

PsicoUSF

Psico-USF

ISSN: 1413-8271

revistapsico@usf.edu.br

Universidade São Francisco

Brasil

Salim Xavier, Gabriela; Pasian, Sonia Regina; Sousa Almeida, Sebastião

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Psico-USF, vol. 20, núm. 3, septiembre-diciembre, 2015, pp. 529-545

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Assessment of Body Image: Instruments Available in Brazil

Gabriela Salim Xavier – Universidade de São Paulo, Ribeirão Preto, Brasil

Sonia Regina Pasian – Universidade de São Paulo, Ribeirão Preto, Brasil

Sebastião Sousa Almeida – Universidade de São Paulo, Ribeirão Preto, Brasil

Abstract

Because of the increasing number of Brazilian studies on body image (BI), the aim of the present study was to review Brazilian scientific research on the construction and adaptation of systematic assessment instruments for this construct. After conducting a broad literature search, 34 BI assessment studies were analyzed, including 27 adaptation studies and seven construction studies. The results were summarized based on the procedures that were used for the adaptation and construction of BI assessment instruments, indicating strong convergence among most researchers with regard to national and international recommendations on techniques to drive such processes and test the psychometric properties before implementing the instruments in professional practice.

Keywords: body image, assessment instruments, transcultural adaptation, literature review, psychometrics

Avaliação da Imagem Corporal: Instrumentos Disponíveis no Brasil

Resumo

Em razão de crescente aumento na frequência de estudos brasileiros relativos à imagem corporal (IC), este trabalho objetiva apresentar panorama das investigações científicas nacionais acerca da adaptação e construção de instrumentos sistematizados de avaliação desse construto. A partir de levantamento na literatura científica, foram selecionados, recuperados e integralmente analisados estudos referentes a 34 instrumentos avaliativos da IC, sendo 27 adaptados e os demais construídos. Os resultados foram sistematizados com base em procedimentos empregados para adaptação e construção de instrumentos avaliativos da IC e indicam forte convergência entre a maioria dos pesquisadores no tocante às principais recomendações nacionais e internacionais para condução técnica de tais processos, inclusive em relação à verificação de propriedades psicométricas antes da efetiva utilização na prática profissional.

Palavras-chave: imagem corporal, instrumentos de avaliação, adaptação transcultural, revisão de literatura, psicometria

“Evaluación de la Imagen Corporal: Instrumentos Disponibles em Brasil

Resumen

Debido a la frecuencia cada vez mayor de trabajos brasileños sobre la imagen corporal (IC), este estudio tiene como objetivo presentar una visión general de la investigación científica nacional sobre la adaptación y construcción de instrumentos sistematizados de evaluación de este constructo. Después de realizar una revisión de la literatura científica fueron seleccionados, recuperados y analizados estudios referentes a 34 instrumentos evaluativos de la IC, siendo 27 adaptados y el resto construidos. Los resultados se resumen a partir de análisis de procedimientos empleados para la adaptación y construcción de instrumentos evaluativos de la IC e indican una fuerte convergencia entre la mayoría de los investigadores con respecto a las principales recomendaciones nacionales e internacionales para seguir técnicamente esos procesos, incluso en relación a la verificación de las propiedades psicométricas con anterioridad a su uso efectivo en la práctica profesional.

Palabras clave: imagen corporal, instrumentos de evaluación, adaptación transcultural, revisión de literatura, psicometría

Introduction

Body image (BI) is a multidimensional construct that involves mental representations of the body, including the size and shape of body structures and feelings, cognition, and behaviors related to them (Cash, 2011). Consensus has been reached among researchers in the field regarding the distinction between two specific components of BI: perceptual and attitudinal/emotional. The evaluation of BI components requires different methods and systematic instruments for examination with regard to emotions, behaviors, and cognition (Banfield & McCabe, 2002).

Various techniques have been developed internationally to evaluate these aspects and components, including questionnaire, self-report, and silhouette-scale formats (Gardner & Brown, 2010). However, a recent analysis of the Brazilian literature on BI (Laus et al., 2014) indicated that despite the significant increase in the number of assessment measures that have become available in the last decade, many studies still use non-validated measures. This indicates that cross-cultural adaptation procedures of assessment instruments deserve greater attention by researchers in the area of BI.

Technical guidelines delimit the methodological care that should be taken in the cross-cultural adaptation of assessment tools. Among the existing guidelines, recommendations that were synthesized by Beaton, Bombardier, Guillemin, and Ferraz (2002) were adopted by the World Health Organization to maximize semantic, idiomatic, experimental, and conceptual equivalence of original instruments and their adapted versions in different countries and languages. In Brazil, the study by Borsa, Damásio, and Bandeira (2012) addressed key aspects of the steps that are necessary to cross-culturally adapt psychological assessment instruments, emphasizing the need for Brazilian studies in different contexts and their possible applications.

In the field of BI research, which has sharply increased in Brazil in recent years (Laus et al, 2014; Tavares, Campana, Tavares Filho, & Campana, 2010), there is a clear need to adapt instruments that were originally created in other countries and cultures to the Brazilian population. Campana, Campana, and Tavares (2009) conducted a review of available scales for eating disorder evaluation in Brazil. Gonçalves, Tavares, Campana, Cabello, and Shimo (2012) examined existing national instruments for BI evaluation in women with breast cancer. The most complete critical review of the BI literature in Brazil was recently published by Laus et al. (2014). This analysis of theoretical and methodological advances in the area of BI is divided into three main areas: population groups studied, BI components investigated, and evaluation measures.

The present study performed a survey of published articles on the cross-cultural adaptation and construction of systematic BI assessment tools in Brazil and describes the procedures that are used in such processes. The cross-cultural adaptation and construction procedures described herein were analyzed within the framework of national and international recommendations in the area. We examined the quality of these processes to provide useful and updated mapping of Brazilian instruments to assess BI.

Method

This literature review of the adaptation of BI assessment tools was performed by establishing inclusion and exclusion criteria for studies that were found in the surveyed scientific databases, followed by a descriptive analysis of the results. To obtain broad access to studies on the adaptation and construction of BI assessment tools in the Brazilian context, published

in both national and international journals, two databases were selected for this survey: Biblioteca Virtual em Saúde (BVS) and Scopus. The choice of the former was justified by its scope. It coalesces 14 bibliographic databases in health sciences. The latter database has comprehensive mapping of major journals, subjects, and authors from different areas of knowledge. We also consulted the CAPES Digital Bank of Theses to identify studies that have not yet been published.

For the electronic search, we used the keyword “body image,” combined with “adaptation” and “Brazil,” “adaptation” and “Brazilian,” “validation” and “Brazil,” “validation” and “Brazilian,” “validity” and “Brazil,” “validity” and “Brazilian,” “translation” and “Brazil,” and “translation” and “Brazilian.” We also used keywords that are related to validation procedures and translation tools to identify additional articles beyond the small number of studies that used only the keyword “adaptation.” We also expanded the search using the keywords “body image” and “scale” combined with “Brazil”/“Brazilian,” and “Brazil”/“Brazilian” combined with “body” and “validity”/“validation.” In all of the searches, we used the Boolean operator “AND” with unlimited dates of publication of the studies. For the CAPES Digital Bank of Theses, the keyword “body image” was combined with the terms “adaptation,” “validation,” “validity,” and “translation,” in addition to combinations with “scale” and “Brazil.” The combination “body,” “validation,” and “Brazil” was also used.

This review was composed of articles that were published in journals that are indexed in the aforementioned databases in English and Portuguese and theses and dissertations in the CAPES Digital Bank of Theses, excluding books, book chapters, abstracts, and papers published in annals of scientific congresses. Articles that appeared with more than one combination of keywords and databases were included only once in the analysis.

All of the results were subjected to inclusion and exclusion criteria in accordance with the objectives of this review. Based on the titles and abstracts, we selected studies whose objectives focused on the cultural adaptation of BI assessment tools that were not created in Brazil and studies that constructed new instruments on BI in the Brazilian context. We excluded (1) studies that did not address BI instrument adaptation studies or validation tools for the Brazilian population, (2) studies that used such instruments but did not focus on methodological aspects (i.e., were not about the instrument), (3) studies that focused on adaptation and translation

into Portuguese in Portugal, (4) theses and dissertations for which we could not obtain the full text, and (5) literature reviews.

Several attempts were made to contact the authors of studies via email to obtain full-text theses and dissertations, in addition to consulting the websites of the respective faculties. Only two theses and one dissertation were not been fully recoverable and therefore excluded. Although it was not identified in the database survey, we also included one article of which we were aware beforehand because it met the study criteria.

The selected and retrieved scientific articles were fully read with regard to the following areas: (1) translation procedures used for adaptation instruments, (2) procedures used in the construction of instruments, and (3) procedures used to investigate the psychometric properties of the adapted and constructed instruments.

Results and Discussion

The scientific literature searches yielded a total of 1,047 references, with some repetitions in one of the databases and between databases (Table 1).

According to the inclusion and exclusion criteria, we selected 29 articles and 12 dissertations/theses in this study. Thus, the 41 fully recovered studies comprised the basic results of the present study. The descriptive and analytical analyses were based on the instruments that were reported in journal publications because the adaptation or development of instruments in dissertations or theses is oftentimes followed by publication in a scientific journal. As a result, a total of 34 assessment tools were identified in the 41 fully recovered studies on BI. We evaluated the procedures that were used in their adaptation and/or creation, accompanied by an analytical classification (sufficient, regular, or insufficient) according to three aspects: (1) translation procedures, (2) adaptation procedures, and (3) psychometric properties. Based on this classification, we analyzed the procedures according to the scientific literature for cultural adaptation and grouped the studies into three classes: (1) sufficient (two or more translations and/or back-translations, in addition to other necessary procedures), (2) regular (at least two translations and at least one back-translation), and (3) insufficient (only instrument translation).

Among the 34 instruments that were identified for BI evaluation, 27 consisted of adaptations to Brazil, which were mostly presented in English. The main justification that was presented by most authors (12 of

27 instruments) to perform cross-cultural adaptation was the lack of systematic techniques for examining specific constructs of BI in Brazil. A brief description and characterization of the 27 BI assessment tools that were adapted to the Brazilian context are presented in Tables 2, 3, and 4.

Only seven of the recovered instruments consisted of scales that were originally developed in the Brazilian context (Table 5). The main justification for creating BI assessment tools (presented in five of these seven studies) was, according to the authors, the cultural specificity of the construct in the study, also supported by technical failures in existing instruments in the international literature and the lack of validated and appropriate techniques that focus on BI assessments for use in Brazil. A consensus appears to have been reached among Brazilian authors concerning the justifications for the effort and expense associated with this process, rather than adapting existing evaluative techniques (Pasquali, 2010).

a) Translation Procedures

Among the 27 BI assessment tools that have undergone adaptation procedures, two of them consisted of silhouette scales (Stunkard Figure Scale and Figure Rating Scale). Thus, for the translation analysis, we considered a total of 25 instruments. This analysis was based on international recommendations for cross-cultural adaptation instruments (Beaton et al., 2002) because of its use by the Federal Council of Psychology (2003) in the process of drafting guidelines for regulatory assessment tools that originate from outside Brazil, in addition to the wide use of these recommendations in national studies within the area of health. We considered the number and qualifications of the professionals who were involved in each stage of the process and the procedures that were applied to verify the translated version.

According to Beaton et al. (2002), the valid and effective translation and cultural adaptation of any healthcare assessment tool involves five steps. The first step deals with translation of the original instrument, which should be performed independently by two or more translators whose native language should be the country for which the instrument is being translated, in this case Brazil. One of the translators must know the subject and instrument under study, and the other translator should not be linked to the area of study.

Of the 25 instruments that were analyzed herein, this first procedural step was achieved for adaptation in

Table 1

Distribution (Single Frequency) of Scientific Database search Results

Keywords	BVS	Scopus	CAPES Digital Bank of Theses	Total
"Body Image" AND adaptation AND Brazil	20	15	**	35
"Body Image" AND adaptation AND Brazilian	10	9	**	19
"Body Image" AND validation AND Brazil	12	15	**	27
"Body Image" AND validation AND Brazilian	14	15	**	29
"Body Image" AND validity AND Brazil	21	20	**	41
"Body Image" AND validity AND Brazilian	25	20	**	45
"Body Image" AND translation AND Brazil	15	16	**	31
"Body Image" AND translation AND Brazilian	11	13	**	24
"Body Image" AND scale AND Brazil	41	53	**	94
"Body Image" AND Scale AND Brazilian	41	39	**	80
Body AND validity AND Brazilian	117	70	**	187
Body AND validation AND Brazilian	49	56	**	105
Imagem Corporal AND adaptação	1,409*	**	56	56
Imagem Corporal AND validação	34	**	44	78
Imagem Corporal AND validade	2,119*	**	20	20
Imagem Corporal AND tradução	57	**	12	69
Imagem Corporal AND Escala AND Brasil	15	**	21	36
Corpo AND Validação AND Brasil	13	**	58	71
Total	495	341	211	1.047

*Not included in the survey because of the number of results that were found from the imprecision of keywords. **Not applicable, on this basis, this combination of keywords.

13 studies (Male Body Dissatisfaction Scale [MBDS], Body Image Quality of Life Inventory [BIQLI], Swansea Muscularity Attitudes Questionnaire [SMAQ], Drive for Muscularity Scale [DMS], Masculine Body Ideal Distress Scale [MBIDS], Male Body Checking Questionnaire [MBCQ], Sociocultural Attitudes Toward Appearance Questionnaire-3 [SATAQ-3], Body Esteem Scale [BES], Body Appreciation Scale [BAS], Social Physique Anxiety Scale [SPAS], Acceptance of Cosmetic Surgery Scale [ACSS], Body Image Avoidance Questionnaire [BIAQ], and Body Checking Questionnaire [BCQ]). Among the other instruments, variation was found in the number of translators (one to three) in 10 cases (Body Checking and Cognitions Scale [BCCS], Tripartite Influence Scale, Body Change Inventory [BCI], Offer Self Image Questionnaire [OSIQ], Body Checking and Avoidance Questionnaire [BCAQ], Body Areas Scale [BAS], Escala de Evaluación

de Insatisfacción Corporal para Adolescentes [EEICA], Body Dysmorphic Disorder Examination [BDDE], Body Investment Scale [BIS], and Body Attitudes Questionnaire [BAQ]), all described as researchers in the area and fluent in English. Two other instruments (Body Shape Questionnaire [BSQ] and Eating Behaviours and Body Image Test [EBBIT]) did not provide information on the number or professional qualifications of those who participated in this technical step.

The second step in this process is the synthesis of translations, in which two translators meet with a third party to integrate the two drafts into a single version (Beaton et al., 2002). This step was accomplished in the adaptation of most of the instruments analyzed (18 studies, 72%; i.e., MBDS, BCCS, BIQLI, SMAQ, DMS, MBIDS, MBCQ, SATAQ-3, BES, BAS, SPAS, ACSS, BIAQ, BAS, EEICA, BDDE, BCQ, and BAQ). This procedural step was not mentioned or described

Table 2

Body Image Assessment tools Cross-Culturally Adapted for Brazil (n = 8): Part 1

Instrument	Authorship	Year	Database searched	Translation procedures*	Accuracy	Evidence of validity	Process evaluation
Male Body Dissatisfaction Scale (MBDS)	Carvalho et al.	2013	BVS and Scopus	2 Trans, Summary of Trans, 2 Back., Equiv 1, 4 and instrumental, committee of judges, and Pilot study	Internal consistency	Unrealized	Sufficient [#]
Escala de Insatisfação Corporal Masculina (MBDS)							
Body Checking Cognitions Scale (BCCS)	Kachani et al./	2013/	BVS and Scopus/	Reference to the previous study	Internal consistency/	Factorial,	Regular
Escala de Checagem Corporal e Cognições (BCCS)	Kachani et al.	2011a	BVS and Scopus	/ 2 Trans, Summary of Trans, 1 Back, Equiv 1 and 4 by experts	Internal consistency	Convergent, Content	
Body Image Quality of Life Inventory (BIQLI)	Assunção et al./	2013/	BVS and Scopus/	2 Trans, Summary of Trans, 2 Back, Summary of Back, Equiv 1, 2, 3 and 4, Committee of judges, and Pilot study	Internal consistency	Factorial, Convergent, Content	Sufficient
Swansea Muscularity Attitudes Questionnaire (SMAQ) Questionário das Atitudes relacionadas à Musculatura (Universidade de Swansea) (SMAQ)	Campana et al./	2013/	Scopus/ CAPES	2 Trans, Summary of Trans, 2 Back, Equiv 1, 2, 3 and 4, Committee of judges, and Pilot study	Internal consistency	Factorial, Convergent, Discriminant	Sufficient
Drive for Muscularity Scale (DMS)	Campana et al./	2013/	Scopus/ CAPES	2 Trans, Summary of Trans, 2 Back, Equiv 1, 2, 3 and 4, Committee of judges, and Pilot study	Internal consistency	Factorial, Convergent, Discriminant	Sufficient
Escala de Busca pela Musculatura (DMS)		2011	Digital Bank of Theses				
Masculine Body Ideal Distress Scale (MBIDS)	Campana et al./	2013/	Scopus/ CAPES	2 Trans, Summary of Trans, 2 Back, Equiv 1, 2, 3 and 4, Committee of judges, and Pilot study	Internal consistency	Factorial, Convergent	Sufficient
Escala de Desconforto em Relação ao Corpo Masculino Ideal (MBIDS)		2011	Digital Bank of Theses				
Tripartite Influence Scale	Amaral et al./	2013/	BVS and Scopus/	Not applicable / 2 Trans, 2 Back, Equiv 1 by experts, and Pilot study	Internal consistency	Factorial, Convergent, Content	Sufficient
Escala de Influência dos Três Fatores	Conti et al.	2010	BVS and Scopus		Internal consistency	Convergent, Content	Sufficient
Stunkard's Figure Rating Scale	Conti et al./	2013/	Scopus/ Scopus	Not applicable/	Test-retest/	Convergent and	Sufficient
Escala de Figuras de Stunkard	Scagliusi et al.	2006		Not applicable	Unrealized	Discriminant	

*Trans, translation; Back, back translation; Equiv, equivalence; 1, semantic equivalence; 2, cultural equivalence; 3, idiomatic equivalence; 4, conceptual equivalence.

[#]The study was restricted to the first stage of the cross-cultural adaptation process.

Table 3
Body Image Assessment tools Cross-Culturally Adapted for Brazil (n = 10): part 2

Instrument	Authorship	Year	Database searched	Translation procedures*	Accuracy	Evidence of validity	Process evaluation
Figure Rating Scale of Childress et al.	Adami et al.	2012	BVS and Scopus	Not applicable	Unrealized	Convergent	Insufficient
Body Change Inventory (BCI)	Conti et al.	2012	Scopus	1 Trans, 1 Back, Equiv 1 by experts, and Pilot study	Unrealized	Unrealized	Insufficient ^{###}
Questionário de Mudança Corporal (QMC)							
Male Body Checking Questionnaire (MBCQ)	Carvalho	2012	CAPEs Digital Bank of Theses	2 Trans, Summary of Trans, 2 Back, Equiv 1, Committee of judges, and Pilot study	Test-retest/Internal consistency	Factorial, Convergent, Discriminant	Sufficient
Questionário de Checagem do Corpo Masculino (MBCQ)							
Sociocultural Attitudes Towards Appearance Questionnaire-3 (SATAQ-3)	Amaral/ Amaral et al./ Swami et al. [#]	2011/ 2011/ 2011 ^{##}	CAPEs Digital Bank of Theses/ BVS and Scopus	2 Trans, Summary of Trans, 2 Back, Equiv 1, Committee of judges, and Pilot study	Test-retest/Internal consistency	Factorial and Convergent	Sufficient
Questionário de Atitudes Socioculturais Relativas à Aparência-3 (SATAQ-3)							
Body Esteem Scale (BES)	Campana	2011	CAPEs Digital Bank of Theses	2 Trans, Summary of Trans, 2 Back, Equiv 1, 2, 3 and 4, Committee of judges, and Pilot study	Internal consistency	Factorial, Convergent, Discriminant	Sufficient
Escala de Estima do Corpo (BES)							
Body Appreciation Scale (BAS)	Campana/ Swami et al. [#]	2011/ 2011 ^{##}	CAPEs Digital Bank of Theses	2 Trans, Summary of Trans, 2 Back, Equiv 1, 2, 3 and 4, Committee of judges, and Pilot study	Internal consistency	Factorial, Convergent, Discriminant	Sufficient
Escala de Apreciação do Corpo (BAS)							
Social Physique Anxiety Scale (SPAS)	Campana	2011	CAPEs Digital Bank of Theses	2 Trans, Summary of Trans, 2 Back, Equiv 1, 2, 3 and 4, Committee of judges, and Pilot study	Internal consistency	Factorial, Convergent, Discriminant	Sufficient
Escala de Ansiedade Físico Social (SPAS)							
Offer Self Image Questionnaire (OSIQ) Questionário de Imagem Corporal (OSIQ)	Conti, Hearst, & Latorre	2011	BVS and Scopus	2 Trans, 2 Back, Equiv 1 by experts, and Pilot study	Internal consistency and Test-retest	Convergent, Discriminant	Sufficient
Body Checking and Avoidance Questionnaire (BCAQ)	Kachani et al.	2011b	BVS and Scopus	1 Trans, 1 Back, Equiv 1 by experts	Internal consistency	Factorial, Convergent, Discriminant	Insufficient
Acceptance of Cosmetic Surgery Scale (ACSS)	Swami et al.	2011	BVS and Scopus	2 Trans, Summary of Trans, 2 Back, Equiv 1, 2, 3 and 4, Committee of judges, and Pilot study	Internal consistency	Factorial, Convergent	Sufficient

*Trans, translation; Back, back translation; Equiv, equivalence; 1, semantic equivalence; 2, cultural equivalence; 3, idiomatic equivalence; 4, conceptual equivalence.

[#]The study was restricted to the first stage of cultural adaptation process.

^{##}The SATAQ-3 and BAS scales were subjected to cross-cultural adaptation procedures, as a secondary objective of the study by Swami et al. (2011), for the purpose of being used as a source for comparing evidence of convergence of the construct validity of the ACSS.

^{###}With regard to translation procedures.

Table 4

Body Image Assessment tools Cross-Culturally Adapted for Brazil (n = 9): Part 3

Instrument	Authorship	Year	Database searched	Translation procedures*	Accuracy	Evidence of validity	Process evaluation
Body Image Avoidance Questionnaire (BIAQ)	Campana, da Consolação, Tavares, Silva, & Diogo	2009	BVS and Scopus	2 Trans, Summary of Trans, 2 Back, Equiv 1, 2, 3 and 4, Committee of judges, and Pilot study	Internal consistency	Factorial	Sufficient
Body Area Scale	Conti, Latorre, Hearst, & Segurado	2009	BVS and Scopus	2 Trans, Summary of Trans, 1 Back, Equiv. 1, 2, 3 and 4	Test-retest and Internal consistency	Convergent, Discriminant	Regular
Escala de Áreas Corporais (EAC)							
Escala de Evaluación de Insatisfacción Corporal para Adolescentes (EEICA)	Conti, Slater, & Latorre	2009	BVS and Scopus	3 Trad., Summary of Trans, 1 Back, and Equiv by experts	Test-retest and Internal consistency	Convergent, Discriminant	Regular
Escala de Avaliação da Insatisfação Corporal para Adolescentes (EEICA)							
Body Shape Questionnaire (BSQ)	Conti, Cordás, & Latorre/ Di Pietro & Silveira/ Di Pietro	2009/ 2009/ 2002	BVS and Scopus/ BVS and Scopus/ CAPES Digital Bank of Theses	Version translated by Di Pietro (2002)/ Trans and Back	Test-retest and Internal consistency/ Internal consistency	Factorial, Convergent, Discriminant	Insufficient
Body Dysmorphic Disorder Examination (BDDE)	Jorge/ Jorge et al.	2006/ 2008	BVS and Scopus	2 Trans, Summary of Trans, 2 Back, Equiv 1 and 2 by experts, and Pilot study	Internal consistency and Precision between evaluators	Convergent	Sufficient
Body Investment Scale (BIS)	Gouveia et al.	2008	BVS	2 Trans, Equiv 1, and Pilot study	Internal consistency	Factorial	Insufficient
Escala de Investimento Corporal (BIS)							
Body Checking Questionnaire (BCQ)	Campana	2007	CAPEs Digital Bank of Theses	2 Trans, Summary of Trans, 2 Back, Equiv 1, 2, 3 and 4, Committee of judges, and Pilot study	Internal consistency	Factorial	Sufficient
Questionário de Checagem do Corpo (BCQ)							
Eating Behaviours and Body Image Test (EBBIT)	Galindo & Carvalho/ Galindo	2007/ 2005	BVS and Scopus/ CAPES Digital Bank of Theses	Trans, Equiv by experts, and Pilot study	Internal consistency	Factorial, Convergent	Insufficient
Teste de Comportamentos Alimentares e Imagem Corporal							
Body Attitudes Questionnaire (BAQ)	Scaglusi et al.	2005	BVS and Scopus	2 Trans, Summary of Trans, 1 Back, and Equiv	Test-retest and Internal consistency	Convergent, Discriminant	Regular

*Trans, translation; Back, back translation; Equiv, equivalence; 1, semantic equivalence; 2, cultural equivalence; 3, idiomatic equivalence; 4, conceptual equivalence.

Table 5
Body Image Assessment tools Constructed in Brazil (n = 7)

Instrument	Authorship	Year	Database searched	Accuracy	Evidence of validity	Process evaluation
Escala de Figuras de Silhuetas para adultos (e adolescentes)/ Figure Rating Scale for adults (and adolescents)	Laus, Almeida, Murarole, & Braga-Costa/ Kakeshita, Silva, Zanatta, & Almeida/ Kakeshita	2013/ 2009/ 2008	BVS and Scopus/ BVS and Scopus / CAPES Digital Bank of Theses	Test-retest/ Test-retest	Convergent, Content	Sufficient
Escala Feminina/Masculina de Normalização Corporal (EFIC/EMIC) Women's/Men's Body Standardization Scale	Hirata, Pérez-Nebra, & Pilati	2012	BVS and Scopus	Internal consistency	Factorial	Sufficient
Escala de Silhuetas de Fototipos/ Prototype Silhouettes Scale	Marinho	2011	CAPEs Digital Bank of Theses	Unrealized	Convergent	Insufficient
Escala Situacional de Satisfação Corporal (ESSC)/ Situational Scale of Body Satisfaction	Hirata & Pilati	2010	BVS	Internal consistency	Factorial	Sufficient
Escala de Silhuetas Tridimensionais (EST)/ Three-dimensional Silhouettes Scale	Morgado	2009	CAPEs Digital Bank of Theses	Test-retest	Content, Convergent	Sufficient
Escala de Figuras de Silhuetas para crianças/ Figure Rating Scale for children	Kakeshita et al./ Kakeshita	2009/ 2008	BVS and Scopus/ CAPEs Digital Bank of Theses	Test-retest	Content, Convergent	Sufficient
Escala de Satisfação com Imagem Corporal (ESIC)/ Body Image Satisfaction Scale	Ferreira & Leite	2002	***	Internal consistency	Factorial, Convergent	Sufficient

*** Identified from another publication in this survey and from previous knowledge of the authors.

in seven of the studies (Tripartite Influence Scale, BCI, OSIQ, BCAQ, BSQ, BIS, and EBBIT), two of which (BCI and BCAQ) performed only one translation in the first stage, so synthesis was unnecessary.

Back-translation is the third technical step, which requires that two new professionals translate the synthesized version of the translation to the original language of the instrument, also independently. Importantly, both of these professionals should have no knowledge of the original instrument or the subject that the instrument addresses (Beaton et al., 2002). This step was followed for 14 of the 25 BI assessment tools reviewed herein (MBDS, BIQLI, SMAQ, DMS, MBIDS, MBCQ, SATAQ-3, BES, BAS, SPAS, ACSS, BIAQ, BDDE, and BCQ). Of the remaining tools, seven (BCCS, BCI, BCAQ, BAS [Body Areas Scale], EEICA, BSQ, and BAQ) performed only one back-translation. In two cases (BIS and EBBIT), no back-translation or equivalent procedure was performed. For the other two instruments, two back-translations were performed by the same researcher (Tripartite Influence Scale and OSIQ).

The fourth technical step is the submission of all material (two translations, translations of summary, and two back-translations) to an expert committee to produce the final version of the instrument. According to Beaton et al. (2002), this committee should consist of a researcher who is experienced in methodological aspects of the instruments, a linguist, two translators, and two back-translators to judge the synthesis and a health professional who is experienced in the topic that is covered by the instrument. The decisions that are made by this committee should be followed with regard to four aspects to ensure equivalence between the original and translated versions: semantic (reciprocity of word meanings), idiomatic (maintenance of colloquialisms), cultural (consistency of situations described), and conceptual (retain the same meaning of the construct).

The presence of an expert committee with such technical characteristics occurred with the adaptation of 13 of the reviewed instruments (MBDS, BIQLI, SMAQ, DMS, MBIDS, MBCQ, SATAQ-3, BES, BAS, SPAS, ACSS, BIAQ, and BCQ). For the remaining 12, eight (BCCS, Tripartite Influence Scale, BCI, OSIQ, BCAQ, BAS [Body Areas Scale], EEICA, and BDDE) relied on the assessment of equivalence between versions (produced by translators and the original) by experts on instrument translation or the area of study of the construct. The other studies (BSQ, BIS, EBBIT,

and BAQ) did not describe this step or some other procedure that could fulfill the same function. With regard to the assessment of equivalence between versions, all but one instrument (BSQ) was concerned with guaranteeing this in the adaptation.

Finally, according to Beaton et al. (2002), the fifth and final step would be to conduct a pilot study or pre-test of the version of the instrument that is produced by the committee of judges to verify understanding by individuals of the target population. This step can be accomplished by applying the instrument with a sample of 30-40 individuals or having individuals who are fluent in both languages evaluate both the original and translated versions of the instrument. In both cases, the translated version may be returned to the committee of judges, if necessary, to revise the instrument or tailor specific items.

This last evaluative step was present in 19 of the adaptation procedures analyzed herein (76% of cases). Only one of these (ACSS) opted for instrument rating by bilingual individuals. In a few studies (six instruments, 24%), the samples were ≥ 30 individuals (MBDS, Tripartite Influence Scale, BCI, MBCQ, SATAQ-3, and BDDE). For the other instruments (12 studies, 48%), this pretest stage step was performed with smaller samples (BIQLI, SMAQ, DMS, MBIDS, BES, BAS, SPAS, OSIQ, BIAQ, BIS, BCQ, and EBBIT), but with justification supported by other instrument adaptation technical references, except for two cases (BIS and EBBIT). The six instruments (24%) that did not perform this technical step (BCCS, BCAQ, BAS [Body Areas Scale], EEICA, BSQ, and BAQ) only described their application with specialists for analysis of understanding or did not mention any other equivalent procedure.

In summary, this analysis points to consensus among BI researchers of instruments with regard to the main international recommendations for the translation and cultural adaptation of assessment instruments. Although strict compliance with these guidelines was not found in all of the studies, some of the technical steps were performed in at least half of them, which reflects the technical expertise and concern of these researchers with producing adequate and valid adaptations of BI assessment tools from other cultures to the Brazilian context.

b) Construction Procedures

To analyze the technical procedures that are involved in the construction of psychological

assessment tools, we followed the model proposed by Pasquali (2010), based on three poles: theoretical, empirical (experimental), and analytical (statistical). The first pole focuses on the theoretical framework that underlies the construct of interest. The second pole implements operational steps and techniques of applying the pilot version of the tool. The third pole defines statistical procedures to achieve psychometric properties. The latter refers to the same procedures that are required for cultural adaptation and is described together with them hereinafter.

Based on the first two poles (Pasquali, 2010), the researcher must first systematize all empirical evidence regarding the construct to define specific aspects on which he seeks to build the instrument. This initial step was taken in the construction of seven instruments herein (Table 5). The researcher then should know the dimensionality of the construct, allowing the precise conceptualization and its factors. Subsequently, the construct should be operationalized (i.e., construction of items that should behaviorally represent the construct; Pasquali, 2010). These procedures were taken in the construction of three verbal scales to assess BI identified in this systematic review (Women's/Men's Body Standardization Scale [EFIC/EMIC], Situational Scale of Body Satisfaction [ESSC], and Body Image Satisfaction Scale [ESIC]), in which the items were built based on existing instruments in the literature, so few alternatives were developed by the responsible researchers.

Despite the four remaining instruments match the silhouettes scales (Figure Rating Scale for adults [and adolescents], Phototype Silhouettes Scale, Three-dimensional Silhouettes Scale [EST], and Figure Rating Scale for children), some analyses of the construction process of the items can be performed. The EST consists of a three-dimensional tool for the congenitally blind, the construction of which had a widely used instrument that measures the same construct in the general population. The three other scales' silhouettes were constructed based on construct characteristics (body shape) that are specific to their target population, based on prior epidemiological research. Thus, considering BI as a psychological construct that is also based on physical characteristics, we can conclude that these three studies resorted, equivalently, the source of interviews with the targeted population, as described by Pasquali (2010).

After construction, semantic and theoretical analyses of the items are necessary (i.e., evaluate their understanding and relevance to the construct; Pasquali,

2010). Among the three verbal scales, the EFIC/EMIC utilized a semantic analysis with application of the instrument in 20 individuals of the target population. The other two instruments (ESIC and ESSC) underwent evaluation by judges. With regard to the silhouette scales, most were evaluated by judges, and the three-dimensional silhouette was also analyzed by the target population. Only one of them (Phototype Silhouettes Scale) did not undergo any evaluation of its items.

With regard to empirical procedures (experimental) for the construction of psychological assessment instruments, defined by Pasquali (2010), two steps are highlighted: planning instrument implementation and proper collection of empirical information. The sample should be clearly defined and specified in terms of its main features, and its size delimits in the number of factors (100 per factor) or items (5-10 individuals per item). All seven instruments that were designed to evaluate BI conformed to these guidelines.

The analysis of the instruments that were specifically constructed to evaluate BI in the Brazilian context and identified in this study indicate that experts in the field generally conducted their studies with an adequate basis in the main technical and methodological frameworks that are currently available in the scientific literature. This finding is extremely important because the construction of evaluation tools is more complex than cross-cultural adaptation, requiring greater experience and technical training of the researchers who assume this task (Pasquali, 2010).

c) Psychometric Properties

Verification of the psychometric properties of an evaluative instrument represents another important phase of the procedures associated with the cross-cultural adaptation and construction of new psychological examination techniques (Pasquali, 2010; Urbina, 2007; Borsa et al, 2012). Initial procedures (described above) do not guarantee that the translated or constructed instruments are consistent in terms of examination content or reliable. Verifying its main psychometric qualities is still necessary with regard to accuracy (or reliability), evidence of validity, and normative references (Beaton et al, 2002; Pasquali, 2010; Primi & Nunes, 2010).

Reliability refers to the ability of an instrument to accurately assess a construct, particularly because the indices that are obtained by the evaluative technique are susceptible to environmental changes and population sample where the instrument is applied (Urbina, 2007).

Based on the analysis of the 34 instruments in the present survey (Tables 2, 3, 4, and 5), the vast majority (30 instruments, both adaptation and construction) were subjected to procedures to assess accuracy. Only the Figure Rating Scale and Phototype Silhouettes Scale did not present data on accuracy.

Different methods can be used to evaluate reliability, namely internal consistency, test-retest reliability, parallel forms, and precision among raters (Pasquali, 2010). Among the instruments that have been evaluated for accuracy, 22 employed one method, and nine used two methods.

Internal consistency and test-retest reliability were the most often employed. The former was used in 27 of the instruments, and the latter was used in 12 of the instruments, alone or combined with other procedures. According to Urbina (2007), indices of internal consistency seek to require consistency between the items of an instrument. This method is one of the most known and applied for examination precision, which may explain its wide use among the instruments analyzed in the present study. Only one study (BDDE) utilized examination between evaluators as an accuracy strategy, which was performed by comparing the evaluation of the same instrument by two independent professionals (Anastasi & Urbina, 2000).

The equity method of parallel forms was not used, likely because of technical difficulties that are inherent to the development of appropriate instruments to examine BI. Although used in 12 cases, test-retest reliability was seldom used, which is concerning given the importance of this method for verifying the temporal stability of the measure. In summary, the findings concerning accuracy of the instruments that were identified in this survey are positive indicators of the reliability of Brazilian instruments that are used to assess BI.

With regard to psychometric properties, evaluating evidence of validity of the instruments is necessary, which has historically been defined as the instrument's ability to adequately measure the construct that it seeks to examine (Anastasi & Urbina, 2000). According to Primi, Muniz, and Nunes (2009) and Primi and Nunes (2010), the didactic systematization of information concerning the validity of a psychological assessment tool should revolve around five main areas: (1) evidence based on content (representativeness of the test items to cover the area in question), (2) evidence based on the response process (mental processes involved in the proposed tasks and their relationship to the construct in question), (3) evidence based on internal

structure (structure of correlations between items and between subtests that assess similar constructs), (4) evidence based on relationships with external variables (convergent validity, discriminant validity, and test predictive capacity through external criteria), and (5) evidence based on the testing consequences (social consequences).

All of the BI assessment instruments covered herein, either adapted or constructed, underwent a procedure to assess evidence of validity. The only two studies that did not examine the validity of the instruments consisted of work that described translation and semantic equivalence, indicating that they were restricted only to the first stage of cultural adaptation (MBDS and BCI).

Among the 32 instruments that performed a procedure to assess validity, the majority (19 instruments, 59.3%) involved at least two types of evidence, most often internal structure analysis and relationships with external variables. Predominate in these studies were factor analysis of the results and analysis of convergence/divergence between results of the BI evaluation tools. Another 13 studies that had indicators of validity utilized only one source of evidence, again prioritizing analyses of internal structure and relationships with external variables (convergence/divergence between instruments or external criteria). In neither case was the exclusive use of content analyses of the instruments by judges utilized as a source of validity, which qualifies the evidence identified as good flags about the BI, as theoretically desired. Based on this analysis, we can conclude that the BI assessment tools that were identified in this literature review were positive indicators, arising from one or two sources of evidence of validity, that effectively examine the theoretical trait that the instrument purports to measure (Urbina, 2007; Primi et al., 2009).

Analyses of convergence of the results of BI assessment tools were the most frequently used to obtain evidence of validity (26 studies). This type of analysis focuses on comparing the results with other instrument measures (i.e., previously validated instruments) that examine the same construct. High concordance between the two is considered evidence of convergent validity (Primi & Nunes, 2010). The frequent application of this method for almost all of the studies reviewed herein corroborates the frequency of their use in the literature, which is justified by the ease of this process (Urbina, 2007). The same could be said with the use of discriminant analysis (identified in 14 BI

assessment tools), the purpose of which is to verify that the assessed construct is not correlated with variables from which it should theoretically differ. Both sources of evidence of validity are governed by the same process of data collection (i.e., application of other instruments for comparison), setting up an instrument of relations with external variables.

Also within this group of validity of evidence (i.e., relationships with external variables) are procedures that verify the prediction that the instrument does relative to another variable, with criteria that make distinctions between groups with different characteristics (Primi & Nunes, 2010). This validation method is applicable for diagnostic assessment, especially in clinical populations. None of the studies identified herein used this alternative technique, possibly because of the time that is required between the instrument's application and predictive criteria that may make this an impractical method (Urbina, 2007; Primi et al., 2009).

Factor analysis procedures were also quite frequently identified in the studies described herein, which occurred in 21 articles that examined the internal structure of the instruments. This finding is a positive indicator of validity, indicating that the researchers in the area of BI are concerned with producing appropriate tools for use in Brazil and possess the proper technical expertise.

Finally, the content-related validity results were based on judges or specialists who analyzed the representativeness, clarity, and relevance of the items that comprise the instruments with regard to the examined construct (Cassep-Borges, Balbinotti, & Teodoro, 2010). Among the six instruments that examined this (BCCS, BIQLI, Tripartite Influence Scale, Figure Rating Scale for adults [and adolescents], EST, and Figure Rating Scale for children), all of them underwent another scan strategy to provide evidence of validity, at least in one of the publications about the same instrument. Anastasi and Urbina (2000) stated that validity related to content should not replace other methods but rather be added to them when analyzing the quality of the instrument.

In summary, the analysis of validation procedures that were employed in BI assessment tools in the present survey indicates a consensus among researchers in the BI field that the primary national and international technical recommendations should be followed. Among the 27 adapted instruments that were analyzed, the majority (17 instruments) underwent a set of procedures that were considered sufficient for cross-cultural

adaptation. Additionally, four instruments were considered "regular" with regard to methodological care (BCCS, BAS [Body Areas Scale], EEICA, and BAQ). The other six instruments were deemed to employ "insufficient" technical strategies (Figure Rating Scale, BCI, BCAQ, BSQ, BIS, and EBBIT).

With regard to psychometric properties, checking indicators of validity is fundamentally important for adapting and developing assessment tools, in addition to the authors who lead these processes, providing a theoretical basis for use by allowing interpretations and plausible inferences based on empirical data (Pasquali, 2010; Primi & Nunes, 2010; Urbina, 2007). Among the instruments evaluated herein, all of them underwent a procedure to check evidence of validity. Only two instruments (Figure Rating Scale and Phototype Silhouettes Scale) did not evaluate accuracy in their processes of adaptation or construction, so they were considered insufficient. In two other cases (MBDS and BCI), procedures were not conducted to verify evidence of validity of the instruments. These studies were restricted to the first stage of the cross-cultural adaptation process, and the authors alerted readers to the need for subsequent validation studies before using the instruments.

Final Considerations

The mapping of BI assessment tools confirms a sharp increase in such studies in Brazil (Tavares et al., 2010). A large proportion of the studies that adapted and constructed BI instruments were published in the past two decades, indicating that it is a recent theme in the national scientific literature.

The vast majority of the analyzed instruments followed national and international recommendations regarding the adaptation and construction of evaluative techniques, ensuring adequate technical quality of their end products. Despite these findings, however, some of the studies identified herein lacked the inclusion of certain stages of cultural adaptation and methodological rigor, especially with regard to the choice of qualified judges and experts who participated in the cultural adaptation process. A notable tendency to use university samples to adapt instruments was found, which is justified by easy access, but such samples limit the generalizability of application to other individuals in the population.

Considering the ethical aspects of the cross-cultural adaptation of psychological assessment instruments, Cassep-Borges et al. (2010) indicated that

formal authorization must be secured from the author of the original instrument. Although most studies stated that they obtained such permission, seven instruments (Tripartite Influence Scale, Figure Rating Scale, BCI, OSIQ, BAS [Body Areas Scale], BDDE, and BIS) did not mention obtaining permission from the original authors. Two other cases (BCCS and BCAQ) made no mention of contact with the original authors of the respective scales or authorization for such use. In one case (BSQ), the researchers reported that they were unable to contact the original authors of the instrument. This contact between professionals goes beyond ethical care and enables the instrument's original author to contribute to the adaptation process.

This review of the scientific literature on BI assessment tools was conducted to systematize the current state of instruments that are available for use in the Brazilian context and the methodological procedures that support their adaptation and construction. The present study may stimulate future research that adapts or constructs new instruments of BI assessment in Brazil. Our central objective was to synthesize the efforts of Brazilian researchers and highlight methodological guidelines that support adaptation and construction processes.

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Recebido: 07/08/2014

Primeira reformulação: 16/01/2015

Segunda reformulação: 24/03/2015

Aprovado: 29/06/2015

Sobre os autores:

Gabriela Salim Xavier é psicóloga (FFCLRP-USP), mestre em Psicologia pela Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto-USP, pesquisadora do Laboratório de Nutrição e Comportamento e realiza estudos sobre imagem corporal.

E-mail: gabrielasalimxavier@gmail.com

Sonia Regina Pasian é psicóloga (FFCLRP-USP), professora associada do Departamento de Psicologia da Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto-USP, coordenadora do Centro de Pesquisas em Psicodiagnóstico – FFCLRP-USP, membro do Conselho Consultivo da Associação Brasileira de Rorschach e Métodos Projetivos (ASBRo) e editora associada da revista *Avaliação Psicológica* (IBAP).

E-mail: srpasian@ffclrp.usp.br

Sebastião Sousa Almeida é psicólogo (FFCLRP-USP), professor titular da Faculdade de Filosofia, Ciências e Letras de Ribeirão Preto-USP, membro do corpo editorial das revistas *Nutritional Neuroscience* (USA), *Psychology & Neuroscience* (Brasil) e *Estudos de Psicologia* (Natal), líder do Grupo de Pesquisa Nutrição e Comportamento, do Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) e, atualmente, é coordenador do Comitê de Assessoramento da área de Psicologia e Serviço Social do CNPq.

E-mail: sebasalm@usp.br

Contato com os autores:

Departamento de Psicologia - FFCLRP – USP

Sebastião Sousa Almeida

E-mail: sebasalm@usp.br

Av. Bandeirantes, 3900 – Monte Alegre

Ribeirão Preto/SP

CEP: 14040-901

