Yang, H., & Stoeber, J. (2012). The Physical Appearance Perfectionism Scale: Development and preliminary validation. *Journal of Psychopathology and Behavioral Assessment, 34*(1), 69-83. DOI: 10.1007/s10862-011-9260-7

The Physical Appearance Perfectionism Scale:

Development and Preliminary Validation

Hongfei Yang

Zhejiang University

Joachim Stoeber

University of Kent

Corresponding author:

Dr. Hongfei Yang
Department of Psychology and Behavioral Sciences
Zhejiang University
Xixi Campus
Hangzhou City
Zhejiang Province, 310028
P. R. of China
Email: hongfeiy@zju.edu.cn

Abstract

Eight studies with data from 2316 students are presented describing the development and preliminary validation of the Physical Appearance Perfectionism Scale (PAPS), a brief measure with two subscales: Worry About Imperfection and Hope For Perfection. Results from exploratory and confirmatory factor analyses confirmed the measure's two-dimensional structure. Moreover, correlation analyses provided first evidence for the two subscales' differential validity: Worry About Imperfection showed negative correlations with positive self-perceptions of one's appearance (e.g., appearance self-esteem) and positive correlations with maladaptive concerns aspects of perfectionism, physical appearance concerns (e.g., body image disturbances), and body weight control whereas Hope For Perfection showed positive correlations with positive striving aspects of perfectionism, positive self-perceptions, and impression management. In addition, all PAPS scores showed high reliability (Cronbach's alpha) and temporal stability (test-retest). Overall the findings suggest that the PAPS is a reliable and valid instrument to assess positive and negative aspects of physical appearance perfectionism.

Keywords: perfectionism; physical appearance; body image; social anxiety; self-esteem; dieting

The Physical Appearance Perfectionism Scale: Development and Preliminary Validation

Today's society puts great importance on people's physical appearance. We all are surrounded by pictures of other people who look "perfect": on billboards, in newspapers and magazines, on TV and in the movies, and on the internet. Perfect looks are highly valued because they symbolize success, happiness, and being loved and admired by others. Consequently, many people strive to look perfect, and many others are concerned about their physical appearance worrying that they may not look perfect. The purpose of the present study was to develop a measure of physical appearance perfectionism capturing individual differences in people's hopes and concerns about a perfect physical appearance. Moreover, it will also investigate how these hopes and concerns are related to dimensions of general perfectionism, body image, body satisfaction, and weight control and impression management behaviors.

Perfectionism and Physical Appearance

Perfectionism is a personality disposition characterized by striving for flawlessness and exceedingly high personal standards accompanied by overly critical self-evaluations and concerns about others' evaluations (Flett & Hewitt, 2002; Blankstein & Dunkley, 2002). Moreover, perfectionism is best conceptualized as a multidimensional characteristic. In particular, two broad dimensions of perfectionism need to be differentiated: one dimension termed "positive striving" capturing the self-oriented striving and high personal standards aspects of perfectionism, and one dimension termed "maladaptive evaluation concerns" (or shorter, "maladaptive concerns") capturing socially prescribed perfectionism, critical self-evaluations, and concerns about mistakes and about others' evaluation (Bieling, Israeli, & Antony, 2004; Frost, Heimberg, Holt, Mattia, & Neubauer, 1993; see Stoeber & Otto, 2006, for a comprehensive review).

In the past decades, a number of studies have pointed to the associations between maladaptive concerns and different forms of appearance concerns and appearance management behaviors (e.g., Grammas & Schwartz, 2009; Haase, Prapavessis, & Owens, 2002; Hanstock & O'Mahony, 2002; Hewitt, Flett, & Ediger, 1995; Sherry et al., 2009). The studies found that socially prescribed perfectionism in young women was associated with higher levels of body-image dissatisfaction and avoidance of social situations where weight and appearance may be a focus (Hewitt et al., 1995). Moreover, it was associated with a greater tendency to be concerned about acne in particular and appearance in general (Hanstock & O'Mahony, 2002). These relations are not specific to women as was shown by Haase and colleagues (2002) who found that negative perfectionism, a form of perfectionism closely related to maladaptive concerns perfectionism, was associated with higher social physique anxiety in both male and female athletes. Also Sherry et al. (2009) reported no gender differences when they found that socially prescribed perfectionism in a community sample was associated with higher levels of distorted beliefs about the importance, influence, and meaning of physical appearance in one's life. Finally, a study investigating the relations of perfectionism and male body image found that socially prescribed perfectionism in male undergraduates was associated with higher levels of body dissatisfaction regarding muscularity, body fat, and height (Grammas & Schwartz, 2009).

All these studies investigated general perfectionism which is defined as a general disposition affecting people across various domains of life (Hewitt & Flett, 1991). However, there is emerging evidence that levels of perfectionism show marked differences between domains such as work, academics, sport, interpersonal relations, and home life (e.g., Cain, Bardone-Cone, Abramson, Vohs, & Joiner, 2008; Dunn, Gotwals, & Causgrove Dunn, 2005; McArdle, 2010; Mitchelson, 2009; Stoeber & Stoeber, 2009). Consequently, it is conceivable

that people differ also with respect to how perfectionistic they are regarding the domain of physical appearance.

So far little is known about physical appearance perfectionism and its relations with appearance concerns. To our knowledge, only three studies have been published examining appearance perfectionism. In the first study (Zhang, Yang, & Zhao, 2007), researchers developed a domain-specific perfectionism scale for college students with five subscales (i.e., physical appearance, academic, interpersonal, love, and character perfectionism) and found that only the physical appearance subscale showed a negative correlation with mental health, whereas the other subscales showed positive correlations, suggesting that physical appearance perfectionism shows unique relations compared to other forms of perfectionism. The second study (Cain et al., 2008) modified the items of the perfectionism subscale of the Eating Disorders Inventory (Garner, Olstead, & Polivy, 1983) to capture perfectionism in three domains: academic, interpersonal, and physical appearance (weight/shape). Results showed that, while all three domain measures predicted disordered eating (dieting, binge eating), physical appearance perfectionism showed significantly higher correlations with disordered eating than the other two perfectionism domains, suggesting that physical appearance perfectionism may be an important factor when investigating disordered eating. The final study (Stoeber & Stoeber, 2009) investigated the prevalence of perfectionistic tendencies in 22 different life domains including physical appearance in a sample of university students and an age-diverse sample of internet users. Results showed that physical appearance was the fourth most frequent domain for which students reported being perfectionistic, and the eighth most frequent for internet users: 40% of the students and 27% of the internet users indicated to be perfectionistic with respect to their physical appearance, suggesting that physical appearance is a domain of life where a considerable percentage of people are perfectionistic.

While these studies provide first indications of the importance of physical appearance perfectionism, they leave many open questions. For example, it is unclear how physical appearance perfectionism is related to the positive striving and maladaptive evaluation concerns dimensions of perfectionism. Whereas the findings of Zhang et al. (2007) and Cain et al. (2008) suggest that physical appearance perfectionism is a maladaptive form of perfectionism and thus should be more closely related to maladaptive concerns perfectionism, Stoeber and Stoeber (2009) found that being perfectionistic regarding physical appearance showed a positive correlation with socially prescribed perfectionism (which forms part of the maladaptive concerns dimension) in the internet sample, but a positive correlation with self-oriented perfectionism (which forms part of positive striving dimension) in the student sample. The reason for this may be that—like general perfectionism—physical appearance perfectionism is a multidimensional characteristics comprising positive striving and maladaptive concerns aspects, but the measures of physical appearance perfectionism used in the previous studies do not capture these different aspects. Both Zhang et al.'s (2007) and Cain et al.'s (2008) measures were unidimensional measures, and Stoeber and Stoeber's (2009) measure was only a single item. Consequently, it would be important to develop a multidimensional measure of physical appearance perfectionism that captures positive and negative aspects to provide an instrument for a more detailed investigation of the associations of physical appearance perfectionism with general perfectionism, self-perceptions regarding physical appearance, and behaviors aimed at improving one's physical appearance and making a favorable impression.

The Present Studies

Following the large body of theory and research on general perfectionism that has shown that perfectionism is best understood when multidimensional measures of perfectionism are used and both positive and negative aspects are considered (e.g., Bieling et al., 2004; Blankstein &

Dunkley, 2002; Chang, 2006; Enns & Cox, 2002; Frost et al., 1993; Hill et al., 2004; Rice & Preusser, 2002; Slade & Owens, 1998; Slaney, Rice, & Ashby, 2002; Stoeber, Kobori, & Tanno, 2010; Stoeber & Otto, 2006; Stoeber & Rennert, 2008; Terry-Short, Owens, Slade, & Dewey, 1995; Yang, Zhang, & Zhao, 2007), we aimed to develop a brief multidimensional measure that would capture both positive and negative aspects of physical appearance perfectionism: the Physical Appearance Perfectionism Scale (PAPS). Overall, eight studies are presented describing the development and preliminary validation of the PAPS. First, a pool of items was generated based on an open-ended survey, related scale items and brain-storming results. Then we constructed the first version of the PAPS (Study 1) that was subsequently refined over the following studies (Studies 2 and 3). To investigate the structure of the measure, we employed both exploratory factor analysis (EFA; Studies 2 and 3) and confirmatory factor analysis (CFA; Studies 4, 5, and 8). To investigate the PAPS scores' stability, Study 6 retested students after 4 weeks. To investigate the validity of the PAPS we examined relations with multidimensional measures of general perfectionism (Studies 3 and 8), positive and negative self-perceptions related to one's physical appearance and body image concerns (Studies 4 and 8), body weight control behaviors (Study 5), and impression management behaviors (Study 7).

Studies 1-3: Development and First Validation

Method

Participants and procedure. For Studies 1-3, undergraduate students from the first author's university, a large Chinese university in the eastern coastal region of the People's Republic of China, were recruited: for Study 1, 108 students (52 male, 56 female) with an average age of 20.1 years (*SD* = 1.2; range = 17-23 years); for Study 2, 135 students (84 male, 49 female, 2 no gender indicated) with an average age of 20.0 years (*SD* = 1.3; range = 16-23 years); and for Study 3, 131 students (65 female, 65 male, 1 no gender indicated) with an average

age of 20.7 years (*SD* = 1.1; range = 17-23 years). All students were recruited after class, volunteered to participate in the study without compensation, and completed paper-and-pencil versions of all measures.

Measures. As a first step, we aimed to obtain a pool of items from which to construct a two-dimensional scale measuring negative (concerns) and positive (strivings) aspects of physical appearance perfectionism. To this aim, we distributed an open-ended questionnaire to the students of Study 1 with the question: "What kinds of thoughts, feelings, and behaviors would those who strive for physical appearance perfection have?" Overall, students generated 383 items.

Next we held five discussion meetings in a study group to screen the students' responses to the open-ended questionnaire looking for items of different contents. Based on these discussions, we found that students had generated 31 items of different content. In addition, we screened other materials such as Price's body image model and Body Image Rating Scale (Price, 1990; Souto & Garcia, 2002) to generate further items with the aim to cover both dimensions with the same number of items. Moreover, we selected only items that would equally apply to men and women. This procedure resulted in a first, 26-item version of the PAPS with 13 items capturing maladaptive concerns aspect and 13 items capturing positive striving aspects. As a rating scale, we chose a five-point scale from 1 (*strongly disagree*) to 5 (s*trongly agree*). This version was administered to the students of Study 2, after which 12 items were discarded (see the EFA of the results section for details). A second, modified 14 item-version of the PAPS was then administered to the students of Study 3.

In addition, Study 3 included the General Perfectionism Scale (GPS; Yang et al., 2007). The GPS is a 14-item multidimensional measure of general perfectionism comprised of two subscales capturing positive strivings and maladaptive concerns aspects of perfectionism:

striving for high goals (7 items; e.g., "I make great efforts to strive for excellence") and concern over shortcomings (7 items; "It will make me mad if I find an error in my studies/work"). Items are answered on a five-point scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Previous research has supported the reliability and validity of the scales (e.g., Yang et al., 2007; Yang, Zhao, Shen, & Wu, 2009). In the present study, Cronbach's alphas were .88 and .84 respectively.

Results

EFAs. To investigate the factor structure of the initial 26-item version of the PAPS, the item responses obtained from the students of Study 2 were subjected to an EFA in SPSS 17.0. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) was 0.731 indicating that the data were suitable for factor analysis. Using principal components analysis for factor extraction and oblimin rotation yielded seven factors with eigenvalues > 1. Because the first two factors subsumed items that seemed to differentiate negative (Factor 1) and positive (Factor 2) aspects of physical appearance perfectionism, we retained only the 14 items that showed unique substantial loadings on the first two factors (8 negative, 6 positive) for further analysis and discarded all other items (12 items).

To investigate the factor structure of the 14 items, the reduced version of the PAPS was presented to the students of Study 3. When the item responses were analyzed, they showed a KMO of 0.864 indicating suitability for factor analysis. Using again principal components analysis as the extraction method, three factors were identified with eigenvalues > 1: Factor 1 had an eigenvalue of 4.80 explaining 34.3% of the total variance, Factor 2 an eigenvalue of 2.52 explaining 18.0%, and Factor 3 an eigenvalue of 1.10 explaining 7.8%. However, after oblimin rotation, Factor 3 subsumed only two items with unique substantial loadings. Therefore, we decided to disregard the third factor, excluded the two items from further analyses, and ran another EFA on the remaining 12 items with the same procedures as before.

Results of this EFA now showed a clear two-factorial structure. Factor 1 had an eigenvalue of 4.33, explained 36.1% of the total variance, and comprised 7 items that pertained to worries about imperfections of one's appearance. Consequently, the factor was labeled "Worry About Imperfection." Factor 2 had an eigenvalue of 2.45, explained 20.4% of the total variance, and comprised 5 items that all pertained to hopes to look perfect. Consequently, Factor 2 was labeled "Hope For Perfection." The two factors showed a significant positive correlation ($r = .20$, $p < .05$). Table 1 shows the 12 items together with the loadings they displayed in the EFA's pattern matrix. As expected, all items showed substantial loadings (> .40) on one factor only. When the item responses were combined to three PAPS scores—a PAPS total score comprising responses from all 12 items, and separate scores for Worry About Imperfection and Hope For Perfection scores—all three scores showed satisfactory Cronbach's alphas: total score (.83), Worry About Imperfection (.85), and Hope For Perfection (.80).

Gender. Because previous research found gender differences in appearance self-perceptions and concerns (e.g., Sherry et al., 2009; Xie & Wu, 2002), we inspected gender differences in the students of Study 3 by correlating the PAPS scores with gender (coded as 0 = male, 1 = female). All three PAPS scores showed small, but nonsignificant positive correlations with gender: total score ($r = .15$, *ns*), Worry About Imperfection ($r = .11$, *ns*), and Hope For Perfection ($r = .13$, *ns*). Moreover, the Box's M test comparing the variance–covariance matrices of female and male students was nonsignificant ($F = 1.11$, *ns*).[1] Consequently, the data were collapsed across gender.

Correlations. Finally, we inspected the correlations of the PAPS scores with general perfectionism as measured with the GPS. Because Worry About Imperfection and Hope For Perfection scores showed a significant correlation ($r = .30$, $p < .001$), we examined bivariate and partial correlations of the subscale scores. Results showed that the PAPS total score correlated

with both striving for high goals and concern over shortcomings (see Table 2, Study 3). The subscales scores, however, showed a different pattern. Worry About Imperfection showed a significant positive correlation with concern over shortcomings, but not with striving for high goals. In contrast, Hope For Perfection showed a positive correlation with striving for high goals, but not with concern over shortcomings.

Brief Discussion

After item collection, initial and secondary tests, we arrived at the final version of the PAPS that comprised 12 items and showed a clear two-factorial structure differentiating maladaptive concerns (Worry About Imperfection: 7 items) and positive striving (Hope For Perfection: 5 items) aspects of physical appearance perfectionism. Whereas the PAPS total scores—combining all 12 items and thus blurring the distinction between maladaptive concerns and positive strivings aspects of physical appearance perfectionism—appeared to be of questionable utility, the PAPS subscales scores showed promise and first evidence of differential validity. This was demonstrated in the correlations with a multidimensional measure of general perfectionism that comprised two subscales, one capturing maladaptive concerns aspects and one positive striving aspects. Whereas the PAPS total score showed positive correlations with both subscales, Worry About Imperfection showed a positive correlation only with the maladaptive concerns subscale, and Hope For Perfection only with the positive striving subscale.

However, further evidence was required regarding both the factor structure of the PAPS and the differential validity of the two aspects of physical appearance perfectionism the PAPS captures. Consequently, two further studies were conducted to confirm the factor structure of the PAPS by means of CFA and to further establish the PAPS subscales' differential validity by investigating their convergent and discriminant correlations with positive and negative physical self-perceptions and explore their relations with body weight control behaviors.

Studies 4 and 5: CFA and Correlations with Physical Self-Perceptions and Body Weight Control Behaviors

Method

Participants and procedure. For Studies 4 and 5, samples of undergraduate students from the same university as in the previous studies were recruited: for Study 4, 380 students (167 male, 213 female) with an average age of 20.9 years (*SD* = 1.7; range = 17-26 years); for Study 5, 335 students (172 male, 154 female, 9 no gender indicated) with an average age of 20.0 years (*SD* = 1.3; range = 16-23 years). Again all students were recruited after class, volunteered to participate in the study without compensation, and completed paper-and-pencil versions of all measures.

Measures. All students completed the PAPS (see Table 1). In addition, the students of Study 4 completed measures of physical self-satisfaction, physical self-esteem, social appearance anxiety, and body image disturbance; and the students of Study 5 completed a measure of body weight control behaviors.

To measure physical self-satisfaction, we used two subscales from the Adolescent Students' Physical Self Scale (Huang, Chen, Fu, & Zenf, 2002) measuring satisfaction with one's appearance (12 items; e.g., "neck, chin, mouth") and satisfaction with one's figure (6 items; e.g., "body shape, weight, waist"). Items are rated on a five-point scale from 1 (*strong dissatisfaction*) to 5 (*strong satisfaction*). Previous research supports the reliability and validity of the scale and its subscales (e.g., Huang et al., 2002; Wei & Hu, 2008). In Study 4, Cronbach's alphas were .88 and .86.

To measure physical self-esteem, we used a version of the Physical Self-Perception Profile (PSPP; Fox & Corbin, 1989) adapted for Chinese college students (Xu & Yao, 2001). The adapted version of the PSPP comprises five subscales measuring perceived bodily attractiveness

(Body; 6 items; e.g., "I have very attractive body in comparison with most people"), perceived sporting competence (Sport; 6 items; "I feel that I am not very good when I participate in physical exercise"), perceived physical condition (Condition; 6 items; "I always keep higher level of physical conditions in comparison with most people"), perceived physical fitness (Fitness: 6 items; "I feel very confident about my body speed"), and general physical self-worth (PSW; 6 items; e.g., "I am very satisfied with the type of my physical body"). Items are rated on a four-point scale from 1 (*definitely not true of me*) to 4 (*definitely true of me*). Previous studies support the scales' reliability and validity (e.g., Xie & Wu, 2002; Xu & Yao, 2001). In Study 4, however, only Sport, Condition, and the total score showed acceptable Cronbach's alphas (.72, .70, and .88), but not Body, Fitness, and PSW (.56, .64, and .52). Consequently, we did not include the latter three scales in our analyses.

To measure social appearance anxiety, we used a Chinese translation of the Social Appearance Anxiety Scale (SAAS; Hart et al., 2008). The SAAS captures how people's social self-image is altered due to the amount of anxiety they feel in social situations and is comprised of 16 items (e.g., "I feel nervous when having my picture taken"). Items are rated on a five-point scale from 1 (*definitely disagree*) to 5 (*definitely agree*). The Chinese translation was achieved with support from the English Language Department of the first author's university and followed established guidelines for cross-cultural translation of instruments (Brislin, 1970): First, two graduate students translated the original measure from English into Chinese; then two other graduate students, independently from the first two, translated it back to English; finally discrepancies were discussed in a conference (involving the four students, the first author, and an English lecturer) and the final translation was agreed. Previous research supports the scale's reliability and validity (e.g., Çetin, Doğan, & Sapmaz, 2010; Hart et al., 2008). In Study 4, Cronbach's alpha was .91.

To measure body image disturbance, we used two subscales from the Body Image Depression Questionnaire (Gao, Peng, Zhou, Lu, & Ye, 2005) that captures concerns about one's body shape (8 items; e.g., "I always worry about my body shape") and physical appearance (9 items; "I always have troubles because my appearance is not good"). Items are rated on a three-point scale with the answer categories 1 (*not true of me*), 2 (*neutral*), and 3 (*true of me*). Previous studies have provided evidence of the scales' reliability and validity (e.g., Gao et al., 2005, 2006). In Study 4, Cronbach's alphas were .70 and .74.

To measure body weight control behaviors, we used a Chinese translation of the Body Weight Control Behaviors Questionnaire (BWCBQ; Ogle, Lee, & Damhorst, 2005). The BWCBQ measures the frequency of body weight control behaviors with respect to 10 domains: controlling calorie intake, controlling fat intake, controlling sugar intake, exercising, watching what you eat, eating low calorie foods, dieting, eating less than before, fasting, and engaging in crash dieting. Items are rated on a five-point scale from 1 (*almost never*) to 5 (*almost always*). The BWCBQ was translated into Chinese following the same procedures as with the SAAS. Because crash dieting is unfamiliar to Chinese participants, this item was excluded. In Study 5, the total score's Cronbach's alpha was .89.

Results

CFA. First, we examined the factor structure of the PAPS combining the data from Studies 4 and 5 in one dataset ($N = 715$). Using Mplus 5.2 (Muthén & Muthén, 2000-2008), we conducted a CFA on the item responses testing for a two-factor, first-order confirmatory model (henceforth termed two-factor oblique model) in which the seven Worry About Imperfection items were specified to load only on the first factor and the five Hope For Perfection items only on the second factor and the two factors were allowed to correlate. Because the data displayed significant deviation from multivariate normality (both multivariate skewness and multivariate

kurtosis were significant with $p < .001$), we used the robust maximum likelihood estimator (MLM) to compute fit indices that are robust to violations of multivariate normality (Brown, 2006).To evaluate model fit, it is generally recommended to consider multiple measures that capture different aspects of fit (Hoyle & Panter, 1995). Given the well-known problems with the χ^2 statistic as a measure of model fit, most notably its extreme sensitivity to sample size, we restricted use of this statistic to testing the difference of the two-factor oblique model when compared to the baseline model (one-factor model). Instead, we used the following robust measures of fit: the comparative fit index (CFI), the non-normed fit index (NNFI), and the root mean square error of approximation (RMSEA). Regarding the CFI and NNFI, larger values indicate better model fit, with CFI values above .90 indicating acceptable model fit. By contrast, smaller RMSEA values indicate better model fit, with values below .08 indicating acceptable fit (e.g., Hu & Bentler, 1995, 1999; see also Brown, 2006).

When the specified two-factor oblique model was estimated, results showed that the model provided an acceptable fit to the data (CFI = .918, NNFI = .898, RMSEA = .079). Moreover, the model showed a significantly better fit than the one-factor model (CFI = .551, NNFI = .452, RMSEA = .182). To compare the two-factor oblique model with the one-factor model, we conducted a χ^2 difference test. Because we used MLM to estimate the model, the Satorra-Bentler scaled χ^2 statistic (S-B χ^2) was used to test the difference between the models (see Brown, 2006, for details). The difference was significant, S-B $\chi^2(1) = 864.72$, $p < .001$, indicating that the two-factor oblique model showed a significantly better fit than the one-factor model. Consequently, we accepted the two-factor oblique model as the final model. Table 1 (CFA 1) shows the items' loadings on the two factors. All items displayed substantial loadings on their target factor, as was expected. Moreover, the two factors showed a small positive correlation which however was

nonsignificant ($\phi = .09$, *ns*). Consequently, the PAPS total scores—combining scores from two only loosely correlated factors—are not meaningful and thus are included in Table 2 only for demonstration purposes.

Gender. Next we inspected gender differences by correlating gender (0 = male, 1 = female) with Worry About Imperfection and Hope For Perfection scores, using the students who supplied information on their gender from the combined samples of Studies 4 and 5 (339 males, 367 females). Like in Study 3, the subscale scores showed only small positive correlations, but this time—due to the large sample size—the correlations were significant (Worry About Imperfection: $r = .13$, $p < .001$; Hope For Perfection: $r = .09$, $p < .05$), suggesting that female students have somewhat higher levels of perfectionistic worries and hopes regarding their physical appearance compared to male students. However, like in Study 3, the Box's *M* tests comparing male and female students' variance-covariance matrices were again nonsignificant (*F*s < 1.46, *ns*). Consequently, data were again collapsed across gender.

Correlations. Because Worry About Imperfection and Hope For Perfection scores showed a significant positive correlation ($r = .12$, $p < .01$), we again regarded bivariate and partial correlations. As expected, Worry About Imperfection and Hope For Perfection displayed different patterns of correlations (see Table 2, Studies 4 and 5). Worry about Imperfection showed negative correlations with physical self-esteem regarding sport competence, physical condition, and total physical self-esteem and with physical self-satisfaction regarding appearance and figure characteristics. In addition, Worry about Imperfection showed positive correlations with social appearance anxiety, body image disturbances regarding appearance and body shape, and with all body weight control behaviors (except exercising). In contrast, Hope For Perfection showed positive correlations with physical self-satisfaction regarding appearance and figure characteristics and a negative correlation with body weight control behaviors regarding fasting.

Unexpectedly, like Worry About Imperfection, Hope For Perfection displayed positive correlations with body image disturbances regarding body shape and appearance. Even though these correlations were significantly smaller than those of Worry about Imperfection as indicated by Meng's *Z* test ($Zs > 3.03$, $ps < .01$; Meng, Rosenthal, & Rubin, 1992), they suggest that students high in hopes to appear perfect to others have a somewhat disturbed body image compared to students low in such hopes.

Brief Discussion

The results of Studies 4 and 5 confirmed the two-factorial structure of the PAPS by means of confirmatory factor analysis. Furthermore they provided further support for the differential validity of the PAPS's two subscales. Worry About Imperfection showed negative correlations with indicators of a positive body image (physical self-esteem, physical self-satisfaction) and positive correlations with indicators of a negative body image (social appearance anxiety, body image depression) and, in addition, it showed positive correlations with body weight control behaviors that have been linked to disordered eating (e.g., Keel, Baxter, Heatherton, & Joiner, 2007; Ogle et al., 2005). In contrast, Hope For Perfection showed positive correlations with physical self-satisfaction while showing only small positive correlations with body image disturbances (and significantly smaller than those of Worry About Imperfection).

The findings provide further support for the factorial structure of the PAPS and the differential validity of its two subscales, indicating that Worry About Imperfection captures maladaptive concerns aspects whereas Hope For Perfectionism captures positive striving aspects of physical appearance perfectionism. However, it now was important to examine the temporal stability of the PAPS scores to determine if they capture individual differences that are relatively stable (like general perfectionism) or individual differences that are more fleeting (like perfectionism cognitions; cf. Flett, Hewitt, Blankstein, & Gray, 1998; Stoeber et al., 2010).

Furthermore it was important to gather additional support for the PAPS's validity regarding further behaviors related to physical appearance such as impression management and appearance management behaviors.

Studies 6 and 7: Stability and Impression Management

Method

Participants and procedure. For Study 6, a sample of 99 students (47 male, 51 female, 1 no gender indicated) with an average age of 20.4 years (*SD* = 1.3; range = 17-23 years) was recruited from the same university as in the previous studies. For Study 7, a sample of 822 undergraduate students (all female) with an average age of 20.1 years (*SD* = 1.3; range = 17-25 years) was recruited from the same university and three other universities in the region. Again, all students were recruited after class, volunteered to participate in the study without compensation, and completed paper-and-pencil versions of all measures (see Measures below). The students of Study 6 completed the PAPS again after 4 weeks to provide data for the measure's stability.

Measures. All students completed the PAPS. In addition, the students of Study 7 completed measures of impression management and female appearance management behaviors.

To measure impression management, we used the Impression Management Scale (IMS; Liu, 2005). The IMS is a 12-item scale measuring how people try to positively affect others' impression of themselves (e.g., "I will better my behavior according to others' responses"). Items are rated on a six-point scale from 1 (*definitely disagree*) to 6 (*definitely agree*). The IMS has shown a one-factorial structure and high test-retest reliability and internal consistency (Liu, 2005; Wang, 2009). In Study 7, Cronbach's alpha was .87.

To measure female appearance management behaviors, we used the Appearance Management Behavior Scale (AMBS; Kong & Yang, 2009). The AMBS is an 18-item scale

designed for female undergraduates that comprises three scales measuring appearance management via talking/behaving (7 items; e.g., "I pay attention to my talking/behaving"), make up (5 items; "I like to match different adornments"), and dress/hair style (6 items; "I spend a lot of time on hair care"). Items are answered on a five-point scale from 1 (*definitely disagree*) to 5 (*definitely agree*). The AMBS has demonstrated high test-retest reliability and internal consistency (Kong & Yang, 2009). In Study 7, Cronbach's alphas were .84, .85, and .78.

Results

Stability. First, we examined the test-retest stability by correlating the PAPS scores of the students in Study 6 across the four weeks. Results showed that PAPS scores were highly stable regarding mean score and relative position stability. Regarding mean score stability, students' mean scores did not change significantly over the four weeks as indicated by pairwise *t*-test (all *t*s < 0.26, *ns*). Regarding relative position stability, the PAPS showed high test-retest correlations: $r = .86$ for the total score, $r = .82$ for Worry About Imperfection, and $r = .80$ for Hope For Perfection (all *p*s < .001).

Correlations. Next we inspected the correlations with impression management in the students of Study 7 (see Table 2, Study 7). Because Worry About Imperfection and Hope For Perfection scores showed a significant positive correlation ($r = .33$, $p < .001$), we again regarded bivariate and partial correlations. Both Worry About Imperfection and Hope For Perfection showed a positive bivariate correlation with impression management. However, when partial correlations were regarded (controlling for the overlap between the two subscales), only Hope For Perfection showed a positive correlation with impression management whereas the correlation of Worry About Imperfection was reduced to zero. In addition, Hope For Perfection showed positive correlations with all female appearance management behaviors.

Brief Discussion

The results of Study 6 provided first evidence that the PAPS scores show high short-term stability comparable to trait-like measures of general perfectionism such as the Multidimensional Perfectionism Scale (Hewitt & Flett, 1991, 2004). In addition, the results of Study 7 provided further evidence for the differential validity of the PAPS subscales scores: Hope For Perfection showed positive correlations with all indicators of appearance impression management (general impression management, appearance management behaviors), indicating that female students high in Hope For Perfection regarding their physical appearance use female appearance management behaviors—talking and behaving, make up, dress and hairstyle to make a good impression on others—more often than female students low in Hope For Perfection. In contrast, Worry About Imperfection showed small negative correlations with appearance management behaviors, particularly regarding talking and behaving, indicating that female students high in perfectionistic concerns about their appearance use these impression management behaviors less than female students low in perfectionistic concerns.

The findings provide further support for the usefulness of the PAPS. However, the PAPS was developed in Chinese (Mandarin). While this already makes the PAPS a widely applicable instrument (an estimated 1.3 billion people speak Mandarin), it would be important to make the PAPS more widely available by providing an English translation and investigating the factorial structure and the differential validity of the subscales in an English-speaking sample. Consequently, a final study was conducted investigating an English translation of the PAPS with respect to its factorial structure (using CFA), possible gender differences, and differential validity by inspecting the subscales' correlations with multidimensional measures of perfectionism (general perfectionism, perfectionistic self-presentation) and measures of body image including positive indicators (appearance self-esteem, body areas satisfaction) and negative indicators (social appearance anxiety, social interference of body image concerns).

Study 8: English Translation and Further Validation

Method

Participants and procedure. A sample of 306 students (63 male, 243 female) was recruited at the second author's university, a large British University in the southeast of England, using the School of Psychology's research participation scheme website. Mean age of students was 21.5 years (*SD* = 7.3; range = 17-62 years). Students completed all measures on the School's online questionnaire management system (QMS, Version 2) and received either extra course credit or entered a raffle for a chance to win £50 (approx. US $80) in exchange for participation.

Measures. All students completed the English translation of the PAPS. In addition, they completed measures of general perfectionism, perfectionistic self-presentation, state appearance self-esteem, body areas satisfaction, social appearance anxiety, and symptom interference of body image concerns.

The English translation of the PAPS was achieved with support from the English Language Department of the first author's university and followed established guidelines for cross-cultural translation of instruments (Brislin, 1970): First, two graduate students translated the original measure from English into Chinese; then two other graduate students, independently from the first two, translated back to English; finally discrepancies were discussed in a conference (involving the first author and an English lecturer from the Chinese university, both native Chinese speakers, and the second author and a native-English speaking research assistant from the British university) and the final English translation was agreed (see Table 1). In Study 8, the translation showed Cronbach's alphas of .86 for the total score, .90 for Worry About Imperfection, and .83 for Hope For Perfection.

To measure general perfectionism, we used a short form of the Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991, 2004: short form: Cox, Enns, & Clara, 2002).

The short form of the MPS is a 10-item scale with two subscales measuring self-oriented perfectionism (5 items; e.g., "One of my goals is to be perfect in everything I do") and socially prescribed perfectionism (5 items; "Anything I do that is less than excellent will be seen as poor work"). Items are rated on a seven-point scale from 1 (*totally disagree*) to 7 (*totally agree*). Previous research supports the short form subscales' reliability and validity (e.g., Cox et al., 2002; Sherry, Hewitt, Sherry, Flett, & Graham, 2010). In Study 8, Cronbach's alphas were .90 and .86.

To measure perfectionistic self-presentation, we used the Perfectionistic Self-Presentation Scale (PSPS; Hewitt et al., 2003). The PSPS is a 27-item scale with three subscales measuring perfectionistic self-promotion (10 items; e.g., "I strive to look perfect to others"), nondisplay of imperfection (10 items; "I hate to make errors in public"), and nondisclosure of imperfection (7 items; "I should always keep my problems to myself"). Items are rated on a seven-point scale from 1 (*totally disagree*) to 7 (*totally agree*). The subscales have demonstrated reliability and validity in a number of studies (e.g., Hewitt et al., 2003; Hewitt, Habke, Lee-Baggley, Sherry, & Flett, 2008). In order to shorten the scale, we used only the 12 sample items (4 items for each subscale) presented in Hewitt et al. (2003, Table 1). In Study 8, Cronbach's alphas were .82, .83, and .77.

To measure physical appearance self-esteem, we used the 6 items of the State Self-Esteem Scale (Heatherton & Polivy, 1991) that form the appearance subscale of the scale (e.g., "I am pleased with my appearance right now"). Items are rated on five-point scale from 1 (*not at all*) to 5 (*extremely*). Previous research supports the scale's reliability and validity (e.g., Heatherton & Polivy, 1991; Malcarne, Hansdottir, Greenbergs, Clements, & Weisman, 1999). In Study 8, Cronbach's alpha was .88.

To measure satisfaction with one's physical appearance, we used the Body Areas

Satisfaction Scale (BASS) of the Multidimensional Body-Self Relations Questionnaire (Cash, 2000). The BASS is comprised of 9 items asking about how satisfied respondents are with the areas of their body (e.g., "Face [facial features, complexion]"). Items are answered on a five-point scale from 1 (*very dissatisfied*) to 5 (*very satisfied*). The BASS has shown reliability and validity in a number of studies (e.g., Cash & Henry, 1995; Williams & Cash, 2001). In Study 8, Cronbach's alpha was .84.

To measure social appearance anxiety, we included the original version of Social Appearance Anxiety Scale (SAAS; Hart et al., 2008; see Studies 4 and 5, for details). In Study 8, Cronbach's alpha was .91.

To measure symptom interference of body image concerns, we used the 7 items of the English version of the Body Image Concern Inventory (BICI; Littleton, Axsom, & Pury, 2005; Littleton & Radecki Breitkopf, 2008) that measure symptom interference with functioning due to body image concerns (e.g., "I am reluctant to engage in social activities when my appearance does not meet my satisfaction"). Items are rated on a five-point scale from 1 (*never*) to 5 (*always*). Previous research supports the scale's reliability and validity (e.g., Littleton et al., 2005; Littleton & Radecki Breitkopf, 2008). In Study 8, Cronbach's alpha was .87.

Results and Discussion

CFA. Following the same procedures we used with the original version of the PAPS (see Studies 4 and 5), we conducted a CFA with Mplus 5.2 testing for a two-factor oblique model in which the seven Worry About Imperfection items were specified to load only on the first factor and the five Hope For Perfection only on the second factor and the two factors were allowed to correlate. Because the data again displayed significant deviations from multivariate normality (both multivariate skewness and multivariate kurtosis were significant with $p < .001$), we again used robust MLM estimation on the item responses and inspected the model's robust fit indices

(CFI, NNFI, RMSEA) and the difference between models (S-B χ^2).

Results showed that the specified two-factor oblique model provided an acceptable fit to the data regarding CFI and NNFI (CFI = .918, NNFI = .898), but not regarding RMSEA (RMSEA = .092). Still, the model showed a significantly better fit than the one-factor model (CFI = .622, NNFI = .539, RMSEA = .172) as was confirmed by the difference test comparing the two models which was significant with S-B $\chi^2(1) = 339.57$, $p < .001$.

To investigate possible reasons why the RMSEA was higher than the .08 indicative of an acceptable fit, we inspected the modification indices for suggestions of model improvement. The two highest modification indices suggested that the error of Items 5 should be allowed to correlate with the errors of Items 4 and 9. If the model was respecified accordingly, RMSEA was .078. Because model re-specifications allowing errors to correlate are regarded as suspicious when there is no underlying theory or an obvious explanation such as items having similar wording (e.g., Cole, Ciesla, & Steiger, 2007), we further conducted an EFA using the same procedure as in Study 3 to investigate if the English version of the PAPS showed any additional factors. This however was not the case. Instead, the EFA clearly showed the expected two-factor structure with only two eigenvalues > 1: Factor 1 showed an eigenvalue of 4.87, explained 40.6% of the total variance, and subsumed all 7 Worry About Imperfection items with loadings from .73 to .87; and Factor 2 showed an eigenvalue of 2.79, explained 23.3% of the total variance, and subsumed all Hope For Perfection Items with loadings from .53 to .86. Moreover, no item showed substantial cross-loadings.

Consequently, we accepted the original CFA's two-factor oblique model as the final model for the English translation of the PAPS. Table 1 (CFA 2) shows the items' loadings on the two factors. All items displayed substantial loadings on their target factor, as was expected.

Moreover, the two factors showed a significant positive correlation ($\phi = .25$, $p < .01$).

Gender. Next we inspected gender differences by correlating gender (0 = male, 1 = female) with the PAPS total scores, Worry About Imperfection and Hope For Perfection. Only the total score and Worry About Imperfection showed a significant positive correlation with gender (both rs = .20, ps < .001), but not Hope For Perfection ($r = .09$, *ns*) indicating that the female students of Study 8 had higher levels of perfectionistic worries compared to the male students, but not higher levels of perfectionistic hopes regarding their physical appearance. Moreover, like in the previous studies, the Box's M test comparing male and female students' variance-covariance matrices was nonsignificant ($F = 1.01$, *ns*). Consequently, data were again collapsed across gender.

Correlations. Because Worry About Imperfection and Hope For Perfection scores showed a significant positive correlation ($r = .25$, $p < .001$), we again regarded both bivariate and partial correlations. Focusing on the partial correlations (because the control for the overlap between the two subscales and thus show their unique relations), the results showed that, like the original version, the English translation of the PAPS subscales displayed a highly differential patterns of correlations. Regarding general perfectionism, Worry About Imperfection showed a positive correlation with socially prescribed perfectionism whereas Hope For Perfection showed a positive correlation with self-oriented perfectionism. Regarding perfectionistic self-presentation, both PAPS scales showed positive correlations with perfectionistic self-promotion and nondisplay of imperfection, but only Worry About Imperfection showed a positive correlation with nondisclosure of imperfection which is regarded the most dysfunctional facet of perfectionistic self-presentations linked to depression (Hewitt et al., 2003) and feelings of threat in social situations (Hewitt et al., 2008). Regarding indicators of a positive body image, Worry About Imperfection showed negative correlations with state appearance self-esteem and body

areas satisfaction whereas Hope For Perfection showed positive correlations. Regarding indicators of a negative body image, Worry About Imperfection showed positive correlations with social appearance anxiety (replicating the finding from Study 4) and with social interference because of body image concerns. Hope For Perfection did not show any significant correlations with these indicators.

Brief Discussion

Even though the results of the CFA showed a slightly poorer fit for the English translation of the PAPS compared to the original version, this was restricted to one indicator (RSMEA). Moreover, the CFA (supported by an additional EFA) showed that the English translation had overall the same two-factorial structure as the original version with two factors differentiating Worry About Imperfection and Hope For Imperfection. What is more, the subscales showed the same differential validity as those of the original version regarding general perfectionism and physical appearance self-perceptions and concerns, particularly when partial correlations were regarded controlling for the overlap between the two subscales.

General Discussion

The present studies describe the development and preliminary validation of the Physical Appearance Perfectionism Scale (PAPS), a brief multidimensional measure of physical appearance perfectionism. Exploratory and confirmatory factor analyses indicated that the PAPS is a two-dimensional measure and that its items form two distinct subscales: Worry About Imperfection and Hope For Perfection. When the subscales' relations with measures of general perfectionism, physical appearance self-perceptions and concerns, body weight control, and impression management were examined, results across studies showed a highly differential pattern of relations for the two subscales. Worry About Imperfection showed positive correlations with maladaptive concerns aspects of perfectionism (concern over shortcomings,

socially prescribed perfectionism), physical appearance concerns (social appearance anxiety, body image disturbance, body image concerns symptom interference), and body control behaviors (restrained eating). In addition, it showed negative correlations with positive self-perceptions (appearance self-esteem, appearance self-satisfaction, body areas satisfaction). In contrast, Hope For Perfection showed positive correlations with positive striving aspects of perfectionism (striving for high goals, self-oriented perfectionism), positive self-perfections, and impression management behaviors (e.g., making a positive impression on others via dress, hairstyle, make-up). Both subscales displayed positive correlations with perfectionistic self-presentations. However, only Worry About Imperfection showed a positive correlation with nondisclosure of imperfection, which is a facet of perfectionistic self-presentations that has been linked to depression and social anxiety (Hewitt et al., 2003, 2008). The overall pattern of correlations suggests that the two subscales have differential validity capturing different aspects of physical appearance perfectionism: Whereas Worry About Imperfection captures only negative aspects, Hope For Perfection captures mainly positive aspects.

The PAPS provides for a multidimensional assessment of physical appearance perfectionism in the tradition of previous theory and research on general perfectionism that has shown that perfectionism is best understood when multidimensional measures of perfectionism are used and both positive and negative aspects are considered. With this the PAPS fills an important gap in the canon of perfectionism measures because it focuses on the domain of physical appearance, in which many people have perfectionistic tendencies (Stoeber & Stoeber, 2009). Moreover, because it is a multidimensional measure capturing positive and negative aspects, it goes beyond the previously published studies using one-dimensional measures of physical appearance perfectionism that did not differentiate positive and negative aspects and thus found physical appearance perfectionism to be mainly maladaptive (Cain et al., 2008; Zhang

et al., 2007). The same, however, holds for the PAPS total score which also does not differentiate positive and negative aspects and showed only correlations indicative of psychological maladjustment, that is, positive correlations with negative characteristics (e.g., body image disturbances, social appearance anxiety) and negative correlations with positive characteristics (e.g., body areas satisfaction, physical appearance self-esteem). Consequently, we advise against using the PAPS total score and urge researchers to examine only the subscale scores, Worry About Imperfection and Hope For Perfection, when using the PAPS to investigate physical appearance perfectionism.

Strengths, Limitations, Future Studies

The present studies have a number of strengths. First, when all eight studies are taken together, the development and preliminary validation of the PAPS is based on data from over 2,300 participants. Therefore it can be expected that the present findings have a broad and robust empirical base. Second, when the English translation of the PAPS was regarded and compared to the original (Chinese) version, the PAPS showed a comparable factor structure and the PAPS subscales a comparable pattern of differential relations. Consequently it can be assumed that the PAPS is an instrument that is not restricted to a single language and culture, but may be useful across different languages and cultures. Third, the present studies used a broad range of measures when investigating how the PAPS subscales were related to general perfectionism, physical appearance self-perceptions and concerns, and body weight control and impression management behaviors. Thus, it can be assumed that the evidence displayed in the present pattern of findings is not restricted to specific measures, but are generalizable across various measures of the constructs of interest.

The present studies also have a number of limitations. First, all studies used university students as participants who were mostly young adults in their early 20s. Consequently, future

studies need to demonstrate that the present findings generalize to different samples, for example, young adults who are not attending university, adolescents, older adults, or clinical samples. In adolescence, one's physical appearance emerges as an important aspect of adolescents' self-concept, and is often a major topic of stress and worry (see Steinberg, 2008, for a review). Moreover, adolescence is the phase of life where stable individual differences in maladaptive perfectionism develop (e.g., Stoeber & Childs, in press). In the course of adult development, by contrast, perfectionism—and maladaptive perfectionism in particular—seems to decline and show weaker associations with psychological maladjustment (Chang, 2000; Landa & Bybee, 2007). Future studies need to find out if these age trends also hold for physical appearance perfectionism in general and for maladaptive worries about the imperfection of one's physical appearance in particular. Moreover, future studies should investigate the ability of the PAPS to successfully differentiate between healthy individuals and individuals seeking treatment and between different forms of psychopathology in individuals seeking treatment. Second, in the effort to validate the PAPS subscales, most of the measures included in the present studies regarded general perfectionism and physical appearance self-perceptions and concerns. Only one study regarded a variable (body weight control behaviors) that has been linked to disordered eating (Keel et al., 2007; Ogle et al., 2005). Because perfectionism, negative body image, and appearance concerns have all been related to disordered eating (e.g., Dour & Theran, 2011; Downey & Chang, 2007; Haase et al., 2002), future studies providing further validation of the PAPS should include additional measures of disordered eating and eating disorder symptoms. Finally, apart from the one study investigating the PAPS's stability, all studies were cross-sectional. Therefore, the found relations do not give us any indication of the effects that physical appearance perfectionism may have on people's well-being and psychological adaption. Future studies will need to employ longitudinal designs to investigate if the PAPS also predicts changes

in people's behavior and mental health over time. Moreover, future studies need to investigate if the PAPS is sensitive to detect *changes* in physical appearance perfectionism following experimental manipulations of the importance of people's physical appearance or exposure to media such as reality TV cosmetic surgery programs that have been shown to influence people's body image (Mazzeo, Trace, Mitchell, & Walker Gow, 2007).

Conclusions

Whereas future studies need to replicate and expand on the present findings, the present studies provide substantial preliminary evidence supporting that the PAPS is a useful and efficient instrument to capture positive and negative aspects of physical appearance to make perfectionism, and we hope that it will help stimulate much needed research into physical appearance perfectionism and contribute to further our understanding of its antecedents, concomitants, and consequences.

References

Bieling, P. J., Israeli, A. L., & Antony, M. M. (2004). Is perfectionism good, bad, or both? Examining models of the perfectionism construct. *Personality and Individual Differences, 36*, 1373-1385. doi: 10.1016/S0191-8869(03)00235-6

Blankstein, K. R., & Dunkley, D. M. (2002). Evaluative concerns, self-critical, and personal standards perfectionism: A structural equation modeling strategy. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism* (pp. 285-315). Washington, DC: APA.

Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Psychology, 1*, 185-216. doi: 10.1177/135910457000100301

Brown, T. A. (2006). *Confirmatory factor analysis for applied research*. New York: Guilford.

Cain, A. S., Bardone-Cone, A. M., Abramson, L. Y., Vohs, K. D., & Joiner, T. E. (2008). Refining the relationships of perfectionism, self-efficacy, and stress to dieting and binge eating: Examining the appearance, interpersonal, and academic domains. *International Journal of Eating Disorders, 41*, 713-721. doi: 10.1002/eat.20563

Cash, T. F. (2000). *The Multidimensional Body-Self Relations Questionnaire (MBSRQ): Users' manual*. Naples, FL: Body Images Research Consulting.

Cash, T. F., & Henry, P. E. (1995). Women's body images: The results of a national survey in the U.S.A. *Sex Roles, 33*, 19-28-28. doi: 10.1007/bf01547933

Çetin, B., Doğan, T., & Sapmaz, F. (2010). Olumsuz Değerlendirilme Korkusu Ölçeği Kısa Formu'nun Türkçe uyarlaması: Geçerlik ve güvenirlik çalışması [Turkish adaptation of the Brief Fear of Negative Evaluation Scale: Reliability and validity study]. *Education and Science, 35,* 206-216.

Chang, E. C. (2000). Perfectionism as a predictor of positive and negative psychological outcomes: Examining a mediation model in younger and older adults. *Journal of*

Counseling Psychology, 47, 18-26. doi: 10.I037//0022-0167.47.1.18

Chang, E. C. (2006). Conceptualization and measurement of adaptive and maladaptive aspects of performance perfectionism: Relations to personality, psychological functioning, and academic achievement. *Cognitive Therapy and Research, 30*, 677-697. doi: 10.1007/s10608-006-9060-7

Cole, D. A., Ciesla, J. A., & Steiger, J. H. (2007). The insidious effects of failing to include design-driven correlated residuals in latent-variable covariance structure analysis. *Psychological Methods, 12*, 381-398. doi: 10.1037/1082-989X.12.4.381

Cox, B.J., Enns, M.W., & Clara, I. P. (2002). The multidimensional structure of perfectionism in clinically distressed and college student samples. *Psychological Assessment, 14,* 365-373. doi: 10.1037//1040-3590.14.3.365

Dour, H. J., & Theran, S. A. (2011). The interaction between the superhero ideal and maladaptive perfectionism as predictors of unhealthy eating attitudes and body esteem. *Body Image, 8*, 93-96. doi: 10.1016/j.bodyim.2010.10.005

Downey, C. A., & Chang, E. C. (2007). Perfectionism and symptoms of eating disturbances in female college students: Considering the role of negative affect and body dissatisfaction. *Eating Behaviors, 8*, 497-503. doi: doi:10.1016/j.eatbeh.2007.02.002

Dunn, J. G. H., Gotwals, J. K., & Causgrove Dunn, J. (2005). An examination of the domain specificity of perfectionism among intercollegiate student-athletes. *Personality and Individual Differences, 38,* 1439-1448. doi: 10.1016/j.paid.2004.09.009

Enns, M. W., & Cox, B. J. (2002). The nature and assessment of perfectionism: A critical analysis. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism* (pp. 33-62). Washington, DC: APA.

Flett, G. L., & Hewitt, P. L. (2002). Perfectionism and maladjustment: An overview of

theoretical, definitional, and treatment issues. In P. L. Hewitt & G. L. Flett (Eds.), *Perfectionism* (pp. 5-31). Washington, DC: APA.

Flett, G. L., Hewitt, P. L., Blankstein, K. R., & Gray, L. (1998). Psychological distress and the frequency of perfectionistic thinking. *Journal of Personality and Social Psychology, 75*, 1363-1381. doi: 10.1037/0022-3514.75.5.1363

Fox, K. R., & Corbin, C. B. (1989). The Physical Self-Perception Profile: Development and preliminary validation. *Journal of Sport & Exercise Psychology, 11*, 408-430.

Frost, R. O., Heimberg, R. G., Holt, C. S., Mattia, J. I., & Neubauer, A. L. (1993). A comparison of two measures of perfectionism. *Personality and Individual Differences, 14*, 119-126. doi: 10.1016/0191-8869(93)90181-2

Gao, Y. B., Peng, W. B., Zhou, L. H., Lu, B. W., & Ye, L. H. (2005). Reliability and validity of the Body Image Depression Questionnaire for Teenagers [in Chinese]. *Chinese Journal of School Health, 26*, 1005-1006. doi: CNKI:ISSN:1000-9817.0.2005-12-013

Gao, Y. B., Peng, W. B., Zhou, L. H., Lu, B. W., & Ye, L. H. (2006). A study on the relationship between body image depression and self-regard of high school and college students [in Chinese]. *Psychological Science，29*, 973-975. doi: CNKI:ISSN:1671-6981.0.2006-04-052

Garner, D. M., Olmstead, M. P., & Polivy, J. (1983). Development and validation of a multidimensional eating disorder inventory for anorexia nervosa and bulimia. *International Journal of Eating Disorders, 2*, 15-34. doi: 10.1002/1098-108X(198321)2:2<15::AID-EAT2260020203>3.0.CO;2-6

Grammas, D. L., & Schwartz, J. P. (2009). Internalization of messages from society and perfectionism as predictors of male body image. *Body Image 6*, 31-36. doi:

10.1016/j.bodyim.2008.10.002

Haase, A. M., Prapavessis, H., & Owens, R. G. (2002). Perfectionism, social physique anxiety and disordered eating: A comparison of male and female elite athletes. *Psychology of Sport and Exercise, 3*, 209-222. doi: 10.1016/S1469-0292(01)00018-8

Hanstock, T. L., & O'Mahony, J. F. (2002). Perfectionism, acne and appearance concerns. *Personality and Individual Differences, 32*, 1317-1325. doi: 10.1016/s0191-8869(01)00120-9

Hart, T. A., Flora, D. B., Palyo, S. A., Fresco, D. M., Holle, C., & Heimberg, R. G. (2008). Development and examination of the Social Appearance Anxiety Scale. *Assessment, 15*, 48-59. doi: 10.1177/1073191107306673

Heatherton, T. F., & Polivy, J. (1991). Development and validation of a scale for measuring state self-esteem. *Journal of Personality and Social Psychology, 60*, 895-910. doi: 10.1037/0022-3514.60.6.895

Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology, 60*, 456-470. doi: 10.1037/0022-3514.60.3.456

Hewitt, P. L., & Flett, G. L. (2004). *Multidimensional Perfectionism Scale (MPS): Technical manual*. Toronto, Canada: Multi-Health Systems.

Hewitt, P. L., Flett, G. L., & Ediger, E. (1995). Perfectionism traits and perfectionistic self-presentation in eating disorder attitudes, characteristics, and symptoms. *International Journal of Eating Disorders, 18*, 317-326. doi: 10.1002/1098-108X(199512)18:4<317::AID-EAT2260180404>3.0.CO;2-2

Hewitt, P. L., Flett, G. L., Sherry, S. B., Habke, M., Parkin, M., Lam, R. W., et al. (2003). The interpersonal expression of perfection: Perfectionistic self-presentation and psychological

distress. *Journal of Personality and Social Psychology, 84*, 1303-1325. doi: 10.1037/0022-3514.84.6.1303

Hewitt, P. L., Habke, A. M., Lee-Baggley, D. L., Sherry, S. B., & Flett, G. L. (2008). The impact of perfectionistic self-presentation on the cognitive, affective, and physiological experience of a clinical interview. *Psychiatry: Interpersonal & Biological Processes, 71*, 93-122. doi: 10.1521/psyc.2008.71.2.93

Hill, R. W., Huelsman, T. J., Furr, R. M., Kibler, J., Vicente, B. B., & Kennedy, C. (2004). A new measure of perfectionism: The Perfectionism Inventory. *Journal of Personality Assessment, 82*, 80-91. doi: 10.1207/s15327752jpa8201_13

Hoyle, R. H., & Panter, A. T. (1995). Writing about structural equation models. In R. H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 158-176). Thousand Oaks, CA: Sage.

Hu, L., & Bentler, P. M. (1995). Evaluating model fit. In R. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp. 76-99). Thousand Oaks, CA: Sage.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55. doi: 10.1080/10705519909540118

Huang, X. T., Chen, H., Fu, I. Q., & Zenf, X. (2002). An exploration into adolescent students' physical self [in Chinese]. *Psychological Science, 25*, 260-263. doi: CNKI:SUN:XLKX.0.2002-03-001

Keel, P. K., Baxter, M. G., Heatherton, T. F., & Joiner, T. E., Jr. (2007). A 20-year longitudinal study of body weight, dieting, and eating disorder symptoms. *Journal of Abnormal Psychology, 116*, 422-432. doi: 10.1037/0021-843x.116.2.422

Kong, S. S., & Yang, H. F. (2009). Development of College Female Student Appearance-

Management Behavior Scale [in Chinese]. *Chinese Journal of Clinical Psychology, 17*, 702-704. doi: CNKI:SUN:ZLCY.0.2009-06-018

Landa, C. E., & Bybee, J. A. (2007). Adaptive elements of aging: Self-image discrepancy, perfectionism, and eating problems. *Developmental Psychology, 43*, 83-93. doi: 10.1037/0012-1649.43.1.83

Littleton, H. L., Axsom, D., & Pury, C. L. S. (2005). Development of the Body Image Concern Inventory. *Behaviour Research and Therapy, 43*, 229-241. doi: 10.1016/j.brat.2003.12.006

Littleton, H., & Radecki Breitkopf, C. (2008). The Body Image Concern Inventory: Validation in a multiethnic sample and initial development of a Spanish language version. *Body Image, 5*, 381-388. doi: 10.1016/j.bodyim.2008.06.004

Liu, J. (2005). *A study on college students' impression management and its affecting factors* [in Chinese]. Unpublished master's thesis, Department of Psychology, Central China Normal University, PR China.

Mazzeo, S. E., Trace, S. E., Mitchell, K. S., & Walker Gow, R. (2007). Effects of a reality TV cosmetic surgery makeover program on eating disordered attitudes and behaviors. *Eating Behaviors, 8*, 390-397. doi: 10.1016/j.eatbeh.2006.11.016

McArdle, S. (2010). Exploring domain-specific perfectionism. *Journal of Personality, 78*, 493-508. doi: 10.1111/j.1467-6494.2010.00624.x

Malcarne, V. L., Hansdottir, I., Greenbergs, H. L., Clements, P. J., & Weisman, M. H. (1999). Appearance self-esteem in systemic sclerosis. *Cognitive Therapy and Research, 23*, 197-208. doi: 10.1023/a:1018783329341

Mitchelson, J. K. (2009). Seeking the perfect balance: Perfectionism and work-family conflict. *Journal of Occupational and Organizational Psychology, 82*, 349-367. doi: 10.1348/096317908X314874

Meng, X.-L., Rosenthal, R., & Rubin, D. B. (1992). Comparing correlated correlation coefficients. *Psychological Bulletin, 111*, 172-175. doi: 10.1037/0033-2909.111.1.172

Muthén, L. K., & Muthén, B. O. (2000-2008). *Mplus user's guide*. Los Angeles, CA: Authors.

Ogle, J. P., Lee, H.-H., & Damhorst, M. L. (2005). Perceptions of body malleability: Linkages with body-related feelings and behaviors among undergraduate women and men. *Family and Consumer Sciences Research Journal, 34*, 35-56. doi: 10.1177/1077727X05277737

Price, B. (1990). A model for body-image care. *Journal of Advanced Nursing, 15*, 585-593. doi: 10.1111/j.1365-2648.1990.tb01858.x

Rice, K. G., & Preusser, K. J. (2002). The Adaptive/Maladaptive Perfectionism Scale. *Measurement and Evaluation in Counseling and Development, 34*, 210-222.

Sherry, S. B., Hewitt, P. L., Sherry, D. L., Flett, G. L., & Graham, A. R. (2010). Perfectionism dimensions and research productivity in psychology professors: Implications for understanding the (mal)adaptiveness of perfectionism. *Canadian Journal of Behavioural Science, 42*, 273-283. doi: 10.1037/a0020466

Sherry, S. B., Vriend, J. L., Hewitt, P. L., Sherry, D. L., Flett, G. L., & Wardrop, A. A. (2009). Perfectionism dimensions, appearance schemas, and body image disturbance in community members and university students. *Body Image, 6*, 83-89. doi: 10.1016/j.bodyim.2008.12.002

Slade, P. D., & Owens, R. G. (1998). A dual process model of perfectionism based on reinforcement theory. *Behavior Modification, 22*, 372-390. doi: 10.1177/01454455980223010

Slaney, R. B., Rice, K. G., & Ashby, J. S. (2002). A programmatic approach to measuring perfectionism: The Almost Perfect Scales. In G. L. Flett & P. L. Hewitt (Eds.), *Perfectionism* (pp. 63-88). Washington, DC: APA.

Souto, C. M. R. M., & Garcia, T. R. (2002). Construction and validation of a Body Image Rating Scale: A preliminary study. *International Journal of Nursing Terminologies and Classifications,13*, 117-126. doi: 10.1111/j.1744-618X.2002.tb00415

Steinberg, L. (2008). *Adolescence* (8th ed.). New York: McGraw-Hill.

Stoeber, J., & Childs, J. H. (in press). Perfectionism. In R. J. R. Levesque (Ed.), *Encyclopedia of adolescence*. New York: Springer.

Stoeber, J., Kobori, O., & Tanno, Y. (2010). The Multidimensional Perfectionism Cognitions Inventory–English (MPCI-E): Reliability, validity, and relationships with positive and negative affect. *Journal of Personality Assessment, 9*, 16-25. doi: 10.1080/00223890903379159

Stoeber, J., & Otto, K. (2006). Positive conceptions of perfectionism: Approaches, evidence, challenges. *Personality and Social Psychology Review, 10*, 295-319. doi: 10.1207/s15327957pspr1004_2

Stoeber, J., & Rennert, D. (2008). Perfectionism in school teachers: Relations with stress appraisals, coping styles, and burnout. *Anxiety, Stress, & Coping, 21*, 37-53. doi: 10.1080/10615800701742461

Stoeber, J., & Stoeber, F. S. (2009). Domains of perfectionism: Prevalence and relationships with perfectionism, gender, age, and satisfaction with life. *Personality and Individual Differences, 46*, 530-535. doi: 10.1016/j.paid.2008.12.006

Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston, MA: Pearson.

Terry-Short, L. A., Owens, R. G., Slade, P. D., & Dewey, M. E. (1995). Positive and negative perfectionism. *Personality and Individual Differences, 18*, 663-668. doi: 10.1016/0191-8869(94)00192-U

Wang, X. M. (2009). College students' impression management and its correlations with self-esteem and achievement motivation [in Chinese]. *Journal of Heilongjiang College of Education, 28*, 83-84. doi: CNKI:SUN:HLJB.0.2009-09-036

Wei, J. B., & Hu, C. B.(2008). Relation between physical self and self-worth of university students [in Chinese]. *Chinese Journal of Clinical Psychology, 15*, 403-405. doi: CNKI:SUN:ZLCY.0.2008-04-026

Williams, P. A., & Cash, T. F. (2001). Effects of a circuit weight training program on the body images of college students. *International Journal of Eating Disorders, 30*, 75-82. doi: 10.1002/eat.1056

Xie, Q., & Wu, Y. N. (2002). The Relationships between physical self- perception and participation of exercise with university students [in Chinese]. *Journal of Guangzhou Institute of Physical Education, 22*, 46-48. doi: CNKI:SUN:GZTX.0.2002-05-016

Xu, X., & Yao, J. X. (2001). Revision and test of the Physical Self-Perception Profile for college students [in Chinese]. *Sport Science, 21*, 78-81. doi: CNKI:SUN:TYKX.0.2001-02-025

Yang, H. F., Zhang, X. Y., & Zhao, Y.(2007). The development of General Perfectionism Scale for college students [in Chinese]. *Chinese Mental Health Journal, 21*, 107-110. doi: CNKI:SUN:ZXWS.0.2007-02-013

Yang, H. F., Zhao, Y., Shen, M. W., & Wu, M. Z. (2009). Implicit perfectionism and its relationship with explicit perfectionism [in Chinese]. *Psychological Science, 32,* 125-128. doi: CNKI:SUN:XLKX.0.2009-02-007

Zhang, X. Y., Yang, H. F., & Zhao, Y. (2007). The development of a domain-specific perfectionism scale for college students [in Chinese]. *Chinese Journal of Clinical Psychology*, *15*, 125-131. doi: CNKI:SUN:ZLCY.0.2007-02-007

Footnotes

[1]Because Box's *M* test is highly sensitive to even minor differences between variance–covariance matrices, significances were tested on the $p < .001$ level as is recommended (Tabachnick & Fidell, 2007). All other significances were tested on the conventional $p < .05$ level.

Table 1

PAPS: Items and Factor Loadings from the Exploratory and Confirmatory Factor Analyses

		EFA		CFA 1		CFA 2	
Items[a]	#	F1	F2	F1	F2	F1	F2
Worry About Imperfection (WAI)							
I am not satisfied with my appearance.	1	.71	–.01	.65	—	.72	—
I am never happy with my appearance no matter how I dress.	3	.74	–.30	.70	—	.66	—
I worry that my appearance is not good enough.	5	.66	.23	.59	—	.75	—
I wish I could completely change my appearance.	8	.76	.05	.57	—	.84	—
My appearance is far from my expectations.	9	.79	–.06	.72	—	.82	—
I worry about others' being critical of my appearance.	10	.65	.17	.65	—	.72	—
I often think about shortcomings of my appearance.	11	.75	.10	.68	—	.75	—
Hope For Perfection (HFP)							
I hope my body shape is perfect.	2	.09	.58	—	.72	—	.48
I hope that I look attractive.	4	.15	.76	—	.82	—	.77
I hope others admire my appearance.	6	.18	.75	—	.80	—	.73
I hope others find me attractive.	7	–.18	.84	—	.78	—	.82
I hope I am handsome/beautiful.	12	–.09	.75	—	.75	—	.83

Note. PAPS = Physical Appearance Perfectionism Scale. # = item number and position. F1 = Factor 1, F2 = Factor 2. EFA = exploratory factor analysis (Study 3: $N = 131$): loadings are the item-factor correlation from the EFA's oblique-rotated pattern matrix; $r(F1, F2) = .20$, $p < .05$. CFA = confirmatory factor analysis, CFA 1 (Studies 4-5: $N = 715$) and CFA 2 (Study 8: $N = 306$): loadings are the standardized estimates from the CFA testing the hypothesized two-factor oblique model; CFA 1: $\phi(F1, F2) = .09$, *ns*; CFA 2: $\phi(F1, F2) = .25$, $p < .01$.

[a]The Chinese version of the PAPS is available from the first author upon request.

Table 2

PAPS Total Score, Worry About Imperfection (WAI), and Hope For Perfection (HFP): Bivariate and Partial Correlations

	Bivariate correlation			Partial correlation	
	Total score	WAI	HFP	WAI	HFP
Study 3					
General perfectionism					
Striving for high goals	.20*	–.07	.49***	.02	.45***
Concern over shortcomings	.24**	.40***	–.09	.39***	.01
Study 4					
Physical self-esteem					
Sport	–.13*	–.12*	–.07	–.11*	–.06
Condition	–.10	–.17**	–.04	–.18***	–.06
Total score[a]	–.16**	–.20***	–.02	–.20***	.00
Physical self-satisfaction					
Appearance characteristics	.18**	–.11*	.41***	–.17**	.42***
Figure characteristics	.06	–.12*	.22***	–.15**	.24***
Social appearance anxiety	.42***	.58***	.02	.58***	–.05
Body image disturbance					
Appearance	.48***	.52***	.16**	.51***	.12*
Body shape	.33***	.34***	.14**	.33***	.11*
Study 5					
Body weight control behaviors					
Controlling calorie intake	.18**	.21***	.06	.20***	.02
Controlling fat intake	.16**	.20***	.03	.20***	.00
Controlling sugar intake	.13*	.21***	–.02	.22***	–.06
Exercising	–.09	–.10	–.03	–.09	–.02
Watching what one eats	.17**	.28***	–.03	.29***	–.09
Eating low-calorie foods	.11*	.22***	–.03	.22**	–.08
Dieting	.11*	.20***	–.04	.21**	–.08
Eating less than before	.13*	.19***	–.03	.23***	–.07
Fasting	.05	.18**	–.12*	.21***	–.17**
Total score	.15***	.24**	.03	.23***	–.08

[Table 2, continued]

Study 7					
Impression management	.35***	.15***	.46***	.00	.44***
Appearance management behaviors					
Talking and behaving	.11*	–.07*	.31***	–.19***	.35***
Make up	.19*	.05	.28***	–.04	.27***
Dress and hairstyle	.22**	.11	.29***	–.01	.27***
Total score	.37**	.04	.21**	–.10**	.37***
Study 8					
General perfectionism					
Self-oriented perfectionism	.14*	.08	.18**	.04	.16**
Socially prescribed perfectionism	.37***	.36***	.17**	.33***	.09
Perfectionistic self-presentation					
Perfectionistic self-promotion	.45***	.35***	.41***	.28***	.35***
Nondisplay of imperfection	.49***	.43***	.33***	.38***	.25***
Nondisclosure of imperfection	.35***	.39***	.08	.39***	–.02
Appearance self-esteem	–.65***	–.78***	.05	–.79***	.23***
Body areas satisfaction	–.65***	–.77***	–.08	–.77***	.18**
Social appearance anxiety	.79***	.84***	.26***	.83***	.09
Body image concerns symptom interference	.65***	.73***	.14*	.73***	–.06

Note. PAPS = Physical Appearance Perfectionism Scale. Partial correlation: WAI = partial correlation of WAI controlling for HFP; HFP = partial correlation of HFP controlling for WAI. Study 3: $N = 131$; Study 4: $N = 380$; Study 5: $N = 33$); Study 7: $N = 822$ (all female); Study 8: $N = 306$.

[a]The total score comprises Body, Sport, Condition, Fitness, and general physical self-worth (see Studies 1-3, Measures).

*$p < .05$. **$p < .01$. ***$p < .001$.