

Development and validation of the Brazilian Weight Teasing during Physical Activity Scale

Desenvolvimento e validação da Escala Brasileira de Provocações Referente ao Peso durante Atividade Física

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ABSTRACT: Weight-related teasing is associated with loneliness, depression, eating disorders, and less physical activity. The purpose of the study was to develop the Brazilian Weight Teasing during Physical Activity scale (WTPAS-BR) and gather validity evidence to support its use in Brazilian adolescents. In phase 1, the prototype scale was adjusted. In phase 2, the prototype scale was cross-culturally adapted into the WTPAS-BR. In phase 3, the WTPAS-BR was psychometrically assessed. Adjustments to the prototype scale qualified items to measure weight-related teasing. A rigorous and systematic cross-cultural adaptation process translated, and assessed the content and adequacy of the WTPAS-BR among Brazilian adolescents. Based on the factorial assessment of WTPAS-BR, a one-factor model with four items was adopted. The WTPAS-BR showed adequate internal consistency, convergent validity, and test-retest reliability. Strong validity evidence supports the use of the WTPAS-BR to measure weight-related teasing occurring during physical activity in Brazilian adolescents.

Key Words: Bullying; Validation studies; Survey and questionnaire; Motor activity.

RESUMO: A provocação relacionada ao peso corporal está associada com solidão, depressão, distúrbios alimentares e baixa atividade física. O objetivo deste estudo foi desenvolver a Escala Brasileira de Provocação relacionada ao Peso Corporal durante a Atividade Física (PPCAF-BR) e reunir evidências de validade para apoiar seu uso em adolescentes brasileiros. Na fase 1, ajustes foram feitos em uma escala protótipo. Na fase 2, esta escala foi adaptada culturalmente para a PPCAF-BR. Na fase 3, a PPCAF-BR foi avaliada psicometricamente. As adaptações realizadas na escala protótipo qualificaram os itens para a avaliação de provocações referentes ao peso corporal. A tradução e a adequação da PPCAF-BR em adolescentes brasileiros foi obtida através de uma rigorosa e sistemática adaptação transcultural. Baseado na análise fatorial, foi adotado um modelo de um fator com quatro itens. A PPCAF-BR apresentou consistência interna, validade convergente e reprodutibilidade teste-reteste adequadas. Fortes evidências de validade suportam a utilização da PPCAF-BR para medir a provocação relacionada ao peso corporal ocorrida durante a atividade física em adolescentes brasileiros.

Palavras-chave: Bullying; Estudos de validação; Pesquisa e do questionário; Atividade motora.

Priscila Iumi Watanabe¹
Fabio Eduardo Fontana²
Seong-In Choi²
Michael Pereira da Silva³
Oldemar Mazzardo⁴
Jennifer Waldron²
Wagner Campos¹

¹Universidade Federal do Paraná

²University of Northern Iowa

³Universidade Estadual do Centro-Oeste do Paraná

⁴Universidade Estadual do Oeste do Paraná

Introduction

Teasing refers to provoking someone using playful, humorous, ironic, or ambiguous verbal or nonverbal communicative expressions¹. Weight-related teasing is a category of teasing that refers to aggressive provocations (e.g., name-calling, joking, or laughing) against someone perceived to be overweight²⁻⁶. Weight-related teasing is common among adolescents^{5,7}. Although it is widespread, female and overweight adolescents are the more frequent recipients of weight-related teasing⁶. In addition, weight-related teasing is associated with serious psychological consequences. Adolescents who are more frequently teased about their weight have more difficulty making social connections^{4,8}, are more dissatisfied with their physical appearance^{3,7}, and are more vulnerable to depression^{5,7} and eating disorders^{2,9,10}. Weight-related teasing may also affect the fitness level and physical activity habits of adolescents. Using two items selected from the Perception of Teasing Scale - Weight-Teasing subscale (POTS-WT)¹¹, Greenleaf *et al.*⁵ concluded that aerobic fitness levels declined in adolescents who were targets of weight-related teasing. The Weight Criticism during Physical Activity scale (WCA) was adapted from POTS-WT to measure teasing occurring during the practice of physical activity¹². Faith *et al.*¹² indicated that mild intensity physical activity was indirectly associated with WCA scores in children. Jensen and Steele¹³ concluded that the association between WCA scores and participation in physical activity was absent for boys, but they found an indirect association between WCA scores and participation in vigorous physical activity among girls who were highly dissatisfied with their bodies. Finally, Jensen *et al.*¹⁴ reported that WCA scores failed to predict participation in physical activity a year later for normal-weight and overweight children. Investigations about the relationship between weight-related teasing and physical activity habits are scarce, and their findings are inconsistent.

A possible reason for discrepancies in findings may be limitations in the WCA scale. In the development of the WCA scale, Faith *et al.*¹² did not measure the validity of the scale to assess weight-related teasing during physical activity in adolescents. In fact, items on the WCA scale fail to inquire whether weight status was the source of the teasing experience. For example, the source of teasing in the WCA item “People make fun of you when you play sports or exercise” could be weight, a disability, lack of coordination, or the gender of the respondent. In addition, weak relationships between WCA and POTS-WT or physical activity engagement led Gayes and Steele¹⁵ to question the ability of the WCA scale to measure weight-related teasing experiences.

The aim of the current study was to develop and validate the Brazilian Weight Teasing during Physical Activity scale (WTPAS-BR) using the WCA scale as a prototype. The intent of the scale is to measure weight-related teasing during physical activity in Brazilian adolescents. The development and validation process consisted of adjusting the WCA scale to reflect weight-related teasing experiences during physical activity, rigorously cross-culturally adapting the WCA scale into the WTPAS-BR, and psychometrically assessing the validity of the WTPAS-BR in Brazilian adolescents. In Brazil, adolescence is marked by rising obesity rates¹⁶⁻¹⁸ and declining levels of physical activity^{19,20}. To our knowledge, the association between weight teasing and engagement in physical activity has not been investigated among Brazilian adolescents. The development of the WTPAS-BR may spur efforts to investigate whether weight teasing is a barrier to the adoption of physically active habits by Brazilian adolescents.

Methods

Participants

The bilingual technique, pilot study, and psychometric assessment procedures used different samples of participants. For the bilingual technique procedure, eleven English-Portuguese bilingual adolescents participated in the study (Males: $M_{AGE} = 14.67$ years of age, $SD = 1.86$, $N = 6$; Females: $M_{AGE} = 14.2$ years of age, $SD = 1.3$, $N = 5$). They attended an international American-English school located in the city of Curitiba, Brazil. The school adopted English

for all academic content except for Portuguese Language, Brazilian History, and Brazilian Geography. For the pilot study procedure, 43 adolescents participated in the study (Males: $M_{AGE} = 13.6$ years of age, $SD = 2.86$, $N = 20$; Females: $M_{AGE} = 13.87$ years of age, $SD = 2.14$, $N = 23$). All of them attended Portuguese only public schools in the city of Curitiba, Brazil. Finally, 109 adolescents participated in the psychometric phase of the study (Males: $M_{AGE} = 15.33$ years of age, $SD = 1.69$, $N = 48$; Females: $M_{AGE} = 14.69$ years of age, $SD = 2$, $N = 61$). Ethics committees of the hosting institutions approved the study (Protocol numbers: 12-0259 and 39326614.0.0000.0102). The study obtained parental consent and child assent from all participants prior to data collection.

Instruments

Perception of Teasing Scale – Weight-Teasing subscale (POTS-WT). POTS-WT is a subscale of POTS extensively used to measure the frequency and emotional impact of weight related teasing experiences¹¹. POTS-WT consists of six Likert scale items (i.e., “People made fun of you because you were heavy.” “People made jokes about you being heavy.” “People laughed at you for trying out for sports because you were heavy.” “People called you names like fatso.” “People pointed at you because you were overweight.” “People snickered about your heaviness when you walked into a room alone.”). Scores range from 1 (never) to 5 (very often). A higher total sum of scores reflects higher teasing frequency. A single question measuring the emotional effect of the teasing experience follows each item (i.e., “How upset were you?”). Scores for the emotional effect question range from 1 (not upset) to 5 (very upset). A higher sum of emotional effect ratings reflects a higher emotional impact of teasing. POTS-WT has adequate internal consistency (Cronbach’s $\alpha = .88$) and test-retest reliability ($r = .90$). It correlates moderately to body image anxiety ($r = .42$; $p < .001$) and body dissatisfaction ($r = .39$, $p < .001$). In work yet to be published, POTS-WT was rigorously cross-culturally adapted to Brazilian Portuguese. Item 6 was deleted in the Brazilian version of the questionnaire (POTS-WT-BR) since a confirmatory factor analyses supported a one-factor containing only the first five items. POTS-WT-BR showed excellent internal consistency (Cronbach’s $\alpha = .872$, $N = 109$) and test-rest reliability (ICC = .980, CI = .971 - .987, $p < .001$, $N = 102$).

Weight Criticism during Physical Activity (WCA). WCA¹² is an adaptation from POTS-WT¹¹ designed to measure weight-related teasing occurring during the practice of physical activity. It consists of six items (i.e., “People make fun of you when you play sports or exercise.” “People call you insulting names when you play sports or exercise.” “People look at you funny in your gym or sports clothes when you play sports or exercise.” “People put down (criticize) your physical skills when you play sports or exercise.” “People don’t choose you for their teams when you play sports or exercise.” “People look upset when you get selected to be on their team during sports or exercise.”). Scores for each item range from 1 (never) to 5 (very often). A higher sum of scores indicates greater frequency of weight criticism. The same question follows-up each item to determine the degree of emotional pain caused by the teasing experience (i.e., If this happens to you, how upset are you?). The follow-up question is scored from 1 (not upset) to 5 (very upset), and a greater sum signifies higher levels of emotional pain. According to Faith *et al.*¹², WCA has adequate internal consistency (Cronbach’s $\alpha = .83$) and is moderately correlated with the POTS-WT subscale ($r = .40$, $p < .01$).

Procedures

WCA adjustment. Due to criticism that the WCA scale did not adequately measure weight-related teasing during physical activity¹⁵, we revised the WCA scale prior to the cross-cultural adaptation process. Two principles guided the adjustment process. The first principle aligned the content and item sequence of the adjusted WCA scale to the original POTS-WT scale. The second principle directed the focus of each item to weight-related teasing. For example, a variation of the term “because you are overweight” was included in each item. The adaptation process

resulted into the Weight-related Teasing during Physical Activity scale (WTPAS).

Cross-cultural adaptation. This study used five systematic procedures to adapt the WTPAS into the WTPAS-BR, the Brazilian-Portuguese version of the questionnaire. A detailed description of the procedures used during the cross-cultural adaptation phase is provided in Figure 1. In sum, the procedures occurred sequentially from translation to content assessment (i.e., content validity) and two field tests measuring the adequacy of the questionnaire among Brazilian adolescents (i.e., bilingual technique and pilot study). After each procedure, a committee consisting of four of the authors discussed possible modifications to WTPAS-BR and made changes when necessary (i.e., committee approach).

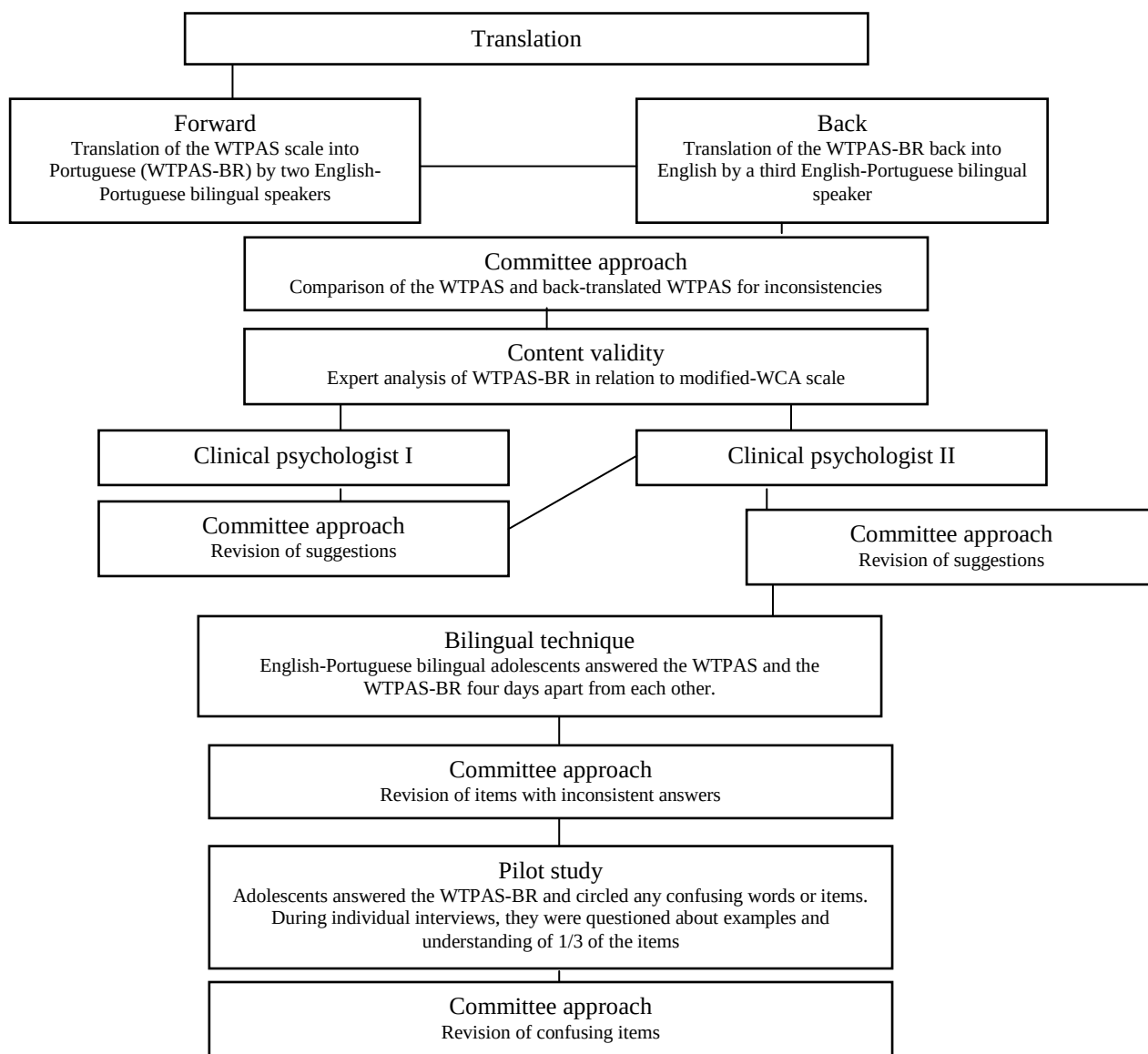


Figure 1. Diagram highlighting the sequence of the cross-cultural adaptation procedures.

Psychometric assessment. Participants answered the WTPAS-BR twice seven days apart from each other. We assessed the factorial structure, internal consistency, and convergent validity of the WTPAS-BR using the teasing frequency scores from the initial administration of the WTPAS-BR. Exploratory and confirmatory factor analyses evaluated the structure of the WTPAS-BR using the 109 cases in the data set. The exploratory factor analysis (EFA) was conducted first as the structure of the original WCA is yet to be investigated. Confirmatory factor analysis (CFA)

further assessed the structure of the WTPAS-BR as appropriate. Internal consistency referred to the degree answers were consistent across items^{21,22}. Convergent validity referred to the degree of association between POTS-WT-BR and WTPAS-BR. The test-retest reliability indicated the stability of scores from the first to the second administration of the WTPAS-BR.

Statistical Analyses

The EFA procedure used direct oblimin rotation to seek the simplest structure that best represented the data set. A CFA further investigated the WTPAS-BR using the following measures of fit: Chi-squared (χ^2) statistic, Chi-square divided by the degrees of freedom (CMIN/DF), Goodness of Fit Index (GFI), Adjusted Goodness of Fit Index (AGFI), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), and Expected Cross-Validation Index (ECVI). The χ^2 index and the CMIN/DF index demonstrate the differences between the observed and the estimated correlation matrix. A non-significant χ^2 index and CMIN/DF index ≤ 3.0 indicate acceptable fit²³. RMSEA indicates the error in fit between the hypothesized model and the population covariance matrix. Different from the χ^2 index, it considers sample size during calculations. Values of RMSEA approaching 0.0 indicate better fit, but values between .06 and .08 are acceptable²⁴. The CFI assesses relative improvement in the fit of the model compared to the null model, with a value of 1 indicating a perfect fit²³. The GFI and AGFI are measures of the relative amount of variances and covariances explained by the model. Cole²⁵ suggested .90 as a minimum criterion value to indicate a good fit to the data. A lower value of the ECVI indicates increased model stability²⁴.

The internal consistency of WTPAS-BR was analyzed using Cronbach's alpha and item-to-total correlations. For adequate internal consistency, Cronbach's alpha $\geq .70$ and item-to-total correlations $\geq .20$ were necessary^{26,27}. Convergent validity was assessed using the Pearson product moment correlation. Correlations were computed separately for frequency of teasing and emotional pain. Strong correlations were expected since both scales measure the same construct. In addition, exposure of the physical appearance of participants during the practice of physical activity may facilitate social comparisons relative to body weight²⁸. The test-retest reliability of WTPAS-BR frequency scores was computed using a two-way mixed intraclass correlation (ICC) assessing the absolute agreement of scores between the two survey administration periods^{29,30}. ICC $\geq .70$ is considered adequate³¹. The CFA was conducted using AMOS version 22. All other analyses were conducted using IBM SPSS statistics software 22 (IBM Corp., Armonk, NY).

Results

WCA adjustment

This study made three adjustments to the WCA scale. We inserted a variation of the term "because you were overweight" to assure all items focused on weight-related teasing experiences. We substituted item four (i.e., "People put down (criticize) your physical skills when you play sports or exercise"), for a newly created item (i.e., "People make jokes about you being heavy when you play sports and exercise."). The new item reflected weight-related teasing instead of sport competency. We reordered items two, three, four, and six to replicate item position in the prototype scale (POTS). The adjusted WCA scale was labelled "Weight Teasing during Physical Activity scale- WTPAS" (i.e., "People make fun of you when you play sports or exercise because you are heavy." "People make jokes about you being heavy when you play sports and exercise." "People look upset when you get selected to be on their team during sports or exercise because you are heavy." "People call you insulting names about being heavy when you play sports or exercise." "People don't choose you for their teams when you play sports or exercise because you are overweight." "People look at you funny in your gym or sports clothes when you play sports or exercise because you are heavy.").

Cross-cultural adaptation

Two English-Portuguese bilingual speakers translated the WTPAS to Brazilian Portuguese. Translations occurred independently. The bilingual speakers merged their translation into a single WTPAS-BR after discussions and solved disagreements by consensus. A third bilingual speaker translated the WTPAS-BR back into English. After comparing the original and back translated English versions of WTPAS, the committee deemed that modifications were not necessary due to the similarities between the two versions. Subsequently, two clinical psychologists sequentially analyzed the WTPAS-BR. The first clinical psychologist disagreed with the translation of the Likert scale option “very often”. The initial translation meant “almost always” (*quase sempre*) instead of “very often” (*muito frequente*). The committee adopted the “very often” (*muito frequente*) Likert option recommended by the expert. As the second clinical psychologist did not make new suggestions to the WTPAS-BR, the committee approved the scale for the subsequent procedure.

During the bilingual technique procedure, eleven bilingual adolescents answered the WTPAS and WTPAS-BR four days apart from each other. Answers to the WTPA scales in English and Portuguese were highly consistent. In fact, answers to items 1, 2, 5, and 6 showed 100% agreement. A single participant selected the option “never (1)” for items 3 and 4 of the WTPAS and “sometimes (3)” four days later (91.9% absolute agreement). Due to the high level of agreement, the committee did not make changes to the WTPAS-BR during the bilingual technique procedure. In the pilot study, some students expressed confusion with item 6 (“People look at you funny in your gym or sports clothes when you play sports or exercise because you are heavy.”). More specifically, they had difficulty with the translation of the term funny and with the order of item ideas (“Pessoas te olharam de forma irônica, durante a prática de exercício ou esporte, por ter usado roupas esportivas quando você estava acima do peso”). The term “ironic (irônica)” initially used to translate funny was substituted by the term “despised (desprezo).” The committee agreed with pilot study participants that in Portuguese “despised (desprezo)” better conveyed the meaning of the item. The order of ideas described in item 6 was changed to improve clarity (“Pessoas te olharam com desprezo quando você usou roupas esportivas para praticar exercícios ou esportes porque você estava acima do peso”).

Psychometric assessment

The factorial structure of the WTPAS-BR was the first psychometric property assessed. An EFA with Oblimin Rotation explored the factorial structure of the WTPAS-BR since the factorial structure of the original WCA scale was never assessed. The EFA yielded a 2-factor solution (Table 1). Core information conveyed by the items within that factor determined the labelling of factors. Items 2, 4, and 6 loaded on factor 1, labelled weight teasing (Eigenvalue = 3.61). Items 3 and 5 loaded on Factor 2, labelled social rejection (Eigenvalue = 1.04). The percentage of the variance explained by the weight-teasing and social rejection factors was 60.1% and 17.31% respectively. Item 1 loaded on both factors, raising a question for alternative models of the factor structure.

A CFA was used to further investigate the structure of the WTPAS-BR. χ^2 , RMSEA, CFI, GFI, AGFI, ECVI, CMIN/DF indices assessed the fit of three potential models (Table 2). Model A was our default theoretical model. It consisted of one-factor with all six items since the purpose of the WTPAS-BR was to measure a single construct (i.e. weight-related teasing). Models B and C tested the fit of different two-factor solutions yielded by the EFA results. Model B consisted of a weight-teasing factor with items 1, 2, 4 and 6, and a social rejection factor with items 3 and 5. Model C used this same factorial structure with the exception of item 1. Item 1 was deleted from model C since it loaded on both factors. Models A and B failed to meet acceptable thresholds for all seven indices, and model C did not meet acceptable indices of RMSEA, AGFI, and CMIN/DF (Table 2).

Table 1. Pattern and Structure Matrices from EFA with Oblimin Rotation using 2-Factor Solution for the six items of the WTPAS-BR.

Items	Parttern Matrix		Structure Matrix	
	Weight teasing	Social rejection	Weight teasing	Social rejection
2	.88	.11	.93	.51
4	.90	-.17	.82	.24
6	.79	.16	.86	.52
1	.53	.52	.77	.76
3	-.05	.96	.39	.93
5	.04	.90	.45	.91
Eigenvalues		3.61	1.04	
% Variance		60.10	17.31	
Total variance explained = 80.66%				

Based on the inadequate fit of the tested models, Model D eliminated items 3 and 5. These items loaded onto the social rejection factor in the EFA and had loadings < .70 in the CFA model A (Table 3). Besides, the content of items 1, 2, 4, and 6 aligned more closely with weight-related teasing. Indices for one-factor Model D improved in relation to the one-factor Model A, but acceptable levels of RMSEA, AGFI, and CMIN/DF were not met (Table 2). The results were encouraging, but Model D still exhibited less than ideal fit. Thus, modifications indices were examined. The error term for items 4 and 6 were chosen to correlate based on the suggested modification index (MI = 8.62). Model E investigated the fit of a single-factor solution consisting of items 1, 2, 4, and 6 with a covariate error term for items 4 and 6. All fit indices for model E significantly improved and were above acceptable thresholds (Table 2). Factor loadings for items in model D were > .70 (Table 3).

Table 2. CFA fit indices obtained for the four tested models.

Model	χ^2 (df)	RMSEA	CFI	GFI	AGFI	ECVI	CDMI/DF
A	126.11 (9)**	.35	.74	.73	.36	1.39	14.01
B	70.79 (8)**	.27	.86	.84	.58	.90	8.85
C	-	.17	.96	.94	.79	.35	4.00
D	16.31 (2)	.26	.95	.94	.71	.30	8.16
E	.67 (1)	.00	1.00	.99	.97	.17	.67

Note. Model A consisted was a one-factor solution containing all six items. Model B consisted of the weight-teasing factor (items 1, 2, 4, and 6) and social rejection factor (items 3 and 5). Model C consisted of the weight-teasing factor (items 2, 4, and 6) and social rejection factor (items 3 and 5). Model D was a one-factor solution containing items 1, 2, 4, and 6. Model E was a one-factor solution containing the items 1, 2, 4, and 6 with e4 and e6 covariate.

** p < .01.

Table 3. CFA factor loadings for the five models tested.

	Model A	Model B		Model C		Model D	Model E
Item	Weight Teasing	Weight Teasing	Social Rejection	Weight Teasing	Social Rejection	Weight Teasing	Weight Teasing
1	.80	.77		Item deleted		.73	.75
2	.91	.94		1.02		.96	.91
3	.59		.87		.86		
4	.62	.63		.62		.64	.70
5	.59		.86		.87		
6	.88	.89		.83		.88	.93

Note. Model A consisted was a one-factor solution containing all six items. Model B consisted of the weight-teasing factor (items 1, 2, 4, and 6) and social rejection factor (items 3 and 5). Model C consisted of the weight-teasing factor (items 2, 4, and 6) and social rejection factor (items 3 and 5). Model D was a one-factor solution containing items 1, 2, 4, and 6. Model E was a one-factor solution containing the items 1, 2, 4, and 6 with e4 and e6 covariate.

Model E was used for all additional psychometric assessment. The Cronbach's alpha of the WTPAS-BR was .86 and item-to-total correlations were $\geq .20$ ($N = 109$, Table 4). The associations between POTS-WT-BR and WTPAS-BR were strong and positive for teasing frequency ($r = .82$; $p < .001$, $N = 109$) and emotional pain ($r = .78$; $p < .001$, $N = 109$). The ICC for test and retest scores was .96 (95% CI = .94 - .98, $p < .001$, $N = 101$).

Table 4. Item-to-total correlations, Cronbach's alpha if item deleted, and Means (SDs) for WTPAS-BR items.

Item	Item-to-total correlations	Cronbach's α if item deleted	M (SD)
1	.72	.81	1.14 (.54)
2	.83	.76	1.19 (.69)
4	.62	.87	1.20 (.74)
6	.76	.82	1.09 (.40)
WTPAS-BR			4.62 (2.02)

Discussion

The objective of this paper was to develop an instrument to measure weight teasing experiences occurring during the practice of physical activity, and to gather validity evidence to use this tool to assess Brazilian adolescents. The WCA was used as a prototype for the development of the Weight Teasing during Physical Activity scale (WTPAS-BR). The WCA scale was adapted from POTS-WT to assess weight teasing during physical activity¹². Previous publications used the WCA scale to investigate the relationship between weight teasing during physical activity and physical activity engagement^{12,14,32}. However, validity evidence supporting the use of the WCA scale to measure teasing during physical activity is limited¹², and the WCA scale has been criticized for measuring teasing experiences unrelated to the physical appearance of the participants¹⁵. Consequently, adjusting the WCA scale was the first procedure implemented in the study. Reworded items in the WCA scale aligned the focus of the scale to weight related teasing experiences. In addition, reordering of items better reflected their positions in POTS-WT. The adjusted scale was labelled Weight Teasing during Physical Activity scale (WTPAS).

In the next phase, the WTPAS was cross-culturally adapted into Brazilian Portuguese (i.e., WTPAS-BR) using

a series of systematic and rigorous cross-cultural adaptation procedures. The implementation of carefully designed cross-cultural adaptation procedures is difficult and time-consuming. However, it is necessary to produce a scale equivalent to the original and linguistically appropriate in the target context^{33,34}.

The translation and back-translation procedures assured that the initial translation of the questionnaire was adequate. Then, experts in the field approved the translations for linguistic, culture, and content appropriateness. Finally, Brazilian adolescents provided input about the WTPAS-BR in two separate phases. Participant's input helped determine the comprehension of the cross-culturally adapted scale by the target population³⁵. First, English-Portuguese bilingual Brazilian adolescents showed a high absolute agreement in their responses to the English and Portuguese versions of the WTPA scale. In addition, item six of the WTPAS-BR was modified to improve clarity based on suggestions provided by Portuguese speaking Brazilian adolescents during one-on-one interviews. Similarly to previous studies^{22,27}, the committee approach procedure was implemented at the end of each cross-cultural adaptation phase. The repetition of the committee approach established checkpoints for the adequacy of proposed changes before approving the questionnaire for a subsequent phase.

After completing the cross-cultural adaptation procedures, validity evidence was gathered to support the use of the WTPAS-BR scale to measure weight-related teasing during physical activity in Brazilian adolescents. Assessment of the structure of the WTPAS-Br occurred first. Model E was the model of best fit based on CFA indices. Model E was a one-factor solution containing the weight-teasing items 1, 2, 4 and 6 with covariate error terms for items 4 and 6. Covariance of measurement error was justified since items 4 and 6 had the largest modification index, they were part of the same factor, and they were both representing specific examples of teasing experiences³⁶. It was the only model to meet recommended thresholds for all seven indices. CFA factor loadings $> .70$ for all four items supported the adequacy of model E. Furthermore, model E fits the intent of the WTPAS-BR scale to exclusively measure experiences of weight-related teasing during physical activity.

Psychometric assessment proceeded with Model E. The internal consistency of the WTPAS-BR was excellent as indicated by a Cronbach's alpha of .86 and item-to-total correlations $\geq .20$. The internal consistency of the WTPAS-BR was slightly higher than the internal consistency reported by Faith *et al.*¹² for the WCA scale (Cronbach's $\alpha = .83$). Strong associations between POTS-WT-BR and WTPAS-BR scales for teasing frequency ($r = .82$) and emotional pain ($r = .78$) supported the convergent validity of the WTPAS-Br scale. Correlation coefficients were substantially stronger than the association between WCA and POTS-WT¹². Strong correlations with the POTS-WT-BR provided further evidence that the WTPAS-BR was a measure of the weight-related teasing. The frequency of teasing scores showed excellent stability over a seven day period (ICC = .96; 95% CI = .94 - .98). These psychometric results indicate that the WTPAS-BR is internally consistent, measures the same construct as other related questionnaires, and produces stable scores across a seven-day period.

Strengths and Limitations

This study has several strengths. The validation process was rigorous and systematic from adjusting the WCA scale, cross-cultural adaptation, to psychometric assessment. The psychometric assessment accumulated four different types of validity evidence such as construct validity, internal validity, convergent validity, and test-retest reliability. The WTPAS-BR is the first questionnaire to measure weight teasing occurring during physical activity in Brazilian adolescents. However, this study is not without limitations. The sample size was small and limited the application of both types of factor analyses to the same data set. Finally, the four items of the WTPAS-BR may not represent the full array of possible weight teasing experiences occurring during physical activity.

Conclusion

This study developed and validated the WTPAS-BR using the WCA scale as a prototype. Based on the intent of the scale and the results from factorial analyses, a one-factor model consisting of items 1, 2, 4, and 6 was best supported. Further psychometric assessment of the WTPAS-BR yielded excellent results for internal validity, convergent validity, and test-retest reliability. Strong validity evidence supports the use of the WTPAS-BR to measure weight teasing occurring during physical activity in Brazilian adolescents. Future research is warranted for further examinations of the validity of the scale using a larger sample of participants.

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