Delimiting the Measurement for the Internalization of Body Ideals From the Sociocultural Attitudes Towards Appearance Questionnaire and Examining its Invariance Across Sex

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Abstract: The objective of this study was to validate an instrument that allows us to overcome some of the limitations found in existing tools aimed at assessing the internalization of sociocultural body ideals. To do this, we used a sample group of 1,130 students aged between 10 and 14 years. The psychometric properties of the Scale for the Internalization of Sociocultural Body Ideals (SISBI) were examined using different analyses. The results supported the eight-item structure: four items for thin body ideal internalization and four items for thin body muscular/athletic internalization. The structure showed invariance to sex and achieved acceptable internal consistency and temporal stability indexes. Furthermore, the results showed that, after controlling for sex and BMI effects, the internalization of the thin body ideal positively predicted social-physique anxiety in a statistically significant way. The results of this study provide evidence of SISBI reliability and validity in Spanish preadolescents.

Keywords: thin body ideal; muscular/athletic body ideal; social physique anxiety; body image; preadolescence.

1. Introduction

Research has linked eating disorders and body image disturbance with unhealthy consequences [1,2]. A challenge for researchers is to determine the risk factors that might lay behind these disorders to be able to intervene and reduce their effects on health [1]. The sociocultural models of body image disturbance and disordered eating have been predominant when attempting to understand the etiology and the management of these disorders, and have received strong empirical support from cross-sectional, longitudinal and meta-analysis studies [3,4]. Sociocultural models posit that people feel pressure from diverse sources (e.g., family, peers, media and partners) to attain an ideal body defined by the sociocultural patterns of beauty belonging to western countries [5].

Traditionally, the literature that has analyzed social pressure has centered on women and the consequences of searching for the ideal of feminine beauty associated with the thin-bodied model [2,6,7]. This may be explained considering that women are targets of social body models to a greater extent than men and thus the negative outcomes derived from this social pressure such as eating disorders, are more common in women than men [8]. Despite this assumption, evidence exists that...
men also feel sociocultural pressure to achieve the socially accepted standards of beauty [9,10]. Indeed, the most recent research has examined the variables related to sociocultural pressure felt by males in search of an ideal associated with the athletic/muscular-bodied model, more related to the culture of masculinity and the role of the manly figure [11,12].

Theoretically, social pressure towards these body ideals carries negative consequences for the individual to the extent that they internalize and accept the attitudes as their own, attitudes that have been approved by persons or agents that they hold as references. In this way, the internalization process refers to the extent an individual cognitively “buys into” the culturally sanctioned ideals of beauty [2], so that the individual ends up assuming such ideals as their own standard. The internalization of the ideals of beauty, generally unattainable for the individual, has been shown as a risk factor for unhealthy behaviors associated with body image disturbance and eating disorders [13]. Furthermore, it is important to highlight that, even though action to change the pressure of the different social agents of body image would be necessary, research suggests that it might be more feasible to intervene in the internalization process of the socially sanctioned ideals as a risk factor associated with body dissatisfaction [14]. Given the importance of body ideal internalization for the prevention and treatment of eating disorders and other unhealthy behaviors, it is essential to have appropriate and sensitive measures available for this construct.

Up until now, there have been two scales to measure the internalization of body ideals. The Ideal Body Internalization Scale-Revised (IBIS-R) [15,16] is a unidimensional measure that comes from an adapted form of the initial six items of the Ideal-Body Stereotype Scale 17 incorporating four new items. The IBIS-R evaluates the ideal female body stereotypes by asking participants for their level of agreement with 10 statements concerning what attractive women look like on a 5-point scale ranging from strongly disagree to strongly agree. A second measure of internalization that has been used a lot is gathered in any of the different existing versions of the Sociocultural Attitudes Towards Appearance Questionnaire [6,7,18,19]. Although the SATAQ [18] was initially proposed to measure factors of awareness (i.e., recognition or acknowledgement of societal appearance norms) and internalization (i.e., to assume these norms as one’s own), the instrument has been amplified from the initial 14 items (six items for the awareness factor and eight for the internalization factor) up to a total of 28 items in the latest version (SATAQ-4R) [19], including social pressure factors from different sources (i.e., family, peers, significant others, and media), and internalization of different body ideals (i.e., thin/low body fat, muscular body, and general attractiveness). However, despite internalization being amply shown as a risk factor in the literature, to which intervention strategies should be applied in order to reduce their levels and consequent associated health problems, the instruments used up until now present certain limitations.

First of all, the instruments that measure the internalization construct have not assumed the same definition as the construct itself. For instance, although the IBIS-R title reflects a measure of internalization, the drafting of its items [16] reflects more a recognition of a social ideal of appearance (e.g., slender women are more attractive, tall women are more attractive) and these items are therefore closer to those employed to measure the SATAQ awareness factor (e.g., Attractiveness is very important if you want to get ahead in our culture) [18] and SATAQ-R (e.g., In our culture, someone with a well-built body has a better chance of obtaining success) [7]. On the other hand, the SATAQ internalization concept has varied in its different versions, from a general internalization, or general attractiveness, to the differentiation of two specific types of internalization: thin/low body fat and muscular body. Nonetheless, researchers have traditionally used the internalization-general subscale as a measure of thin-ideal internalization [6-7,18], which could lead conceptually and empirically to an overlap with some of the specific types of internalization [20]. Thus, the desire for an attractive appearance measurement would involve a barely sustainable assumption that all respondents interpret items referring to media ideals in an abstract way, without referencing any of the specific socially sanctioned beauty ideals (i.e., thin/low body fat, muscular body), thus adding ambiguity to the internalization subscales measurement.

Second, including the internalization construct measurement together with measurements for other constructs from the sociocultural models makes it difficult to isolate the treatment of the
internalization measure; this may lead to an overlap with constructs measured in other existing instruments present in the literature. For example, when proposing the SATAQ-4, Schaefer et al. [20] drafted the items for the muscular/athletic subscale assuming a wide definition for the internalization of appearance ideals, encompassing not only cognitive processes; that is to say, the degree to which an individual “buys into” socially prescribed appearance ideals and expresses a desire to attain the appearance ideal (e.g., “I think a lot about looking muscular”), but also behavioral elements of the construct; namely, engaging in behaviors aimed at meeting those ideals (e.g., “I spend a lot of time doing things to look more athletic”). In an attempt to clean up the muscular/athletic subscale measurement, Schaefer et al. [19] have recently revised the SATAQ-4 and removed the behavioral items from the muscularity internalization subscale, given that measurements exist in the literature that assess behaviors aimed at achieving a thin or muscular body, such as the Drive for Thinness subscale, in the third edition of the Eating Disorder Inventory (EDI-3) [21], the Drive for Muscularity Scale [22] or the Body Change Inventory [23].

Although the rewriting of items in the SATAQ-4 entails a purer delimitation of the internalization, this instrument continues to cover the measurement of other constructs defined in sociocultural models, such as the appearance pressure subscales emanating from different sources (e.g., family, peers, media, and significant others) in the same instrument as the perceived pressure instrument, but not with other constructs that might form part of the sociocultural models (e.g., drive for body ideals, awareness). Furthermore, given that measurements also exist in the literature that assess perceived pressure from different sources for having a thin body or muscular body, such as the Perceived Sociocultural Pressures Scale (PSPS) [10,16], a unique instrument that measures internalization would permit researchers to examine the relationship between this construct and other variables in sociocultural models.

Third, given that athletic expression might not only involve muscularity but also denote a set of other physical attributes arising in the absence of muscularity [19], replaced the word “athletic” with “muscular” when revising the SATAQ-4 for items used to assess the internalization of a muscular ideal. However, in the restricted sense, the muscular ideal may also be interpreted as brawny, or as excessively muscular development, moving away from the average mesomorphic body pattern. Therefore, including both athletic and muscular expressions in the items assessing internalization of a muscular/athletic ideal would allow a wider and more inclusive evaluation of muscularity internalization.

Fourth, the drafting of some items assessing the SATAQ-4R internalization subscales do not suggest a desire to attain a particular body figure as a consequence of the constant social reinforcement of prominent appearance ideals from the media or other social agents. For example, items such as “I think a lot about having very little body fat” may reflect the desire to attain a thin body from the pressure received from socially prescribed appearance ideals or may also involve a desire to lose weight by following medical advice. Therefore, the drafting of items assessing internalization should capture the level to which the individual desire to attain particular appearance ideals (e.g., thin or muscular/athletic body) are a consequence of “buying into” socially prescribed appearance ideals.

Fifth, from a pool of 40 items, the SATAQ-4R [19] keeps negative items for some factors, amongst these a negative item for the muscular subscale (“I don’t want my body to look muscular”) in the version validated with female college students and adolescent girls. However, the inclusion of a few negative items in an otherwise positively stated questionnaire has shown itself not to be recommended given that it leads to ambiguous results rather than controlling response sets [24]. Moreover, the inclusion of negatively-worded items has proven especially problematic with young sample groups so its subsequent translation into other languages is particularly troublesome [25]. Consequently, it seems sensible to count on an internalization measurement that does not mix the wording of negative and positive items.

Finally, most of the instruments for measuring the internalization of certain types of body ideals were originally developed for use exclusively with females. Only the last two versions of the SATAQ have tested the instrument’s structure in sample groups of men and women. However, in both cases
it has started from the hypothesis that the instrument’s factorial structure will vary significantly between male and female as a result of gender differences in body image concerns; thus, it was not checked whether the measurement of the measured constructs are invariant between females and males. Schaefer et al. [19] started with an initial pool of 40 items for the SATAQ-4R that were subjected to separate exploratory and confirmatory factor analyses in a sample of female college students (Study 1) and male college students (Study 3). As a result of these analyses, the authors proposed a 31-item version of the SATAQ-4R for women and a 28-item version for men, which impeded this instrument’s application on sample groups of men and women together. Until now, it has been assumed that women are more sensitive to internalizing a thin body ideal while men are more sensitive to internalizing a muscular body ideal [12]. However, comparisons between males and females with the same measure are difficult without having prior certainty that the instrument’s items possess the same meaning, and that the underlying constructs (e.g., thin and muscular body internalization) are perceived similarly in both groups [26]. The equivalence/invariance measurement of an instrument measuring thin and muscular body internalization would allow comparison between males and females, in a way that could affirm that the reported differences are indicative of true group differences, thus avoiding inaccurate practical inferences.

Taking into account the aforementioned limitations, the purpose of this study was to review the different versions of SATAQ to (a) isolate a measurement for the internalization of thin and muscular/athletic body ideals from other sociocultural risk factors for body image disturbance and eating disorders, (b) reduce the ambiguity of the measurement by not including reverse-worded items, (c) to make the internalization process clearer to reflect “buying into” some of the socially sanctioned body ideals, (d) to examine the factorial structure, the reliability and the measurement invariance across a large community sample of 10- to 14-year-old females and males, (e) to show criterion validity based on the relationship between internalization of sociocultural body ideals and social-physique anxiety (SPA). Concerning criterion validity, it was hypothesized that, once sex and body mass index (BMI) effects were controlled, internalization of the thin body ideal would have a greater predictive effect on SPA than internalization of the muscular/athletic body ideal. So far, it has not been possible to test precisely this relationship given that no internalization measurement has existed that was invariant across sex. Indeed, the literature has shown that girls usually present greater SPA levels than boys [27], so the relationship between body ideal internalization and SPA might be affected in part by sex.

2. Materials and Methods

2.1. Item Generation

Taking into account the SATAQ-4R, and previous versions of this instrument, an initial pool of 10 items (5 for thin/low body fat body internalization and 5 for muscular/athletic body internalization) was generated by the authors to measure the internalization construct and address some limitations detected. All of the items were drafted in a positive way, avoiding the mixing of negative stems with positive stems, which might have introduced artefacts and increased results ambiguity [24]. To assess the internalization of a muscular/athletic ideal, items were not included that only used the word “athletic” or “muscular” to avoid less inclusive interpretations than those that might be understood for a mesomorphic body. Finally, we avoided drafting items that did not capture the cognitive process of “buying into” socially prescribed appearance ideals implicit in the internalization construct (e.g., “I think a lot about having very little body fat”).

2.2. Participants

Participants were 1,130 students (48% girls) between the ages of 10 and 14 years ($M = 11.53, SD = 0.71$) with a mean self-reported body mass index (BMI) of 19.01 kg/m$^2$ ($SD_{BMI} = 3.61$) from different education centers in two Spanish provinces. In the temporal stability analysis, an independent sample of 52 students (50% girls) aged between 12 and 15 years ($M = 12.78, DT = 0.83$) was used.
2.3. Measures

The Scale for the Internalization of Sociocultural Body Ideals (SISBI). The preliminary 10 items generated from the revised SATAQ-4R and from previous versions were used to assess the internalization of the Thin Body Ideal (TBI) (i.e., the desire to achieve as thin a body as the socially accepted stereotype) and internalization of the Muscular/Athletic Body Ideal (MBI) (i.e., the desire to achieve a body as athletic and muscular as the socially accepted stereotype). For the response, a Likert scale was employed that ranged from 1 (totally disagree) to 5 (totally agree).

SPA Scale. The Spanish version [27] of the Social Physique Anxiety Scale (SPAS) [28]. The SPAS-7 is made up of six items grouped into one factor (e.g., “It would make me uncomfortable to know others were evaluating my physique/figure”). For the response, a Likert scale was employed that ranged from 1 (never) to 5 (always). Once item 5 was reverse-coded, higher scores corresponded to greater levels of SPA. In this study, a construct reliability value (H) [29] of .86 was obtained.

2.4. Procedure

Prior to its application to the studied population, the SISBI was pilot tested on a reduced group (N = 9) of students aged between 11 and 14 years. They were asked to mark any item whose meaning was not clear to them. None of the participants claimed not to understand any of the proposed items.

Following this, we contacted the directors of the educational centers to request their collaboration in the study. The participants, for whom authorization from parents or legal guardians had previously been obtained, were informed about the anonymous and voluntary character of their participation. The questionnaire was applied in the classrooms in the presence of one of the researchers. The Ethics Committee of the first author’s institution approved the study protocol.

2.5. Data Analyses

The total sample was split randomly into equal halves (n = 565). The first subsample (48% girls; M_age = 11.56, SD_age = .73) was used to perform an exploratory factor analysis (EFA); whilst the second (48% girls; M_age = 11.51, SD_age = .69) was employed in the subsequent confirmatory factor analysis (CFA). Factorial analyses were conducted using the weighted least-squares adjusted by mean and variance (WLSMV) estimation method and the polychoric correlation matrix [30]. This estimation method allows one to obtain a standard error that is robust to non-normality with ordinal polytomous variables [31]. Given that the data were collected in different educational centers, and to avoid the likely non-independence of the observations, the cluster option and the COMPLEX function of Mplus were used. On the basis of the theoretically correlated character of the considered constructs, and to facilitate the comparison of the factorial structure obtained in the CFA with that obtained in the EFA [32], the latter analysis was conducted using an oblique Geomin rotation (ε = .5) [33]. In the absence of secondary factor loadings >.32, primary factor loadings >.50 were considered adequate [34]. Goodness-of-fit was judged on the following indicators: The ratio between χ² and degrees of freedom (χ²/df), the comparative fit index (CFI), the Tucker-Lewis index (TLI), the root mean square error of approximation (RMSEA) with its 90% confidence interval (CI), and the weighted root mean square residual (WRMR). According to the criteria proposed for the CFA involving ordinal polytomous variables [35], values ≥.96 for CFI and TLI, ≥ .95, ≤ .05 for RMSEA, and ≤ .95 for WRMR were considered as indicative of an excellent data fit to the model.

After verifying the factorial structure in the CFA, which was previously identified in the EFA, both subsamples were combined; the total sample being employed in the subsequent analyses. To provide evidence that supports the invariant character of the SISBI across sex, we followed the procedure proposed by Muthén and Muthén [30] for ordered polytomous variables. Thus, we firstly tested the equivalence of the factorial structure between groups (i.e. the configural invariance). To fulfill this goal, the model was tested: a) independently in girls (M0a) and boys (M0b); and b) simultaneously (i.e., specifying a multigroup analysis) for girls and boys (M0). Then, a model nested to the latter (M1) was tested. Given that the response probability curve of the item is influenced by both its factorial loading and thresholds, the two parameters were simultaneously...
constrained in this model (M1) [30]. Significant differences ($p < .05$) between the nested models in the DIFFTEST procedure of Mplus (i.e., a modified form of testing nested models employing the WLMVS estimation method) were considered as indicative of non-invariance.

Subsequently we obtained: a) the construct reliability for the two factors employing the $H$ coefficient [29]; b) the average extracted variance (AVE); and c) the temporal stability employing the intra-class coefficient and its 95% CI obtained by specifying a bi-directional model with an absolute agreement definition. Values ≥.70 for $H$ and CCI, and ≥.50 for AVE were considered adequate [36,37].

To obtain evidence supporting the instrument’s discriminant validity, we obtained the heterotrait-monotrait (HTMT) ratio of correlations between factors; values <.85 being considered as adequate [38].

To provide evidence of criterion validity, we conducted a linear regression analysis in which sex and BMI (Step 1) and internalization factors (Step 2) were introduced as independent variables, and SPA as the dependent variable. In this analysis, the sex variable was codified as girls = 0 and boys = 1. A statistical significance level of .05 was employed. The factorial analyses were conducted in Mplus 7 whereas IBM-SPSS-22 was employed in the remaining analyses.

### 3. Results

#### 3.1. Exploratory Factor Analysis

The results of the first EFA (Table 1) showed a secondary factor loading greater than .32 for item #6 (“Compro mi cuerpo con el de las personas que son atléticas y musculosas”, in English, “I compare my body to those of people who are athletic and muscular”), in particular, in the boys’ subsample. Once item #6 was removed, a second EFA showed a factor loading greater than .32 for item #9 (“Compro el tamaño de mi cuerpo con el de las personas delgadas que salen en las revistas”, in English, “I compare the size of my body with those of thin people that appear in magazines”), in the boys’ subsample. Once item #9 was removed, the results of the third EFA revealed primary factorial loadings ranging from .56 to .92, as well as no secondary factor loadings greater than .32. The two-factor model comprising four items per factor showed the following fit index values: $\chi^2 (13, n = 269) = 24.28, p = .03; \chi^2/gl = 1.87; CFI = .994; TLI = .987; RMSEA = .057 (90%CI = .018, .091)$ for girls, and $\chi^2 (13, n = 296) = 22.18, p = .05; \chi^2/gl = 1.71; CFI = .989; TLI = .976; RMSEA = .049 (90%CI = .000, .083)$ for boys.

<table>
<thead>
<tr>
<th>Table 1. Exploratory Factor Analysis of the SISBI</th>
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<tr>
<td><strong>EFA 1</strong></td>
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<td>Item 1</td>
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<td>Item 6</td>
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<td>Item 7</td>
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<td>Item 9</td>
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</tbody>
</table>

Note. F1 = Internalization of the thin body ideal, F2 = Internalization of the muscular/athletic body ideal. Factor loadings >.50 (primary) and >.32 (secondary) are bold highlighted.
3.2. Confirmatory Factorial Analyses

In the CFA conducted on the second subsample (Figure 1), the two-factor model comprising four items per factor showed the following fit index values: $\chi^2 (51, n = 565) = 31.88$, $p = .03$; $\chi^2/df = .63$; CFI = .993; TLI = .990; RMSEA = .035 (90%CI = .010, .055); WRMR = .41.

Figure 1. Confirmatory Factor Analysis of the SISBI. Ellipses represent latent factors and rectangles the items. Values inside brackets correspond to the standard errors. Values outside brackets at the right of the rectangles correspond to the error terms. All factor loadings and correlations shown were statistically significant ($p < .001$).

3.3. Invariance Analyses

The results of the invariance analyses revealed adequate model fit index values for the models specified individually for girls and boys, as well as for the multigroup model, in which both subgroups were considered simultaneously. Additionally, no significant differences between M0 and M1 were obtained ($p = .17$) (Table 2).

Table 2. Invariance Analyses across Sex

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2 (df)$</th>
<th>DIFFTEST ($p$)</th>
<th>CFI</th>
<th>TLI</th>
<th>RMSEA (90%CI)</th>
<th>WRMR</th>
</tr>
</thead>
<tbody>
<tr>
<td>M0a: Only girls ($n = 539$)</td>
<td>29.04 (19)</td>
<td>.998</td>
<td>.996</td>
<td>.031 (.000, .053)</td>
<td>.49</td>
<td></td>
</tr>
<tr>
<td>M0b: Only boys ($n = 591$)</td>
<td>40.44 (19)</td>
<td>.982</td>
<td>.974</td>
<td>.044 (.030, .062)</td>
<td>.47</td>
<td></td>
</tr>
<tr>
<td>M0: Base model (girls and boys)</td>
<td>62.12 (38)</td>
<td>.995</td>
<td>.993</td>
<td>.034 (.017, .048)</td>
<td>.67</td>
<td></td>
</tr>
<tr>
<td>M1: M0 + Invariant factor loadings and thresholds</td>
<td>85.77 (66)</td>
<td>.17</td>
<td>.996</td>
<td>.997</td>
<td>.023 (.000, .036)</td>
<td>.87</td>
</tr>
</tbody>
</table>

Note. CFI = Comparative fit index, TLI = Tucker-Lewis index, RMSEA = Root mean square error of approximation, CI = Confidence interval, WRMR = weighted root mean square residual.

3.4. Reliability Analyses

Values of $H = .93$ and AVE = .75 were obtained for the internalization of TBI, and $H = .93$ and AVE = .72 for the internalization of MBI. The temporal stability analysis revealed ICC values of .90
(95% CI = .67, .96) for TBI, and .98 (95% CI = .94, .99) for MBI. The HTMT value for the correlation between factors was .78.

3.5. Criterion Validity Analyses

The results in Table 3 show that, with the effects of sex and BMI controlled, internalization of TBI ($M = 1.94$, $DT = 1.10$, asymmetry = 1.20 and skewness = 0.43) predicted positively and in a statistically significant way SPA ($\beta = .40$, $p < .001$). In the case of internalization of MBI ($M = 2.15$, $DT = 1.12$, asymmetry = 0.91 and skewness = 0.01), this predictive effect was not statistically significant ($\beta = .04$, $p = .339$). The proposed model explained 23% of the SPA variance.

Table 3. Linear Regression Analysis Predicting SPA from Sex and Internalization of the Body Ideals

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SE</th>
<th>$\beta$</th>
<th>p</th>
<th>$R^2$</th>
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</thead>
<tbody>
<tr>
<td>Step 1</td>
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<td></td>
<td></td>
<td></td>
<td>.04</td>
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<tr>
<td>Sex</td>
<td>-.11</td>
<td>.04</td>
<td>-.07</td>
<td>.013</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>.04</td>
<td>.01</td>
<td>.20</td>
<td>&lt;.001</td>
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<tr>
<td>Step 2</td>
<td></td>
<td></td>
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<td></td>
<td>.23</td>
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<tr>
<td>Sex</td>
<td>-.10</td>
<td>.04</td>
<td>-.07</td>
<td>.011</td>
<td></td>
</tr>
<tr>
<td>BMI</td>
<td>.03</td>
<td>.01</td>
<td>.13</td>
<td>&lt;.001</td>
<td></td>
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<tr>
<td>Internalization of the thin-body ideal</td>
<td>.26</td>
<td>.02</td>
<td>.40</td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>Internalization of the muscular/athletic body ideal</td>
<td>.02</td>
<td>.02</td>
<td>.339</td>
<td></td>
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</tbody>
</table>

Note. B = unstandardized regression coefficients; SE = standard error; $\beta$ = standardized regression coefficients; $R^2$ = explained variance. Sex was codified as girls = 0 and boys = 1.

4. Discussion

This article describes the development and validation of the Scale for the Internalization of Sociocultural Body Ideals (SISBI) in a sample of female and male preadolescents. Based on a review of the previous versions of SATAQ, the SISBI considers the internalization measure in isolation as one of the sociocultural risk factors for body disturbance and eating disorders, permitting a more precise assessment of this construct for various reasons. Firstly, by only considering the internalization measure, one can analyze the relationship of this construct with other sociocultural factors that might be measured in other existing instruments. Secondly, it focuses on the two specific body ideals taken up in the literature [12], avoiding overlaps with more general definitions of the construct. Thirdly, based on the accepted definition of the construct, it makes the internalization process clear as a reflection of “buying into” the socially sanctioned appearance ideals. Fourthly, eliminating reverse-worded items possibly reduces carelessness or misunderstanding and, therefore, ambiguity in the response to the measure. Finally, it offers a single instrument, with the items from the different constructs retaining the same meaning for males and females, and therefore allowing a comparison of the internalization of sociocultural body ideals between both groups.

The design of the SISBI began with an initial pool of 10 items that measured the cognitive elements for the internalization of TBI and MBI and brought together a process that reflected the “buying into” socially sanctioned appearance ideals. Although all of the items demonstrated primary factorial saturation >.50 in their factor, a restrictive criterion was applied in the explanatory factorial analysis [34], and two items were eliminated for showing secondary saturation >.32. As a result of successive AFE, the structure of the 8-item model and two internalization factors were suggested and later confirmed through AFC giving excellent fit indexes. The correlation between the TBI and MBI internalization factors was moderately high, suggesting that the two constructs are not completely exclusive, supporting more the idea that they might be present both for girls and boys; in such a way that a person might simultaneously desire some parts of their body to be thinner (e.g., the tummy and waist) yet stronger in other parts (e.g., the arms and legs) [6,12]. Moreover, the
results of the internal consistency and temporal stability analyses were adequate, suggesting that the SISBI is a valid and reliable instrument to assess internalization for TBI and MBI in preadolescents.

On the other hand, the multi-group analysis showed evidence to suggest that the factorial structure of the SISBI is invariant across sex. These results support the future use of SISBI for comparing TBI and MBI between males and females, which implies a relevant advantage with respect to the existing versions of the instrument. Validation of the different versions of SATAQ have been carried out exclusively on sample groups of women [6] or in studies on women and men, but belonging to independent sample groups [19,20]; this has impeded the examination of a factorial structure that was invariant for both groups. The multi-group analysis carried out in this study provides evidence that the 8 items of the SISBI assessing thin-ideal and muscular/athletic-ideal constructs are interpreted in a similar way for males and females. This instrument will allow us in future to review many of the assumptions that have been established for the appearance ideals that boys and girls maintain. For example, past research has shown that thin-ideal internalization maintains association with or predicts SPA [39]. However, given that the literature has also found greater SPA scores in girls than in boys [27], it was difficult to ensure that the association between TBI internalization and SPA was not because of a sex influence. In this regard, the results obtained using a measurement like SISBI, which shows invariance across sex, allows us to demonstrate that, once the effect of sex and BMI are controlled, the internalization of TBI had a predictive effect on SPA. These results clarify the relationship between the variables, as they allow us to affirm that, apart from the effect of sex may have on SPA, the internalization of TBI shows a greater predictive effect on SPA than does the internalization of MBI. Having an instrument that is invariant across sex will allow us in future to make comparisons between the appearance ideals of males and females, as well as the relationship of these variables with third variables.

Although the results of this study lend psychometric support to SISBI, one must recognize certain limitations. Firstly, the sample group used comprised preadolescent students; thus, future studies ought to evaluate the scale with other populations (e.g., adults, clinical populations). Furthermore, the sample was not probabilistic, so the results cannot be generalized, and more studies are necessary with students of different ages and evolving characteristics. Secondly, this study centered on the analysis of the psychometric properties of the scale and showed evidence of criteria validity analyzing the relationship of the subscales with SPA. Future studies ought to consider other associations with variables that are psychological (e.g., body dissatisfaction), biological (e.g., puberty) and sociocultural (e.g., social pressure) in character to provide more evidence of criteria validity.

In spite of the above-mentioned limitations, the SISBI proves itself to be a valid and reliable instrument for measuring the internalization of TBI and MBI in preadolescents of both sexes. This study contributes to the scientific field with an instrument that had a strong internal structure which is useful and easy to use and that allows one to measure one of the key sociocultural risk factors for psychological disorders (e.g., body dissatisfaction) or eating disorders [2,13]. Having a scale that measures the internalization construct both in boys and in girls is of great interest, given that this construct has been indicated as a risk factor. Furthermore, being able to use the instrument with preadolescents allows the early detection of the internalization of the social ideals of beauty, which will permit us to act to prevent eating pathologies and body image disturbance [14].

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