. *Body Image, 8*, 179-185.doi: 10.1016/j.bodyim.2011.01.001

Tavares, A.F, Campana, A. N. N. B. & Moraes, M.S (2012). Apreciação corporal e modificação da aparência física em estudantes adolescentes de baixo poder aquisitivo. [Body appreciation and modification of physical appearance in poor class adolescents] . *Psicologia Escolar e Educacional, 16*, 275-282. doi:0.1590/S1413-85572012000200010.

Thompson, J.K. (2004). The (mis) measurement of body image: ten strategies to improve assessment for applied and research purposes. *Body Image, 1,* 7 - 14. doi:10.1016/S1740-1445(03)00004-4

Tiggemann, M., & Williamson, S. (2000). The effect of exercise on body satisfaction and self-esteem as a function of gender and age. *Sex Roles. 43*,119-127. doi: 10.1023/A:1007095830095

Vartanian, L.R., & Grisham, J.R. (2011). Obsessive–Compulsive Symptoms and Body Checking in Women and Men. *Cognitive Therapy and Research, 36,* 367-374. doi: 10.1007/s10608-011-9356-0

Walker, D. C, Anderson, D. A., & Hildebrandt, T. (2009). Body checking behaviors in men. *Body Image, 6,* 164-170. doi:10.1016/j.bodyim.2009.05.001

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