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The Development and Validation of the Physical Appearance Comparison Scale–3 (PACS-3)

Lauren M. Schaefer
University of South Florida, lschaefer@mail.usf.edu

Joel Kevin Thompson
University of South Florida, JKThompson@usf.edu

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The Development and Validation of the Physical Appearance Comparison Scale–3 (PACS-3)

Lauren M. Schaefer, **J. Kevin Thompson**

University of South Florida

Abstract

Appearance comparison processes are implicated in the development of body-image disturbance and disordered eating. The Physical Appearance Comparison Scale—Revised (PACS–R) assesses the simple frequency of appearance comparisons; however, research has suggested that other aspects of appearance comparisons (e.g., comparison direction) may moderate the association between comparisons and their negative outcomes. In the current study, the PACS–R was revised to examine aspects of comparisons with relevance to body-image and eating outcomes. Specifically, the measure was modified to examine (a) dimensions of physical appearance relevant to men and women (i.e., weight–shape, muscularity, and overall physical appearance), (b) comparisons with proximal and distal targets, (c) upward versus downward comparisons, and (d) the acute emotional impact of comparisons. The newly revised measure, labeled the *PACS-3,* along with existing measures of appearance comparison, body satisfaction, eating pathology, and self-esteem, was completed by 1,533 college men and women. Exploratory and confirmatory factor analyses were conducted to examine the factor structure of the PACS-3. In addition, the reliability, convergent validity, and incremental validity of the PACS-3 scores were examined. The final PACS-3 comprises 27 items and 9 subscales: Proximal: Frequency, Distal: Frequency, Muscular: Frequency, Proximal: Direction, Distal: Direction, Muscular: Direction, Proximal: Effect, Distal: Effect, and Muscular: Effect. the PACS-3 subscale scores demonstrated good reliability and convergent validity. Moreover, the PACS-3 subscales greatly improved the prediction of body satisfaction and disordered eating relative to existing measures of appearance comparison. Overall, the PACS-3 improves upon existing scales and offers a comprehensive assessment of appearance-comparison processes.

Keywords

social comparison; measurement; body image; eating disturbance

Sociocultural theories of body-image disturbance and disordered eating (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999) suggest that frequent appearance-based comparisons with others who embody dominant appearance ideals lead to increased body dissatisfaction. Disordered eating is thought to follow as individuals attempt to reshape their

Correspondence concerning this article should be addressed to Lauren M. Schaefer, who is now at the Neuropsychiatric Research Institute, 120 Eighth Street South, Fargo, ND 58103. lauren.m.schaefer@gmail.com.
Lauren M. Schaefer and J. Kevin Thompson, Department of Psychology, University of South Florida.

bodies through extreme diet, exercise, and other compensatory behaviors. Findings from cross-sectional, experimental, and ecological momentary assessment (EMA) studies have provided strong and consistent support for the proposed impact of appearance comparisons on negative outcomes among men and women (Carlson Jones, 2004; Davison & McCabe, 2005; Leahey, Crowther, & Mickelson, 2007; McCreary & Saucier, 2009; Myers & Crowther, 2009) and have further suggested that certain elements of the comparison may influence its association with negative downstream effects. Specifically, findings from EMA studies have indicated that although women frequently engage in appearance-focused comparisons with a diverse array of proximal (e.g., peers) and distal (e.g., media images) comparison targets (Leahey & Crowther, 2008), comparisons to media images may be particularly detrimental (Ridolfi, Myers, Crowther, & Ciesla, 2011). In addition, upward comparisons (i.e., comparisons to a more attractive person) appear to be associated with greater negative impact than are downward comparisons (i.e., comparisons to a less attractive person; Leahey, Crowther, & Ciesla, 2011; Leahey et al., 2007). Finally, evidence has suggested that appearance comparisons commonly increase negative affect (Leahey et al., 2011; Ridolfi et al., 2011), which may in turn, increase risk for disordered eating behaviors (Engel et al., 2013).

Although scales have been developed to assess one's frequency of engaging in appearance-based social comparisons, each has significant limitations, and no single measure has been able to comprehensively capture multiple aspects of the comparison with demonstrated relevance to body dissatisfaction and disordered eating (i.e., comparison target, direction, and acute emotional impact). The Upward Physical Appearance Comparison Scale (UPACS) and Downward Appearance Comparison Scale (DACS) assess one's frequency of upward and downward comparisons, respectively (O'Brien et al., 2009). However, the items rely significantly on assumptions and stereotypes of attractiveness, rather than directly assessing the respondent's perception of a particular comparison's being upward or downward. For example, the DACS item "I think about how attractive my body is compared to overweight people" is grounded in a stigmatizing assumption that overweight bodies are categorically unattractive. In order for the DACS item "I tend to compare my body to those who have below average bodies" to operate as intended, respondents must evaluate their body as being average or better. Because the majority of women and men endorse dissatisfaction with their appearance (Pope, Phillips, & Olivardia, 2000; Rodin, Silberstein, & Striegel-Moore, 1984), it is quite possible that this item does not consistently capture downward comparisons.

The Physical Appearance Comparison Scale (PACS; Thompson, Heinberg, & Tantleff, 1991) is the most widely used measure of appearance-based comparisons. However, the scale has sometimes suffered poor internal consistency and test–retest reliability (Davison & McCabe, 2005; Keery, van den Berg, & Thompson, 2004) and largely reflects female body-image concerns. Further, the PACS exclusively assesses proximal comparisons at "parties or social events" or in "social situations," precluding an assessment of comparisons that may occur in other contexts (Thompson et al., 1991, p. 174).

Recently, Schaefer and Thompson (2014) revised the PACS to address some of the limitations of the measure. Specifically, the new measure, named the Physical Appearance Comparison Scale—Revised (PACS–R), sought to improve the psychometric properties of

the scale, examine numerous dimensions of physical appearance relevant to male and female individuals, and include a broader range of appearance-comparison contexts or targets. The final 11-item instrument achieved the goals for revision; however, important limitations remain. First, although the PACS–R attempted to examine numerous gender-neutral dimensions of appearance (e.g., body size, body fat), respondents did not distinguish between examined dimensions. Given evidence suggesting that women's body-image concerns frequently center on weight and shape whereas men's body-image concerns frequently reflect a desire for muscularity (Thompson & Cafri, 2007; Thompson et al., 1999), a focus on these dimensions of appearance would offer researchers a measure that specifically addresses comparisons of gender-relevant appearance dimensions. Additionally, inclusion of items to assess comparisons of overall appearance would provide a gender-neutral assessment of general appearance-comparison frequency.

A second significant limitation of the PACS–R is its exclusive focus on proximal comparison targets. As research and clinical experience have attested, individuals frequently engage in comparisons with distal others, including celebrities, athletes, or models in advertisements (Leahey et al., 2011). Further, evidence has suggested that such comparisons are related to body dissatisfaction and disordered eating (Leahey & Crowther, 2008). Therefore, the inclusion of these common and impactful comparison targets would likely be a valuable addition to the measure.

Third, the PACS–R is not able to distinguish between upward and downward comparisons. Given evidence suggesting that upward comparisons may be more harmful than are downward comparisons (Leahey et al., 2007), careful assessment of these different forms of appearance comparison would represent a considerable improvement to the scale. It is important to note that previous measures of upward and downward comparisons have relied on common assumptions and stereotypes regarding the types of individuals who represent upward (e.g., movie stars) and downward (e.g., individuals who are overweight) comparisons, rather than directly assessing the respondent's perception of the target as being more or less attractive than oneself. Therefore, inclusion of items to assess the *perceived* direction of the comparison would add a valuable element to the assessment of appearance comparisons in the PACS–R.

Finally, no existing measure of appearance comparison provides an assessment of the acute impact of the comparison. EMA studies have demonstrated that negative emotions frequently follow appearance comparisons (Leahey et al., 2011). It is quite likely that, consistent with emotion-regulation models of disordered eating (Heatherton & Baumeister, 1991; Wonderlich, Peterson, Leone Smith, & Klein, 2015), the acute emotional impact of the comparison moderates the relationship between comparison frequency and engagement in disordered eating behaviors. In other words, individuals who experience more negative emotional impact associated with appearance comparisons may be more likely to use disordered eating behaviors in an attempt to neutralize negative emotional experiences (Engel et al., 2013; Stice, 1994). Therefore, inclusion of items to assess the impact of appearance comparisons would allow researchers to more readily examine the role of the acute emotional response in appearance-comparison processes.

Building on the success of the PACS–R and its predecessor, the Physical Appearance Comparison Scale—Revised was amended to address some of the limitations of the measure. Specifically, the main goals for the revision were to (a) examine comparisons of weight–shape, muscularity, and overall physical appearance; (b) include items to assess comparisons with distal targets; (c) provide an assessment of upward versus downward comparisons; and (d) provide an assessment of the acute emotional impact of comparisons. The current set of studies sought to examine the psychometric properties of the newly revised measure, labeled the *PACS-3.*

General Method

A sample (N = 1,533) of men and women recruited from a large southeastern university completed the PACS-3, as well as existing measures of appearance comparisons, body satisfaction, disordered eating, and self-esteem. Eighty-six percent of participants responded to questionnaires online, whereas the remaining 14% completed paper-and-pencil measures in the presence of a research assistant. All participants who took part in the in-person data collection were asked to return 2 weeks later to complete a small subset of the original study questionnaires. Upon completion of the study, all participants were debriefed and received course credit as compensation. The study received approval from the university's institutional review board. SPSS was used to divide the overall sample into two roughly equal subsamples (Sample 1 = 741 and Sample 2 = 792) using the feature designed to select a random sample of approximately 50% of all cases. Two studies were then conducted to provide a comprehensive assessment of the PACS-3. In Study 1, exploratory factor analysis (EFA) was conducted to examine the factor structure of the PACS-3 in Sample 1. In Study 2, confirmatory factor analysis (CFA) was conducted within Sample 2 to verify the factor structure identified in Study 1. In addition, the internal consistency, convergent validity, and incremental validity of the PACS-3 scores were examined in this sample. Finally, the 2-week test–retest reliability of the PACS-3 scores was examined in a subset of the overall sample (n = 170). Of importance, analyses to identify the scale structure (i.e., EFA, CFA) were conducted using mixed-gender samples to identify a final set of items with relevance to both men and women. However, subsequent psychometric testing (i.e., internal consistency, convergent validity, incremental validity analyses) was conducted within each gender, because researchers have typically limited their samples to male or female individuals, and gender differences in the associations between the PACS-3 scores and examined variables were expected. Because evidence has suggested that disordered eating declines in adulthood (Tiggemann & Lynch, 2001), all samples were restricted to individuals between the ages of 18 and 30. Demographic information for each of the samples can be found in Table 1.

Study 1: Item Generation and Identification of Scale Structure

Method

Item generation—The same item structure utilized to assess frequency of appearance comparisons in the PACS and PACS–R was again utilized for the PACS-3. Because each of the eight contexts examined in the PACS–R referenced proximal comparison targets (i.e., in public, when meeting a new person, at work or school, when shopping for clothes, at a party,

at the gym, group of friends, or at a restaurant), eight new distal targets were generated to provide a comparable assessment of distal comparisons (i.e., actors–actresses on TV, models in a magazine, actors–actresses in a movie, billboard or advertisement models, famous athletes, images on the Internet, videogame characters, images on dating or social networking websites), yielding 16 comparison targets. Items were written to assess comparisons of each of the three appearance dimensions (i.e., weight–shape, muscularity, and overall appearance) with each of the 16 comparison targets, producing a total of 48 items assessing the *frequency* of appearance comparisons. Respondents were instructed to indicate how often they make each comparison on a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*almost always*). Therefore, higher ratings indicate greater frequency of appearance comparisons.

Each frequency item was followed by two items assessing the comparison *direction* and *effect*. Respondents were instructed to answer the follow-up questions only if they indicated that they *seldom, sometimes, often,* or *almost always* engaged in a given comparison. If respondents indicated that they never engaged in a given comparison, they were instructed to advance to the next frequency item.

Following assessment procedures utilized in EMA studies (e.g., Leahey et al., 2007), the item "When I make these comparisons, I typically believe that I look ___ than the person to whom I am comparing myself" was used to assess the comparison direction. Participants responded using a 5-point Likert-type scale ranging from 1 (*much better*) to 5 (*much worse*). Therefore, higher ratings indicate upward comparisons, whereas lower ratings indicate downward comparisons.

Borrowing from a validated scale assessing the impact of appearance-related commentary (Herbozo & Thompson, 2006), the item "When you make these comparisons, how does it usually make you feel?" and a 5-point Likert-type scale ranging from 1 (*very positive*) to 5 (*very negative*) was used to assess the impact of appearance comparisons. Therefore, higher ratings indicate greater negative impact, whereas lower ratings indicate more positive impact. The initial item pool may be found in the online supplemental materials.

Participants—Participants for Study 1 were 741 undergraduate students (523 women).

Measures

Demographic information: Participants completed a brief demographics questionnaire in which they were asked to indicate their age, ethnicity, height, and weight. Each participant's self-reported height and weight were used to calculate their body mass index (BMI; kg/m^2).

Physical Appearance Comparison Scale–3 (PACS-3): The PACS-3 was developed to measure individuals' tendency to compare aspects of their physical appearance to that of distal and proximal others, as well as to examine the direction and effect of such comparisons.

Procedure—See the General Method section for information regarding data-collection procedures.

Statistical analysis

Initial item analysis and reduction: PACS-3 items that were highly skewed (e.g., ≥|1|) or demonstrated low corrected item–total correlations (i.e., ≤.30) were eliminated prior to conducting more complex structural analyses (Clark & Watson, 1995).

Exploratory factor analysis: An EFA using principal-axis factoring and Promax oblique rotation was conducted to identify the underlying structure of the PACS-3 frequency items. Bartlett's test of sphericity and the Kaiser–Meyer–Olkin measure of sampling adequacy were used to assess the factorability of the items in the PACS–R. Items are considered appropriate for factor analysis when Bartlett's test is statistically significant and the Kaiser–Meyer–Olkin value is .60 or higher (Tabachnick & Fidell, 2007). The number of factors to be retained was guided by theory (Thompson et al., 1999), examination of the scree plot (Cattell, 1966), the Kaiser–Guttman criterion (Guttman, 1954; Kaiser, 1960), and Horn's parallel analysis (Horn, 1965). Low primary-factor loadings were defined as a primary loading of .40 or less, whereas cross-loading items were defined as having a secondary loading of .30 or higher (Schaefer, Burke, et al., 2015; Schaefer, Harriger, Heinberg, Soderberg, & Thompson, 2017). Although items assessing similar constructs (e.g., comparisons to proximal others) were generally expected to factor together, firm a priori hypotheses regarding the ultimate factor structure of the frequency items were not forwarded. The EFA was conducted using SPSS Statistics Version 21.0. Missing data were handled using list-wise deletion.

Results

Initial item analysis and reduction—Thirteen frequency items were deleted due to excessive positive skew. These items generally reflected comparisons to videogame characters and comparisons of muscularity. All items exhibited adequate item–total correlations.

Exploratory factor analysis—The remaining 35 frequency items were next submitted to EFA. Barlett's test of sphericity was significant, $\chi^2(595, N = 692) = 23{,}591.06$, $p < .001$, and the Kaiser–Meyer–Olkin value was .95, indicating that the PACS-3 frequency items were appropriate for factor analysis. The Kaiser–Guttman criterion and scree plot initially suggested a five-factor solution (i.e., proximal comparisons, distal comparisons, muscularity comparisons, comparisons to athletes or while at the gym, and comparisons to individuals on the Internet), whereas Horn's parallel analysis initially suggested a four-factor solution (i.e., proximal comparisons, distal comparisons, muscularity comparisons, and comparisons to athletes or while at the gym). However, when a priori factor-loading criteria were applied to both the four- and five-factor solutions, each solution was reduced to 25 items and three factors representing clear and consistent themes (i.e., frequency of proximal comparisons, distal comparisons, and muscularity comparisons). Therefore, the remaining 25 items were submitted to a second EFA. This analysis resulted in a three-factor solution in which all items loaded strongly on their primary factors without significant cross-loadings (see Table 2). The first factor, labeled *Proximal: Frequency,* comprised 12 items reflecting comparisons of weight, shape, and overall appearance to proximal others. The second factor, labeled *Distal: Frequency,* comprised eight items reflecting comparisons of weight, shape, and

overall appearance to distal others. The third factor, labeled *Muscularity: Frequency,* comprised five items reflecting comparisons of muscularity to proximal and distal others.

Study 2: Confirmation of Factor Structure and Examination of the Reliability and Convergent Validity of the PACS-3

Method

Participants—Sample 2, consisting of 792 undergraduate students (591 women) was utilized for the CFA, internal consistency, convergent validity, and incremental validity analyses. A subset of the overall sample (n = 170; 135 women) was utilized for the test–retest reliability analyses.

Measures—Participants completed the PACS-3, in addition to validated measures of appearance-comparison frequency, body satisfaction, disordered eating, and self-esteem.

Physical Appearance Comparison Scale (PACS): The original PACS (Thompson et al., 1991) is a five-item measure of general appearance-comparison frequency. Items are rated on a 5-point Likert-type scale ranging from 1 (*never*) to 5 (*always*). Higher scores indicate higher levels of general appearance comparison. Cronbach's alpha in the current study was . 72.

Upward Appearance Comparison Scale (UPACS) and Downward Appearance Comparison Scale (DACS): The UPACS and DACS (O'Brien et al., 2009) assess a respondent's tendency to engage in upward (10 items) and downward (eight items) appearance comparisons. Respondents indicate their level of agreement with each item using a 5-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Higher scores on the UPACS and DACS indicate higher levels of upward and downward comparisons, respectively. Cronbach's alpha in the current study was .94 for the UPACS and .95 for the DACS.

Multidimensional Body-Self Relations Questionnaire—Appearance Evaluation Subscale (MBSRQ-AE): The seven-item Appearance Evaluation subscale of the MBSRQ was used to assess overall body satisfaction (Cash, 2000). Items are rated on a 5-point Likert scale ranging from 1 (*definitely disagree*) to 5 (*definitely agree*). Higher scores indicate greater body satisfaction. Cronbach's alpha in the current study was .91.

Eating Disorder Examination Questionnaire (EDE-Q): The EDE-Q (Fairburn & Beglin, 2008) is a 28-item measure of disordered eating symptomatology. The measure contains four subscales: Restraint, Eating Concern, Shape Concern, and Weight Concern. Items are rated on a 7-point scale ranging from 0 (*no days/not at all*) to 6 (*everyday/markedly*). The EDE-Q global score is calculated as an average of the subscale scores. Higher scores indicate greater levels of eating pathology. In the current sample, internal consistency for the EDE-Q subscales ranged from .84 to .92.

Rosenberg Self-Esteem Scale (RSES): The RSES (Rosenberg, 1965) is a 10-item measure of global self-esteem. Respondents indicate their agreement with each item using a 4-point Likert scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). Higher total scores indicate greater self-esteem. Cronbach's alpha in the current study was .90.

Procedure—Information regarding the data collection procedures is provided in the General Method section.

Statistical analysis

Confirmatory factor analysis: A CFA using maximum likelihood estimation within the mixed-gender sample was conducted to evaluate the factor structure of the frequency items that was identified in the EFA. In addition, because each frequency item in the final scale would have an accompanying direction and effect item, an explicit goal of this analysis was to minimize the number of frequency items to reduce participant burden, while maintaining the psychometric integrity of the subscales. Multiple fit indices were examined to evaluate model fit. Guidelines have suggested that comparative fit index (CFI) values of .90 or higher indicate good model fit (Bentler, 1990), whereas CFI values of .95 or higher indicate excellent fit (Hu & Bentler, 1999). Root-meansquare error of approximation (RMSEA) values of .08 or less (Browne & Cudeck, 1993) and standardized root-mean-square residual (SRMR) values of .05 or less (Byrne, 1998) indicate good fit. Modification indices were used to identify sources of misfit and reduce the number of frequency items in the final scale. The CFA was conducted using Mplus 7.0 (Muthén & Muthén, 2012). Missing data were handled using maximum likelihood estimation.

Internal consistency reliability: Following identification of the frequency subscales, associated direction and effect subscales were calculated, and internal consistency for each of the subscales was assessed in men and women separately using Cronbach's alpha. Alpha values of .70 indicate acceptable reliability (Bland & Altman, 1997).

Construct validity: Convergent validity was assessed among men and women separately via Pearson product–moment correlations between the PACS-3 subscales and extant measures of appearance comparisons, body satisfaction, disordered eating, and self-esteem. A correlation of .1 was considered small, .3 medium, and .5 or more large (Cohen, 1988). The PACS-3 frequency, direction, and effect subscales were expected to demonstrate (a) medium to large positive associations with other comparison measures and disordered eating, (b) medium to large negative associations with body satisfaction, and (c) small to medium negative associations with self-esteem. Consistent with previous literature, associations were expected to be larger among women compared to men (Carlson Jones, 2004; Davison & McCabe, 2005).

Incremental validity: Hierarchical multiple regression analyses were performed within male and female samples separately to evaluate whether the PACS-3 is able to predict variance in disordered eating and body satisfaction above and beyond that of extant measures of appearance comparison (i.e., PACS, UPACS–DACS). Analyses controlled for BMI because it is a well-established predictor of disordered eating and body image (Rø,

Reas, & Rosenvinge, 2012). BMI was entered at Step 1. The PACS, UPACS, and DACS scores were entered at Step 2. The PACS-3 Frequency, Direction, and Effect scores were entered at Steps 3, 4, and 5, respectively. A statistically significant R^2 change at Steps 3, 4, and 5 would signal the incremental validity of the PACS-3 subscales. Problems of multicollinearity were indicated by tolerance values less than .10 and a variance inflation factor [VIF] values greater than 10.0 (Kline, 2011).

Test–retest reliability: The 2-week test–retest reliability for the PACS-3 was examined via intraclass correlation coefficients between the PACS-3 scores at the first and second administrations. Correlations of .70 or higher indicate good test–retest reliability (Crocker & Algina, 2008).

Results

Confirmatory factor analysis—Results of the CFA using the frequency items indicated that the 25-item, three-factor solution generally provided less than acceptable fit to the data, $\chi^2(272, N = 773) = 19{,}672.04$, $p < .001$, CFI = .88, RMSEA = .11, SRMR = .05. Modification indices indicated correlated errors among pairs of items within the same subscale that shared an identical stem (e.g., “When I’m eating in a restaurant, I compare my overall appearance to the appearance of others” and “When I’m eating in a restaurant, I compare my weight/shape to the weight/shape of others”). This pattern suggests that one item from the pair may be eliminated from the subscale to reduce redundancy while maintaining adequate construct coverage. CFA modification indices were used to identify item pairs with highly correlated errors. The procedure for item deletion was as follows: Following the CFA, the largest modification index was identified, and each of the two items was carefully reviewed. Theory, item–total correlations, subscale reliability, factor loadings, and item-level regressions predicting disordered eating and body satisfaction were consulted to guide item elimination. In addition, care was taken to retain an equal number of items within each of the three frequency subscales. After each item deletion, the newly adjusted scale was reanalyzed using CFA, and the procedure was repeated. Given interest in minimizing participant burden, this procedure was used to arrive at a version of the scale containing four items per subscale (i.e., 12 total frequency items) and a version containing three items per subscale (i.e., nine total frequency items). The four-item subscale solution provided good fit to the data, $\chi^2(51, N = 771) = 325.52$, $p < .001$, CFI = .96, RMSEA = .08, SRMR = .03. The three-item subscale solution provided good fit according to the CFI and SRMR, and significantly improved fit according to the chi-square, $\chi^2(24, N = 771) = 179.37$, $p < .001$, CFI = .97, RMSEA = .09, SRMR = .03. Although the RMSEA value slightly exceeded cutoffs for good fit in the three-item subscale version of the scale, this fit statistic penalizes models with small degrees of freedom (i.e., fewer than 50; Kenny, Kaniskan, & McCoach, 2015). Therefore, the RSMEA for the three-item subscale version may provide a biased estimate of the model fit. Given this, both versions were examined to assess the reliability, convergent validity, and predictive utility of the resulting subscales. These analyses indicated that the three-item frequency subscales performed similarly to the four-item frequency subscales. Therefore, the version containing three items per subscale was preferred, because this would reduce the total number of items in the PACS-3 to 27 (i.e., nine frequency items, nine direction items, and nine effect items), whereas the four-item

subscales would result in a total of 36 items (i.e., 12 frequency items, 12 direction items, and 12 effect items) within the overall scale. Subsequently, the final version of the PACS-3 comprises three frequency subscales containing three items each (i.e., Proximal: Frequency, Distal: Frequency, Muscular: Frequency), three direction subscales containing three items each (Proximal: Direction, Distal: Direction, Muscular: Direction), and three effect subscales containing three items each (Proximal: Effect, Distal: Effect, Muscular: Effect). In addition, because clinicians and researchers may be interested in examining overall frequency, direction, and effect scores, subscales reflecting Total Frequency (i.e., mean of Proximal: Frequency, Distal: Frequency, Muscular: Frequency subscales), Total Direction (i.e., mean of Proximal: Direction, Distal: Direction, Muscular: Direction subscales), and Total Effect (i.e., mean of Proximal: Effect, Distal: Effect, Muscular: Effect subscales) were calculated. Table 3 presents item means and corrected item–total correlations for the final PACS-3. The final formatted scale may be found in the online supplemental materials.

Internal consistency reliability, subscale means, and intercorrelations between subscales—Cronbach's alpha, means, and intercorrelations between the PACS-3 subscales within the male and female samples are presented in Table 4. Internal consistency values of the PACS-3 subscale scores were good at .85 or higher among women and .76 or higher among men. Subscale means ranged from 1.91 (Muscularity: Frequency) to 3.68 (Distal: Direction) within the female sample and 2.23 (Distal: Frequency) to 3.38 (Distal: Direction) within the male sample. Correlations among the PACS-3 subscales were positive, and generally stronger within the female sample compared to the male sample.

Construct validity—As expected, correlations between the PACS-3 subscales and convergent measures were generally stronger within the female sample compared to the male sample (see Table 5). The PACS generally demonstrated large associations with the PACS-3 Frequency subscales in both male and female samples, supporting the convergent validity of the PACS-3 Frequency scores. The UPACS was moderately positively related to the Direction and Effect subscales in both men and women, whereas the DACS demonstrated small positive associations with the PACS-3 Direction and Effect subscales. Consistent with study hypotheses, in the female sample, the PACS-3 Frequency, Direction, and Effect subscales generally demonstrated medium positive associations with the EDE-Q Restraint and Eating Concern subscales, whereas they generally demonstrated large associations with the EDE-Q Weight and Shape Concern subscales. Among men, the PACS-3 subscales generally demonstrated medium associations with EDE-Q subscales. In both male and female samples, the MBSRQ-AE generally demonstrated medium to large negative associations with the PACS-3 subscales, whereas the RSES demonstrated small to medium associations with the subscales.

Incremental validity—Results for the regression analyses using the male and female samples can be found in Table 6. In the female sample, multicollinearity was judged to not be a problem (tolerance ≥ .29, VIF ≤ 3.49). Step 3 in the analyses indicated that after accounting for the contribution of BMI and existing measures of appearance, the PACS-3 Total Frequency subscale predicted unique variance in both disordered eating ($\Delta R^2 = .05$), $F(1, 523) = 46.92$, $p < .001$, and body satisfaction ($\Delta R^2 = .01$), $F(1, 573) = 6.83$, $p < .01$.

Results from Step 4 indicated that the PACS-3 Total Direction subscale predicted further unique variance in both disordered eating (ΔR^2 = .03), $F(1, 522) = 34.25$, $p < .001$, and body satisfaction (ΔR^2 = .15), $F(1, 516) = 134.97$, $p < .001$. Finally, results from Step 5 indicated that the PACS-3 Total Effect subscale predicted additional unique variance in both disordered eating (ΔR^2 = .02), $F(1, 521) = 18.54$, $p < .001$, and body satisfaction (ΔR^2 = .02), $F(1, 515) = 15.09$, $p < .001$.

In the male sample, multicollinearity was again judged to not be a problem (tolerance ≥ .20, VIF ≤ 5.08). In Step 3, the PACS-3 Total Frequency subscale did not predict unique variance in either disordered eating (ΔR^2 = .01), $F(1, 171) = 1.13$, $p = .29$, or body satisfaction (ΔR^2 = .01), $F(1, 168) = 49.95$, $p = .24$. The PACS-3 Total Direction subscale predicted unique variance in both disordered eating (ΔR^2 = .06), $F(1, 170) = 13.99$, $p < .001$, and body satisfaction (ΔR^2 = .15), $F(1, 167) = 39.02$, $p < .001$. Finally, the PACS-3 Total Effect subscale did not predict unique variance in disordered eating (ΔR^2 = .01), $F(1, 169) = 3.16$, $p = .08$, but did predict additional unique variance in body satisfaction (ΔR^2 = .05), $F(1, 166) = 13.50$, $p < .001$.

Test–retest reliability—The test–retest reliability for the PACS-3 subscales was good, with intraclass correlation coefficients ranging from .74 to .88 (see Table 7).

Discussion

Sociocultural theories of body-image disturbance and disordered eating implicate appearance-comparison processes in the development of these negative outcomes, and a large body of research has supported the proposed impact of appearance comparisons on body-image and eating behaviors (Myers & Crowther, 2009). Further, evidence has suggested a potential moderating role for the direction of the comparison (i.e., upward or downward), target of the comparison (i.e., distal vs. proximal), and immediate emotional response to the comparison (i.e., positive vs. negative). Existing measures of appearance-comparison frequency have had significant limitations, and none have been able to comprehensively assess each of these important elements in the appearance-comparison process. The most commonly used measure of appearance comparison, the Physical Appearance Comparison Scale (Thompson et al., 1991), was recently revised to improve the psychometric functioning of the scale, increase gender neutrality, and examine appearance comparisons in a variety of contexts (Schaefer & Thompson, 2014). The current study sought to build upon these improvements, further amending the scale to provide an assessment of (a) weight–shape, muscularity, and overall physical appearance comparisons; (b) distal versus proximal comparisons; (c) upward versus downward comparisons; and (d) the acute emotional impact of comparisons. The psychometric properties of the newly revised measure, labeled the *PACS-3,* were then examined among college men and women.

Analyses identified three subscales reflecting frequency of proximal comparisons of weight, shape, and overall appearance; distal comparisons of weight, shape, and overall appearance; and comparisons of muscularity to distal and proximal targets. In addition, subscales reflecting the direction and effect of these comparisons were calculated and evaluated. Findings from the current set of studies support the reliability and validity of the PACS-3

subscale scores in women and men. Internal consistency and test–retest reliability were good to excellent in all samples. Further, the PACS-3 subscale scores exhibited (a) significant positive associations with established measures of disordered eating and appearance-comparison frequency and (b) negative associations with measures of body satisfaction and self-esteem. Associations were generally somewhat weaker among men, consistent with previous literature suggesting a significant but smaller impact of appearance comparisons among male individuals (Carlson Jones, 2004; Davison & McCabe, 2005). It is important to note that regression analyses indicated that the PACS-3 significantly improves the prediction of body satisfaction and disordered eating, relative to existing measures of appearance comparison and weight status. Specifically, among women, the PACS-3 subscales accounted for an additional 18% of variance in body satisfaction and an additional 10% of variance in disordered eating, over and above BMI and three existing measures of appearance comparison. Among men, the PACS-3 subscales accounted for an additional 21% of variance in body satisfaction and an additional 8% of variance in disordered eating. These results provide compelling evidence that the PACS-3 is able to tap aspects of appearance comparison with relevance to both body-image and eating pathology that have not been adequately represented in existing measures.

General Discussion

Overall, the PACS-3 forwards the measurement of appearance comparison in several important ways. Whereas previous scales have generally focused on broad comparisons of one's "looks" or physical appearance, the PACS-3 is the first measure to differentially assess comparisons of weight, shape, and overall physical appearance, as well as comparisons of muscularity. Thus, the PACS-3 captures aspects of physical appearance directly implicated in dominant Western appearance ideals (Thompson & Cafri, 2007; Thompson et al., 1999) and with relevance to both men's and women's appearance concerns. Notably, because recent research has suggested the importance of investigating muscularity-oriented manifestations of disordered eating, which may be the predominant presentation in men (Lavender, Brown, & Murray, 2017), it is likely that muscularity comparisons would strongly relate to disordered eating patterns organized around these body-image concerns. In addition, the PACS-3 differentially assesses comparisons with proximal and distal targets. Because research has sometimes produced mixed findings regarding the potential moderating influence of comparison target on body image and eating behavior (Myers & Crowther, 2009), the inclusion of distal and proximal subscales may help facilitate further work in this area. The PACS-3 also offers a more careful and person-centered approach toward measuring upward and downward comparison tendencies. That is, the PACS-3 direction subscales capture the respondent's interpretation of the comparison as upward or downward, rather than relying on stereotypes of or assumptions about the respondent's own weight status. Finally, the PACS-3 offers a unique ability to assess the acute emotional impact of comparisons. Indeed, examination of the beta weights in the final regression models highlight the importance of the immediate emotional effect of comparisons as a predictor of harmful outcomes. Although measures of other psychological constructs with relevance to body image have incorporated effect scales (Herbozo & Thompson, 2006;

Thompson, Cattarin, Fowler, & Fisher, 1995), the PACS-3 is the first comparison measure to directly assess this process.

Limitations of the current investigation indicate several avenues for future research. Although the PACS-3 muscularity subscales are expected to correlate strongly with drive for muscularity (McCreary & Saucier, 2009) and muscle dysmorphia, the current study was not able to assess associations with these constructs. Therefore, future work may seek to examine these relationships to further assess the convergent validity of the PACS-3. Further, the current muscularity subscales are not able to differentiate between proximal and distal comparisons of this dimension of appearance. Consequently, future work may seek to examine whether the target of the comparison has bearing on the effect of men's and women's muscularity comparisons. In addition, although the original PACS was utilized to assess the convergent and incremental validity of the PACS-3 due to the scale's ubiquity of use within eating disorder and body-image research, future work may seek to examine the incremental validity of the PACS-3 relative to the more recently developed but less commonly utilized PACS–R. Similarly, the current study does not include measures to assess the discriminant validity of the PACS-3. Future work may seek to address this issue by examining associations between PACS-3 subscales and measures of theoretically unrelated constructs. In addition, the current study is limited by the demographic characteristics of the samples. In particular, although the large male sample ($n = 419$) may be considered a strength of the study, women constituted the majority (i.e., 72%). Accordingly, it is possible that the imbalanced gender ratio may have impacted the results of the EFA, CFA, and item-reduction procedures, skewing the scale toward more female-gendered constructs. Future investigations are encouraged to continue evaluating the PACS-3 among men, and researchers may find it useful to examine all 48 original frequency items (available as supplemental materials) to ensure adequate representation of male-gendered constructs. In addition, although body satisfaction appears to be relatively stable across adulthood (Tiggemann, 2004), future investigations may seek to examine the PACS-3 and associations with theorized correlates in older and younger samples. Further, because research has suggested that the relationships between appearance comparisons and eating or body-image disturbances may be moderated by ethnicity (Rancourt, Schaefer, Bosson, & Thompson, 2016; Schaefer, Thibodaux, Krenik, Arnold, & Thompson, 2015), future work may seek to examine the PACS-3 in ethnically diverse samples. Finally, because the current study is cross-sectional in design, causal inferences cannot be drawn. Future work may seek to examine the prospective association between the PACS-3 subscales and theorized downstream effects on eating and body image.

Given the wealth of evidence supporting the role of appearance comparisons in the development and maintenance of body image and eating disturbance (Leahey et al., 2007; Myers & Crowther, 2009), cognitive–behavioral interventions recommend addressing these harmful processes within treatment. Toward this end, we suggest that the PACS-3 could be utilized to quantify baseline appearance-comparison levels. If elevated comparisons are noted, patient feedback regarding heightened levels of deleterious appearance comparisons, as well as psychoeducation regarding the harmful effects of comparisons, may be provided. Because research has suggested that brief monitoring of appearance comparisons leads to reductions in comparison frequency (Leahey et al., 2011), patients may be asked to log their

comparisons to raise awareness of this often-automatic behavior. As treatment unfolds, patient progress regarding appearance-comparison frequency, direction, and impact may then be monitored at regular intervals to assess the effectiveness of intervention strategies.

In sum, the PACS-3 offers several advantages over previous versions of the scale, providing researchers and clinicians with a comprehensive assessment of appearance-comparison behaviors and the ability to examine aspects of comparisons with theorized or demonstrated relevance to body image and eating outcomes. The current investigation provides preliminary evidence for the reliability and validity of PACS-3 subscale scores in college men and women. Continued examination of the scale, including psychometric testing in diverse samples and prospective studies, should prove beneficial.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Public Significance Statement

This study describes a new measure of appearance-comparison processes that are involved in the development and maintenance of body dissatisfaction and disordered eating. This scale demonstrates improvements over existing measures of appearance comparison and is likely to be useful for both clinicians and researchers interested in measuring the behavior.

Table 1

Gender, Age, Body Mass Index, and Ethnicity for All College Student Samples

Variable	Sample 1	Sample 2	Test–retest sample
Gender (female): *N* (%)	741 (70.6)	792 (74.6)	170 (79.4)
Age			
M (*SD*)	20.57 (2.57)	20.51 (2.46)	19.62 (2.35)
Range	18–30	18–30	18–29
Body mass index: *M* (*SD*)	24.14 (4.92)	24.06 (5.08)	23.68 (4.22)
Ethnicity (%)			
Caucasian	53.9	52.7	47.9
Hispanic	16.7	13.9	15.4
African American/Black	13.7	13.3	17.8
Mixed ethnicity or other	8.7	10.8	10.1
Asian	6.8	8.9	8.3
American Indian or Alaskan native	.1	.3	.6
Native Hawaiian or Pacific islander	.1	.1	—

Table 2

Pattern Coefficients, Eigenvalues, and Percentage of Variance for the Preliminary PACS-3 Frequency Items in Men and Women

Item	Proximal: Frequency	Distal: Frequency	Muscularity: Frequency
1. When I watch television, I compare my overall appearance to the appearance of the actors/actresses.	.10	**.80**	−.08
3. When I watch a movie, I compare my overall appearance to the appearance of the actors/actresses.	.10	**.84**	−.06
4. When I see a billboard or advertisement, I compare my overall appearance to the appearance of the models in the billboard or advertisement.	−.04	**.80**	.08
6. When I'm surfing the Internet, I compare my overall appearance to the overall appearance of same-sex others that I see.	.25	**.55**	−.00
9. When I'm out in public, I compare my overall appearance to the appearance of others.	**.81**	.02	−.02
10. When I meet a new person (same sex), I compare my overall appearance to his/her appearance.	**.84**	−.05	.01
11. When I'm at work or school, I compare my overall appearance to the appearance of others.	**.89**	−.10	.02
13. When I'm at a party or social gathering, I compare my overall appearance to the appearance of others.	**.80**	.01	−.04
15. When I'm with a group of friends, I compare my overall appearance to the appearance of others.	**.75**	.09	−.02
16. When I'm eating in a restaurant, I compare my overall appearance to the appearance of others.	**.52**	.15	.14
17. When I watch television, I compare my weight/shape to the weight/shape of the actors/actresses.	.17	**.79**	−.08
18. When I see a model in a magazine, I compare my weight/shape to his/her weight/shape.	.07	**.80**	−.01
19. When I watch a movie, I compare my weight/shape to the weight/shape of the actors/actresses.	.12	**.80**	.00
20. When I see a billboard or advertisement, I compare my weight/shape to the weight/shape of the models in the billboard or advertisement.	−.01	**.72**	.13
25. When I'm out in public, I compare my weight/shape to the weight/shape of others.	**.73**	.17	−.03
26. When I meet a new person (same sex), I compare my weight/shape to his/her weight/shape.	**.76**	.14	−.02
27. When I'm at work or school, I compare my weight/shape to the weight/shape of others.	**.78**	.04	.03
29. When I'm at a party or social gathering, I compare my weight/shape to the weight/shape of others.	**.71**	.14	−.01
31. When I'm with a group of friends, I compare my weight/shape to the weight/shape of others.	**.75**	.11	−.01
32. When I'm eating in a restaurant, I compare my weight/shape to the weight/shape of others.	**.48**	.16	.21
33. When I watch television, I compare my muscularity to the muscularity of the actors/actresses.	−.05	.09	**.88**
34. When I see a model in a magazine, I compare my muscularity to his/her muscularity.	−.12	.18	**.85**
35. When I watch a movie, I compare my muscularity to the muscularity of the actors/actresses.	−.06	.04	**.94**
37. When I see a famous athlete or watch an athletic event, I compare my muscularity to the muscularity of the athlete.	.10	−.14	**.77**
41. When I'm out in public, I compare my muscularity to the muscularity of others.	.16	−.17	**.84**
Eigenvalues	13.99	2.78	1.36
Percentage of variance	55.97	11.12	5.46

Note. Factor loadings and eigenvalues were obtained using principal-axis factoring with Promax oblique rotation. Factor loadings greater than .40 appear in boldface. PACS-3 = Physical Appearance Comparison Scale–3.

Table 3

Item Descriptive Statistics and Corrected Item–Total Correlations for the Final PACS-3 in a Mixed-Gender Sample

Item	*M*	*SD*	Item–total correlation
13. When I'm at a party or social gathering, I compare my overall appearance to the appearance of others.	3.00	1.25	.71
13a. When I make these comparisons, I typically believe that I look _____ than the person to whom I am comparing myself.	3.03	.93	.71
13b. When you make these comparisons, how does it usually make you feel?	3.00	.96	.72
25. When I'm out in public, I compare my weight/shape to the weight/shape of others.	2.85	1.18	.79
25a. When I make these comparisons, I typically believe that I look _____ than the person to whom I am comparing myself.	2.96	.91	.77
25b. When you make these comparisons, how does it usually make you feel?	2.95	.94	.79
26. When I meet a new person (same sex), I compare my weight/shape to his/her weight/shape.	2.72	1.25	.78
26a. When I make these comparisons, I typically believe that I look _____ than the person to whom I am comparing myself.	3.00	.83	.79
26b. When you make these comparisons, how does it usually make you feel?	2.94	.89	.81
3. When I watch a movie, I compare my overall appearance to the appearance of the actors/actresses.	2.78	1.23	.75
3a. When I make these comparisons, I typically believe that I look _____ than the person to whom I am comparing myself.	3.66	.78	.72
3b. When you make these comparisons, how does it usually make you feel?	3.38	.84	.78
17. When I watch television, I compare my weight/shape to the weight/shape of the actors/actresses.	2.66	1.30	.83
17a. When I make these comparisons, I typically believe that I look _____ than the person to whom I am comparing myself.	3.57	.82	.76
17b. When you make these comparisons, how does it usually make you feel?	3.38	.87	.80
18. When I see a model in a magazine, I compare my weight/shape to his/her weight/shape.	2.63	1.34	.77
18a. When I make these comparisons, I typically believe that I look _____ than the person to whom I am comparing myself.	3.67	.89	.68
18b. When you make these comparisons, how does it usually make you feel?	3.46	.94	.75
34. When I see a model in a magazine, I compare my muscularity to his/her muscularity.	1.99	1.22	.80
34a. When I make these comparisons, I typically believe that I look _____ than the person to whom I am comparing myself.	3.39	.95	.73
34b. When you make these comparisons, how does it usually make you feel?	3.16	.92	.78
35. When I watch a movie, I compare my muscularity to the muscularity of the actors/actresses.	2.07	1.26	.84
35a. When I make these comparisons, I typically believe that I look _____ than the person to whom I am comparing myself.	3.45	.84	.74
35b. When you make these comparisons, how does it usually make you feel?	3.20	.87	.77
41. When I'm out in public, I compare my muscularity to the muscularity of others.	2.02	1.16	.77
41a. When I make these comparisons, I typically believe that I look _____ than the person to whom I am comparing myself.	2.99	.82	.59
41b. When you make these comparisons, how does it usually make you feel?	2.90	.79	.64

Note. For item–total correlations, total scores from the relevant subscale are utilized (e.g., proximal frequency item with the Proximal: Frequency subscale). PACS-3 = Physical Appearance Comparison Scale–3.

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Table 4

Cronbach's Alpha, Means, and Correlations Among the PACS-3 Subscales for Men and Women

Subscale	α	*M* (*SD*)	1	2	3	4	5	6	7	8	9	10	11	12
1. Proximal: Frequency	.88/.87	2.53 (1.08)/2.96 (1.08)	—	.23**	.26**	.71**	.23**	.34**	.71**	.16*	.25**	.89**	.23**	.32**
2. Proximal: Direction	.88/.87	2.76 (.77)/3.05 (.81)	.36**	—	.85**	.21**	.56**	.60**	.14	.49**	.57**	.22*	.82**	.77**
3. Proximal: Effect	.86/.89	2.73 (.80)/3.03 (.84)	.32**	.90**	—	.26**	.50**	.64**	.10	.41**	.61**	.24**	.71**	.86**
4. Distal: Frequency	.87/.89	2.23 (1.07)/2.85 (1.16)	.72**	.36**	.35**	—	.26**	.41**	.77**	.19*	.28**	.91**	.27**	.35**
5. Distal: Direction	.82/.85	3.38 (.74)/3.68 (.72)	.43**	.62**	.60**	.52**	—	.78**	.14	.69**	.62**	.23**	.88**	.71**
6. Distal: Effect	.89/.88	3.05 (.78)/3.47 (.77)	.45**	.61**	.68**	.61**	.82**	—	.21**	.59**	.79**	.36**	.76**	.91**
7. Muscularity: Frequency	.88/.91	2.39 (1.10)/1.91 (1.08)	.48**	.15**	.18**	.51**	.17**	.20**	—	.19*	.28**	.92**	.18*	.21**
8. Muscularity: Direction	.76/.85	3.25 (.76)/3.28 (.78)	.31**	.56**	.57**	.36**	.64**	.58**	.37**	—	.72**	.20**	.87**	.64**
9. Muscularity: Effect	.83/.86	2.95 (.78)/3.12 (.75)	.34**	.55**	.61**	.42**	.64**	.67**	.40**	.85**	—	.30**	.75**	.90**
10. Total: Frequency	.94/.91	2.39 (.98)/2.58 (.94)	.87**	.35**	.34**	.89**	.45**	.50**	.78**	.41**	.45**	—	.26**	.33**
11. Total: Direction	.91/.93	3.11 (.66)/3.32 (.69)	.39**	.88**	.82**	.46**	.87**	.77**	.21**	.85**	.78**	.43**	—	.83**
12. Total: Effect	.93/.94	2.89 (.70)/3.20 (.71)	.38**	.82**	.90**	.49**	.77**	.89**	.22**	.75**	.86**	.44**	.89**	—

Note. Cronbach's alpha coefficients and means appear before the backslash for men and after for women. Correlation coefficients appear above the diagonal for men and below the diagonal for women. PACS-3 = Physical Appearance Comparison Scale–3.

* $p < .05$.

** $p < .01$.

Psychol Assess. Author manuscript; available in PMC 2020 January 05.

Table 5

Correlations Between the PACS-3 Subscales and Convergent Measures for Men and Women

	PACS-3											
	Proximal			Distal			Muscularity			Total		
Measure	Frequency	Direction	Effect	Frequency	Direction	Effect	Frequency	Direction	Effect	Frequency	Direction	Effect
PACS	.73**/.71**	.09/.22**	.12/.19**	.54**/.59**	.15/.34**	.25**/.35**	.57**/.35**	.18*/.28**	.25**/.32**	.67**/.65**	.16*/.28**	.23**/.28**
UPACS	.65**/.64**	.22**/.38**	.21**/.37**	.62**/.70**	.34**/.47**	.45**/.50**	.62**/.34**	.30**/.36**	.37**/.39**	.70**/.66**	.34**/.45**	.39**/.47**
DACS	.50**/.37**	.16*/.06	.14/.05	.40**/.35**	.08/.19**	.22**/.18**	.44**/.26**	.10/.15**	.13/.11*	.49**/.39**	.15*/.15**	.18*/.12**
EDE-Q Restraint	.27**/.31**	.10/.26**	.12/.2S**	.23**/.41**	.10/.31**	.15/.39**	.22*/.22**	.04/.27**	−01/.31**	.26**/.37**	.12/.30**	.12/.34**
EDE-Q Eating Concern	.26**/.39**	.36**/.32**	.39**/.36**	.33**/.43**	.21**/.32**	.34**/.43**	.13/.32**	.26**/.29**	.30**/.33**	.27**/.45**	.33**/.33**	.39**/.41**
EDE-Q Shape Concern	.33**/.52**	.46**/.51**	.44**/.52**	.36**/.59**	.39**/.52**	.52**/.61**	.18*/.29**	.35**/.45**	.39**/.48**	.32**/.55**	.45**/.54**	.50**/.60**
EDEQ Weight Concern	.32**/.49**	.48**/.52**	.44**/.53**	.38**/.58**	.39**/.49**	.49**/.60**	.19**/.30**	.29**/.43**	.32**/.47**	.33**/.54**	.43**/.53**	.46**/.59**
EDEQ Global	.34**/.48**	.39**/.46**	.39**/.48**	.37**/.57**	.31**/.47**	.43**/.58**	.21**/.31**	.27**/.41**	.28**/.45**	.34**/.54**	.38**/.49**	.41**/.55**
MBSRQ-AE	−.16*/−.31**	−.53**/−.62**	—.54**/—.61**	−.22**/−.40**	−.40**/−.46**	−.47**/−.54**	−.03/−.16**	−.35**/−.48**	—.41**/—.49**	−.15*/−.34**	−.48**/−.58**	−.55**/−.62**
RSES	−.28**/−.29**	−.37**/−.42**	−.44**/−.42**	−.35**/−.39**	−.25**/−.28**	−.39**/−.36**	−.13/−.25**	−.197−.26**	−.33**/−.28**	−.28**/−.37**	−.35**/−.38**	−.46**/−.42**
BMI	−.04/.12**	.28**/.39**	.23**/.36**	.00/.10*	.12/.23**	.16/.29**	−.06/−.01	.04/.15**	.08/.19**	−.03/.09*	.16*/.31**	.17*/.33**

Note. Correlation coefficients appear before the backslash for men and after for women.PACS-3 = Physical Appearance Comparison Scale-3; PACS = Physical Appearance Comparison Scale; UPACS = Upward Physical Appearance Comparison Scale; DACS = Downward Appearance Comparison Scale; EDE-Q = Eating Disorder Examination Questionnaire; MBSRQ-AE = Multidimensional Body-Self Relations Questionnaire—Appearance Evaluation subscale; RSES = Rosenberg Self-Esteem Scale; BMI = body mass index.

* $p < .05$.

** $p < .01$.

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Table 6

Multiple Regression Analyses Predicting Disordered Eating and Appearance Satisfaction in Men and Women

	Women						Men					
	Disordered eating			Appearance satisfaction			Disordered eating			Appearance satisfaction		
Step and predictor	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β	R^2	ΔR^2	β
Step 1	.14***	.14***		.16***	.16***		.10***	.10***		.15***	.15**	
BMI			.38***			−.39***			.32***			−.38**
Step 2	.40***	.25***		.29***	.13***		.23***	.13***		.18***	.04*	
BMI			.36***			−.39***			.32***			−.40**
PACS			.21***			−.02			.16			.06
UPACS			.33***			−.36***			.13			−.22*
DACS			.05			.03			.17*			−.01
Step 3	.45***	.05***		.30***	.01**		.24***	.01		.19***	.01	
BMI			.35***			−.38***			.33***			−.40***
PACS			.09			.04			.11			.11
UPACS			.21			−.31***			.09			−.18
DACS			.01			.05			.15*			.01
PACS-3 Freq			.32***			−.14**			.10			−.12
Step 4	.48***	.03***		.44***	.15***		.29***	.06***		.34***	.15***	
BMI			.28***			−.24***			.28***			−.32***
PACS			.10*			.01			.15			.05
UPACS			.14**			−.16			.00			−.04
DACS			.02			.03			.16*			.00
PACS-3 Freq			.27***			−.03			.07			−.06
PACS-3 Dir			.23***			−.47***			.26***			−.43***
Step 5	.50***	.02***		.46***	.02***		.31***	.01		.39***	.05***	
BMI			.26***			−.22***			.27***			−.30***

	Women						Men					
	Disordered eating			Appearance satisfaction			Disordered eating			Appearance satisfaction		
Step and predictor	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2	β	R^2	Δ R^2	β
PACS			.12**			.00			.14			.06
UPACS			.11*			−.13**			−.01			−.01
DACS			.04			.02			.16*			−.01
PACS-3 Freq			.24***			.00			.05			−.03
PACS-3 Dir			−.02			−.24**			.10			−.10
PACS-3 Eff			.30***			−.28***			.21			−.42***

Note. BMI = body mass index; PACS = Physical Appearance Comparison Scale; UPACS = Upward Physical Appearance Comparison Scale; DACS = Downward Appearance Comparison Scale; PACS-3 = Physical Appearance Comparison Scale–3; Freq = Frequency (Total Frequency subscale); Dir = Direction (Total Direction subscale); Eff = Effect (Total Effect subscale).

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Table 7

Test–Retest Reliability for the PACS-3 Subscales in a Mixed-Gender Sample

Subscale	Intraclass correlation coefficient
Proximal: Frequency	.85
Proximal: Direction	.85
Proximal: Effect	.79
Distal: Frequency	.88
Distal: Direction	.80
Distal: Effect	.78
Muscularity: Frequency	.76
Muscularity: Direction	.77
Muscularity: Effect	.74
Total Frequency	.85
Total Direction	.87
Total Effect	.83

Note. PACS-3 = Physical Appearance Comparison Scale–3.