Self-Report Scales to Measure Expectations and Appearance-Related Psychosocial Distress in Patients Seeking Cosmetic Treatments

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Abstract

Background: The use of screening scales in cosmetic practices may help to identify patients who require education to modify inappropriate expectations and/or psychological support.

Objectives: To describe the development and validation of scales that measure expectations (about how one's appearance and quality of life might change with cosmetic treatments) and appearance-related psychosocial distress.

Methods: The scales were field-tested in patients 18 years and older seeking facial aesthetic or body contouring treatments. Recruitment took place in clinics in the United States, United Kingdom, and Canada between February 2010 and January 2015. Rasch Measurement Theory (RMT) analysis was used for psychometric evaluation. Scale scores range from 0 to 100; higher scores indicate more inappropriate expectations and higher psychosocial distress.

Results: Facial aesthetic ($n = 279$) and body contouring ($n = 90$) patients participated (97% response). In the RMT analysis, all items had ordered thresholds and acceptable item fit. Person Separation Index and Cronbach alpha values were 0.88 and 0.92 for the Expectation scale, and 0.81 and 0.89 for the Psychosocial Distress scale respectively. Higher expectation correlated with higher psychosocial distress ($R = 0.40$, $P < .001$). In the facial aesthetic group, lower scores on the FACE-Q Satisfaction with Appearance scale correlated with higher expectations ($R = -0.27$, $P = .001$) and psychosocial distress ($R = -0.52$, $P < .001$). In the body contouring group, lower scores on the BODY-Q Satisfaction with Body scale correlated with higher psychosocial distress ($R = -0.31$, $P = .003$). Type of treatment and marital status were associated with scale scores in multivariate models.

Conclusions: Future research could examine convergent and predictive validity. As research data are accumulated, norms and interpretation guidelines will be established.

Level of Evidence: 2

Risk

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Cosmetic procedures performed in the United States rose from 1.7 million in 1997 to 10.7 million in 2014.[1] As increasing numbers of people seek treatments to change aspects of their appearance and improve psychosocial wellbeing, it is important that physicians ensure their patients have realistic expectations about the outcomes that can be achieved. Pre-treatment consultations provide physicians with an opportunity to identify and address any misconceptions their patient might have about likely treatment outcomes. A literature review on negative predictors of satisfaction in patients seeking facial cosmetic surgery cites high or unrealistic expectations as a factor often described in regards to disappointing results.[2] Such expectations should raise a "red flag" as these patients are inclined to dissatisfaction regardless of the quality of the surgical result.[3]

In addition to expectations, consultations provide the opportunity to identify patients who may have underlying psychological issues and might benefit from additional support or referral. A psychiatric diagnosis that is sometimes seen in plastic surgery and dermatology clinics is that of body dysmorphic disorder (BDD). A BDD diagnosis has four criteria: preoccupied with one or more nonexistent or slight defects or flaws in one's physical appearance; engagement in repetitive behaviors (eg, mirror checking) or mental acts (eg, comparing one's appearance to others) in response to one's appearance concerns; preoccupation with appearance such that it causes impairment in social, occupation, or other areas of function; and the preoccupation is not attributable to another psychiatric diagnosis.[4] While the rate of BDD in the general population is about two percent,[5,6] Sarwer and Crerand examined findings from cosmetic surgery and dermatology studies and suggested the rate was higher at between 5 and 15 percent.[7] Also, according to surveys conducted by Sarwer et al, approximately 40 percent of plastic surgeons[8] and 12 percent of dermatologists[9] reported that they had been threatened (legally and/or physically) by a patient with symptoms of BDD. Of the plastic surgeons, 84 percent also indicated that they had operated on a patient they believed was appropriate for surgery, but then realised after the surgery that the patient may have had BDD. This finding would suggest that BDD can be hard for surgeons to spot. The use of a brief self-report instrument to screen cosmetic patients in real-time clinical decision making may enable physicians to identify patients who require further education to modify expectations and/or patients who require additional support and/or psychological referral. A systematic rapid evidence assessment (SREA)[10] on cosmetic intervention research published between 2002 and 2012, which reviewed findings from 13 systematic reviews and 179 primary studies, identified factors that may be associated with poor post-cosmetic psychological outcomes, including gender, relationship issues, and having unrealistic expectations. The evidence from this review supported improvement in psychosocial functioning following cosmetic procedures, though reductions in psychiatric symptoms, such as anxiety, depression, and body dysmorphic disorder (BDD), were less clear. The authors call for the use of robust study design in further research, and for routine psychosocial screening of all cosmetic patients using screening tools designed to assess a range of psychosocial risk factors beyond the focus on BDD.

By appropriately identifying possible mental health issues and by identifying and dealing with unrealistic expectations, a physician may avoid causing harm as well as possible legal action. In a systematic review to identify and appraise screening tools used with cosmetic surgery patients prior to surgery, our team found three such instruments.[11] The DAS59[12] and its short-form DAS24[13] were designed to measure problems of appearance in people with disfigurements and aesthetic concerns. The DAS59 was not developed as a screening tool, although the authors suggest that their tool could be used for that purpose. The third instrument – PreFACE[14] – represents a composite scale that includes 9 items taken from other published questionnaires. A psychometric limitation of PreFACE is that its development did not involve qualitative interviews with cosmetic surgery patients, an approach that limits content validity.[15-17] Our review helped to clarify that to measure psychosocial distress and expectations and/or motivation in cosmetic surgery patients, scientifically sound and clinically meaningful patient-reported scales were needed.

The primary aim of this article was to describe the development and psychometric evaluation of two new scales designed for use in clinical practice and research with cosmetic patients. These scales measure: (1) expectations about how one's appearance and quality of life might change with cosmetic treatments; and (2) appearance-related psychosocial distress. To advance knowledge about factors associated with expectations and psychosocial distress, a secondary aim was to explore relationships between the scales' scores and patient (ie, age, gender, ethnicity, marital status) and clinical (ie, type of cosmetic treatment) factors, and patient self-report ratings of satisfaction with appearance.

METHODS

The two new scales—Expectations and Psychosocial Distress—were developed following internationally recommended guidelines for the development of a patient-reported outcome (PRO) instrument.[15-17] The two scales were developed as part of a set of 40 plus scales designed in the FACE-Q study, which is described in full elsewhere.[18-23] The FACE-Q is a PRO instrument designed to measure important concepts of interest to surgical and nonsurgical facial aesthetics patients, including facial appearance, adverse effects, patient experience and quality of life. Briefly, a systematic review,[24] interviews with 50 surgical and/or nonsurgical facial aesthetic patients, and input from 26 experts in the field, were used to develop the FACE-Q conceptual framework and scales and checklists. The scales and checklists

were further refined through cognitive interviews with 35 facial aesthetic patients. Specifically, the interviews were used to obtain feedback from patients on the instructions, response options, and set of items for each scale, in order to identify where refinement was needed. Given the large number of FACE-Q scales addressing various facial anatomical areas and aspects of outcome, results for the scales have been published as a series of articles, each of which describes a clinically relevant grouping (eg, FACE-Q scales for rhinoplasty patients[23]) or aspect of outcome (eg, FACE-Q scale for measuring quality of life[22]).

In addition to the FACE-Q, we previously described the development of the BODY-Q conceptual framework and set of scales, which involved a literature review, 63 patient interviews, 22 cognitive patient interviews, and input from nine clinical experts (phase 1).[25,26] The BODY-Q is a PRO instrument designed to measure appearance, patient experience of care, and quality of life in patients undergoing weight loss and/or body contouring. Rather than perform the psychometric evaluation using only facial aesthetics patients, we included the 2 scales in the BODY-Q development study. Specifically, the Expectations and Psychosocial Distress scales were shown to participants during cognitive interviews, in order to determine acceptability and content validity in body contouring patients.

The Expectations scale includes statements that people might use to describe how their appearance and quality of life might change following a cosmetic procedure (eg, "I will look fantastic," "I will be transformed," "My close relationships will improve"). The Psychosocial Distress scale includes statements to measure appearance-related concerns (eg, "I feel unhappy about how I look," "I feel anxious when people look at me," "I worry that I am ugly"). Both scales ask respondents to answer with their appearance in mind, and each has the following four response options: "Definitely Disagree," "Somewhat Disagree," "Somewhat Agree," and "Definitely Agree." Higher scores on the scales indicate higher (ie, less appropriate) expectations and more appearance-related psychosocial distress. The scoring algorithm to convert raw scale scores to a 0 to 100 scale is available from the authors.

Field-test data to evaluate the psychometric properties of the Expectations and Psychosocial Distress scales came from both the FACE-Q and BODY-Q field-test studies as described below.

Study 1: FACE-Q Field-Test

Ethics review board approval was obtained prior to study initiation. In the United States, institutional review board approval was obtained through the New School in New York City. In Canada, research ethics approval was obtained through the University of British Columbia (Behavioral Research Ethics Board) and McMaster University (Hamilton Integrated Research Ethics Board). In the United Kingdom, local research and developmental approval (National Health Services permission) was obtained from University College London Hospitals National Health Service Foundation Trust. In the FACE-Q field-test, the Expectations and Psychosocial Distress scales were completed by pre-treatment patients aged 18 years and older consulting for any type of surgical and/or nonsurgical facial aesthetic treatment. The first and last participant to complete the two scales in the FACE-Q study was recruited from nine clinics in Canada, the United States, England, and Scotland between February 2010 and January 2015. Staff recruited patients into the study upon check-in. Data were collected using an iPad directly into a web-based application or a questionnaire booklet that did not ask for any identifiable data to ensure patient anonymity. Participants were left alone to answer the questionnaire. Instructions provided to patients told them that if they were unsure how to answer a question, they should answer the best they can. The United States, Canadian, and Scottish participants were provided a coffee card to thank them for their time.

Study 2: BODY-Q Field-Test

Ethics review board approval for the BODY-Q study was also obtained prior to initiation. In Canada, research ethics approval was obtained at McMaster University (Hamilton Integrated Research Ethics Board) and the University of British Columbia (Behavioral Research Ethics Board). In the United States, ethics approval was obtained through the IRB Company Incorporated (Buena Park, CA). In the BODY-Q field-test, the Expectations and Psychosocial Distress scales were completed by pre-treatment cosmetic body contouring surgery patients aged 18 years and older. Participants were consulting for any type of body contouring. The first and last participant to complete the two scales in the BODY-Q study was recruited by staff from three clinics in Canada and the United States between December 2013 and December 2014. Staff recruited patients into the study upon check-in. Data were collected using an iPad directly into a web-based application or a questionnaire booklet that did not ask for any identifiable data to ensure patient anonymity. Participants were asked questions to indicate the type of body contouring procedure(s) they were seeking. As above, participants were left alone to answer the questionnaire. Instructions provided to patients told them that if they were unsure how to answer a question, they should answer the best they can. Participants were provided a coffee card to thank them for their time

Analysis

To address the psychometric aim, we used RUMM2030 software (Perth, Australia)[27] and conducted Rasch Measurement Theory (RMT) analysis.[28-29] RMT examines the difference between observed and predicted item responses to determine if data from a sample fit the Rasch model.[28-29] The results

from a range of statistical and graphical tests were examined, with the evidence from the various tests considered together to make a decision about each scale's overall quality. We performed the following tests, which are explained in more detail elsewhere:[30]

(1) Thresholds for item response options: for each scale, we examined thresholds between response options (eg, between Definitely Agree and Somewhat Agree) to determine if a scale's response categories scored with successive integer scores increased as intended.

(2) Item fit statistics: we examined three indicators of fit to determine if the items of each scale worked together to map out a clinically important construct in the form of a hierarchy: (i) log residuals (item–person interaction); (ii) chi-square values (item–trait interaction); and (iii) item characteristic curves (ICC). Fit residuals should be between −2.5 and + 2.5, and chi-square values should be non-significant after Bonferroni adjustment. We interpreted fit statistics together and in relation to clinical usefulness of the scale.

(3) Targeting: for each scale, we examined person and item locations to determine if items were evenly spread over a reasonable range that matched the range of the construct reported by the sample.

(4) Dependency: residual correlations between pairs of items were inspected to identify any that were 0.30 or higher as high residual correlations can artificially inflate reliability.[29]

(5) Stability: differential item functioning (DIF) was examined to determine if items in a scale worked the same across subgroups within the sample. Subgroups that were examined included age group (< 30, 30-39, 40-49, 50-59, 60 ≥ years), race/ethnicity (white vs other), gender, field-test study (BODY-Q or FACE-Q), and procedure type (minimally invasive treatments, rhinoplasty, antiaging facial surgery, chin and/or jaw surgery, body contouring). Chi-square values significant after Bonferroni adjustment were used to indicate items with potential DIF.

(6) Person separation index (PSI): we computed the PSI for each scale. PSI measures error associated with the measurement of people in a sample and is comparable to Cronbach's alpha[31] which we also computed. For both PSI and Cronbach alpha, higher values indicate greater reliability.

To address the secondary aim, we computed Pearson or Spearman correlations as appropriate to examine relationships between scores on the Expectations, Psychosocial Distress, and Satisfaction with Appearance scales. Self-perceived appearance was measured using the FACE-Q Satisfaction with Appearance scale for facial aesthetic patients, and the BODY-Q Satisfaction with Body scale for body contouring participants. Previous publications[19,26] supported these 10-item

scales as reliable, valid, and responsive measurement tools that score appearance from 0 (lowest satisfaction) to 100 (highest satisfaction).

Potential predictors of Expectations and Psychological Distress were determined using univariate linear regression analyses. The following variables, which were analyzed in relation to the scales' scores, were included in the analysis as follows: age (continuous); gender (female = 1; male = 0); race/ethnicity (white = 1; other = 0); marital status, categorized as three variables (married/common-law, single, separated/divorced/widowed), with each category analyzed as a dichotomous variable (eg, married/common-law = 1; other = 0); and treatment type categorized as five variables (minimally invasive treatment, rhinoplasty, antiaging facial surgery, chin and/or jaw surgery, body contouring), with each category analyzed as a dichotomous variable. For the multivariate analysis, factors that were associated with Expectations and Psychosocial Distress scores at $P < .1$ were entered into a forward selection linear regression model. Statistical significance were two-sided tests and defined as $P < .05$.

RESULTS

Only a few patients declined to participate in this study, resulting in a response rate of 97 percent. Table 1 shows the sample characteristics. The screening scales were completed by 279 facial aesthetic and 90 body contouring participants. The mean age of the combined sample was 42.6 (range 18 to 85 years), 78 percent were female and 70 percent were Caucasian. The 90 participants seeking body contouring indicated that they were seeking between 1 and 8 procedures, which included the following: liposuction ($n = 67$), abdominoplasty ($n = 52$), breast lift/gynaecomastia ($n = 29$), buttocks lift ($n = 4$), inner thigh lift ($n = 3$), hips and outer thigh lift ($n = 2$), arm lift (N = 2), and backlift ($n = 1$). Two body contouring participants reported they had previously had bariatric surgery in the past.

Psychometric Analyses

The RMT findings for the two scales supported their reliability and validity. For each scale, all items had ordered thresholds supporting the hypothesis that the successive integer scores worked as a continuum. Table 2 shows the item fit for the two scales; 15/16 items fit within the recommended range of −2.5 to + 2.5 and 16/16 were not significant in terms of the chi-square P values. The one item with marginal misfit was retained in the scale due to its clinical importance as an indicator of mood.

The scale-to-sample targeting are shown in Figure 1, with the scales' items (bottom histograms) mapping out the continuum for the constructs being measured. In each figure, the x-axis represents the construct, with higher

Table 1. Participant Characteristics

N	369
Age (y)	
Mean (SD)	42.6 (15)
Range	18 to 85
Gender	
Female	288 (78)
Male	68 (18.4)
Missing	13 (3.5)
Race/ethnicity	
White	257 (69.6)
Other	91 (24.7)
Missing	21 (5.7)
Marital status	
Married or living common-law	189 (51.2)
Single	110 (29.8)
Other (divorced, separated, widowed)	51 (13.8)
Missing	19 (5.1)
Country	
USA	301 (81.6)
United Kingdom	65 (17.6)
Canada	3 (0.8)
Type of patient (%)	
Rhinoplasty	97 (26.3)
Minimally invasive, injectable, and/or skin treatment	72 (19.5)
Antiaging surgery - facelift, necklift, browlift, and/or blepharoplasty	76 (20.6)
Jaw and/or chin procedure	34 (9.2)
Body contouring	90 (24.4)

expectations (Figure 1A) and more psychosocial distress (Figure 1B) increasing to the right. The *y*-axis shows the frequency of person measure locations (top histogram) and item locations (bottom histogram). The findings show the scales defined a continuum for the constructs being measured, with little evidence of a ceiling effect, which is important for screening.

Table 3 shows the proportion of participants to endorse each of the item response options. The items, sorted into hierarchical order, show the pattern of responses according to the clinical hierarchy for each construct. For example, in the Expectations scale, the first item "I will look fantastic" was endorsed by 68 percent of participants, whereas for last item "New people will want to get to know me" was endorsed by 22 percent of participants.

The item residual was 0.31 for one pair of items ("I tend to avoid being around people" and "I have little interest in doing things"). A subtest performed on the pairs of items revealed marginal impact on scale reliability (PSI value dropped by 0.01).

Two items in the Psychosocial Distress scale evidenced DIF for age group, and 3 items in the Expectations scale evidenced DIF for study, age-group, and/or gender. However, when the items were split on the variable with DIF, and the new person locations for the scale were correlated with the original person locations, the DIF was found to have negligible impact on the scales (Pearson correlations were 0.99).

In terms of reliability, the PSI and Cronbach alpha for the Expectation scale was 0.88 and 0.92 and for the Psychosocial Distress was 0.81 and 0.89, respectively. The Flesch-Kincaid grade reading levels for the two scales were low, with all but one item a grade 3.9 or lower (Expectations: mean, 1.5 [range, 0 to 7.6]; Psychosocial Distress: mean, 2.7 [range, 0.6 to 3.9]).

Exploratory Analyses

Participants with higher expectations tended to report more psychosocial distress (R = 0.40, $P < .001$). In the facial aesthetic group, lower scores on the Satisfaction with Facial Appearance scale correlated with higher scores on the Expectations (R = −0.27, $P = .001$) and Psychosocial Distress (R = −0.52, $P < .001$) scales. For the body contouring group, lower scores on the Satisfaction with Body scale correlated with higher scores on the Psychosocial Distress scale (R = −0.31, $P = .003$).

Figure 2 shows the mean scores for the Expectations and Psychosocial Distress scales by the type of treatment. The differences between mean scores for both scales were significant ($P \le .003$) on ANOVA. Participants seeking minimally invasive treatments reported the lowest mean score on the Expectations and the Psychosocial Distress scales. Patients seeking body contouring reported the highest mean score on the Expectations scale, while the highest mean score for Psychosocial Distress was shared by patients seeking a rhinoplasty and body contouring. Mean scores on the Satisfaction with Facial Appearance scale varied significantly by treatment type ($P = .017$ on Kruskal-Wallis test), with patients in the antiaging surgery group reporting the lowest satisfaction.

Table 4 illustrates that factors significantly associated with lower scores on the Expectations scale included being married/living common-law as well as seeking minimally invasive treatments, while higher scores were associated with seeking body contouring surgery. Higher scores on

Table 2. Rasch Measurement Theory Statistical Indicators of Fit

Scale	Item	Item location	SE	Fit Residual	Chi-square	DF	P-value
Expectations	Will look fantastic	−1.53	0.09	1.78	16.97	5	.005
	People will tell me I look great	−1.38	0.10	1.67	4.87	5	.433
	People will be proud of how I look	−0.08	0.08	−0.60	7.35	5	.196
	Will be transformed	0.14	0.08	−1.12	10.58	5	.060
	Good things will happen to me	0.30	0.08	−2.19	13.39	5	.020
	Will feel like I fit in	0.47	0.08	−1.39	8.70	5	.122
	Close relationships will improve	0.82	0.09	−0.31	7.26	5	.202
	New people will want to know me	1.25	0.09	−1.45	15.12	5	.010
Distress	Feel unhappy	−1.74	0.09	1.59	12.83	5	.025
	Feel stressed	−0.75	0.09	−0.67	10.22	5	.069
	Feel down	−0.53	0.09	−3.12	18.73	5	.002
	Feel anxious	0.02	0.09	1.11	5.78	5	.328
	Worry don't look normal	0.59	0.10	−1.92	8.57	5	.128
	Worry I am ugly	0.59	0.10	−1.81	5.86	5	.320
	Avoid people	0.85	0.10	0.06	4.28	5	.510
	Little interest doing things	0.97	0.10	−1.13	5.68	5	.339

the Psychosocial Distress scale were associated with younger age, not being married/living common-law, and seeking rhinoplasty or body contouring surgery, while lower scores were associated with seeking minimally invasive treatments.

In the multivariate models, variables that were independently associated with Expectations and Psychosocial Distress scale scores are shown in Table 5. Being married/common-law and seeking minimally invasive treatments were independently associated with lower expectations, while seeking body contouring was associated with higher expectations. Seeking minimally invasive treatments or antiaging facial surgery were independently associated with reporting lower scores for appearance-related psychosocial distress.

DISCUSSION

People coming forward for cosmetic surgery can have inappropriate expectations and experience appearance-related psychosocial distress. Cosmetic practitioners may benefit from the use of short, clinically meaningful scales in the clinical encounter to identify patients who may require additional education and attention.

Patient-centered self-report instruments were initially designed for use in academic and industry research, but are

increasingly being used in clinical care, patient/consumer education, benchmarking, and quality improvement.[32] We anticipate that some plastic surgeons will be keen to use these screening scales with patients to identify concerns and use this information in patient management. We intentionally kept the current scales short to minimize the burden associated with using self-report instruments in clinical care. By testing the scales in a large sample that included participants from the FACE-Q and the BODY-Q field-test studies, we aimed to ensure the two scales' generalizability in clinical practice given the variety of patients many cosmetic practitioners see. The psychometric findings showed that the scales evidenced reliability and validity, and that neither scale had a significant ceiling effect. Future prospective studies are now needed to examine other measurement properties, including convergent and predictive validity, and to establish norms and interpretation guidelines.

Our exploratory analysis identified that not being in a marital or common-law relationship was associated with reporting more psychosocial distress. In a recent large US study of BDD prevalence in facial plastic surgery patients, Dey et al found that in their sample of 234 patients (122 cosmetic and 112 reconstructive), those diagnosed with BDD were younger and more likely to be single or divorced.[33] We also found, not surprisingly, that expectations and psychosocial distress was higher in patients seeking surgical over
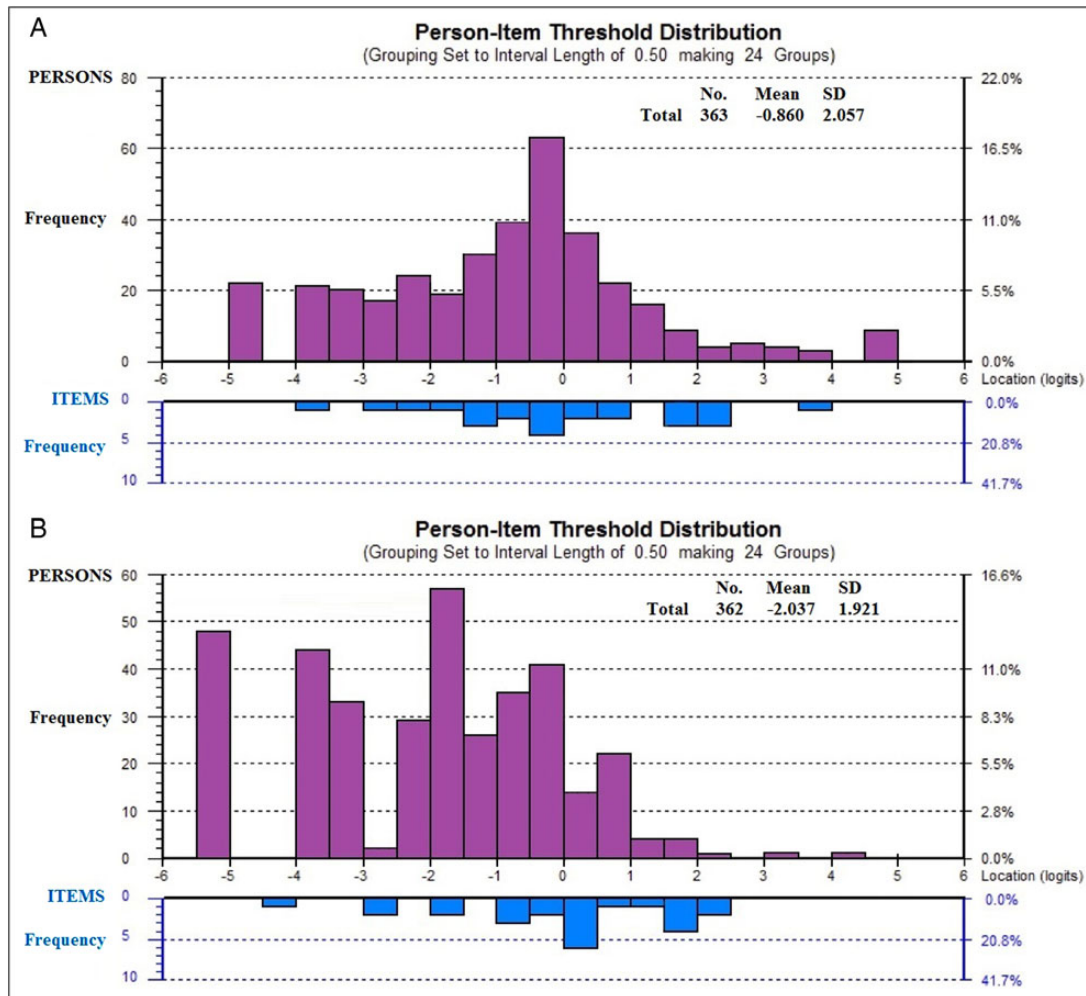
Figure 1. (A) Person Threshold Distribution for Expectation scale. The *x*-axis represents the construct (Expectations), with higher scores (more inappropriate expectations) increasing to the right. The *y*-axis shows the frequency of person measure locations (top histogram) and item locations (bottom histogram). (B) Person Threshold Distribution for Psychosocial Distress scale. The *x*-axis represents the construct (Psychosocial Distress), with higher scores (more distress) increasing to the right. The *y*-axis shows the frequency of person measure locations (top histogram) and item locations (bottom histogram).

minimally invasive treatments. In particular, patients seeking body contouring reported the highest scores for both expectations and psychosocial distress. Body contouring is in fact the most invasive of the procedures included in our sample as such treatments aim to alter the shape and size of the body. Body contouring is increasingly sought by patients who have experienced massive weight loss and have excess hanging skin, which can be highly distressing.[34-36] The goal in facial aesthetic treatments, on the other hand, is usually more subtle (ie, to improve the appearance of a facial feature such as the nose) or to make someone look younger or more refreshed, but not necessarily dramatically different.

Many studies of different surgical patient groups have shown that expectations play an important role in patient assessment of the results of surgery.[36-39] Studying expectations

and patient-reported outcomes (PROs), a systematic review by Walijee et al suggests patient expectations are inconsistently correlated with PROs following surgery.[39] These authors examined 60 studies and reported that while most showed that positive expectations correlated with improved PROs, even when expectations were not completely met, a large proportion of studies reported worse PROs with fulfilment of expectations, and some studies failed to identify any relationship between patient expectations and PROs. The authors note that few validated methods for measuring patient expectations exist and that a vast array of instruments has been used to collect this information. In cosmetic surgery, research using our new validated scales is needed to gain knowledge about expectations and appearance-related psychosocial distress for different types of cosmetic

Table 3. Proportion of Participants in the Sample to Endorse Each Item

	Definitely disagree		Somewhat disagree		Somewhat agree		Definitely agree		Missing	
	N	%	N	%	N	%	N	%	N	%
Expectations										
1. Will look fantastic	54	14.8	55	15.1	163	44.8	86	23.6	6	1.6
2. People will tell me I look great	42	11.5	78	21.4	183	50.3	55	15.1	6	1.6
3. People will be proud of how I look	132	36.3	67	18.4	117	32.1	44	12.1	4	1.1
4. Will be transformed	144	39.6	93	25.5	78	21.4	43	11.8	6	1.6
5. Good things will happen to me	150	41.2	85	23.4	94	25.8	33	9.1	2	0.5
6. Will feel like I fit in	168	46.2	89	24.5	73	20.1	31	8.5	3	0.8
7. Close relationships will improve	196	53.8	69	19.0	71	19.5	27	7.4	1	0.3
8. New people will want to know me	192	52.7	88	24.2	65	17.9	16	4.4	3	0.8
Psychosocial distress										
1. Feel unhappy	68	18.7	129	35.4	126	34.6	39	10.7	2	0.5
2. Feel stressed	135	37.1	122	33.5	78	21.4	25	6.9	4	1.1
3. Feel down	148	40.7	117	32.1	76	20.9	20	5.5	3	0.8
4. Feel anxious	189	51.9	100	27.5	59	16.2	12	3.3	4	1.1
5. Worry don't look normal	240	65.9	71	19.5	42	11.5	8	2.2	3	0.8
6. Worry I am ugly	267	73.4	54	14.8	30	8.2	12	3.3	1	0.3
7. Avoid people	279	76.6	48	13.2	28	7.7	7	1.9	2	0.5
8. Little interest doing things	285	78.3	44	12.1	25	6.9	7	1.9	3	0.8

Missing data ranged from 1 to 6 cases; Items are abbreviated, contact the authors for the complete scale and associated scoring tables (scale and tables are subject to the copyright of Memorial Sloan Kettering Cancer Center).
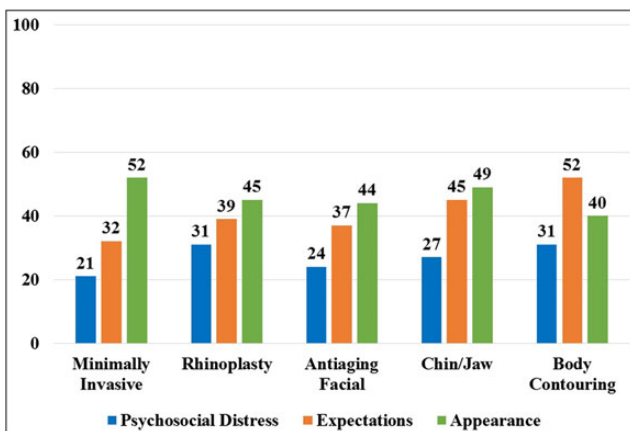
Figure 2. Mean score by procedural group in the sample.

interventions and how these relate to patient factors and important patient-centered outcomes. Further insight into the efficacy of educational interventions would also be important to examine whether expectations in cosmetic patients can be modified and how modification relates to satisfaction with appearance and quality of life outcomes.

Both our FACE-Q and BODY-Q field-test studies have limitations that we have previously described.[18-23,25-26] Specifically, both the FACE-Q and BODY-Q samples included more women compared with men, which reflects the nature of cosmetic surgery patients in the general population. Also, both samples were heterogeneous in terms of patient characteristics. While heterogeneity can be good in PRO instrument development studies, as the variability makes it possible to develop scales targeted to a wide and diverse sample, it can also limit our ability to report findings beyond the psychometric. While we performed DIF by age, race/ethnicity, gender, field-test sample, and procedure type, the small number of Canadian participants limited our ability to examine DIF by country. Another limitation is that the office staff who recruited the sample may have introduced bias in the selection of patients. We have no way of knowing for sure if "highly distressed" clients, for example, were not recruited. Our study is also limited in the use of a cross-sectional design, which did not allow us

Table 4. Univariate Predictors of Expectations and Psychosocial Distress

Variable	Expectations		Psychosocial distress	
	B ± s.e.	*P*-value	B ± s.e.	*P*-value
Demographic factors				
Age in years	−0.08 ± 0.08	.28	−0.17 ± 0.07	.02
Female	2.66 ± 2.91	.36	−4.05 ± 2.83	.15
Race/ethnicity white	−4.95 ± 2.61	.06	0.43 ± 2.55	.87
Married or common-law	−5.48 ± 2.28	.02	−5.02 ± 2.23	.03
Single	1.34 ± 2.45	.17	4.40 ± 2.39	.07
Divorced, Separated, Widowed	5.04 ± 3.21	.12	2.39 ± 3.20	.45
Cosmetic treatment				
Minimally invasive treatment	−11.46 ± 2.76	<.001	−7.73 ± 2.68	.004
Antiaging facial surgery	−4.25 ± 2.79	.13	−4.49 ± 2.63	.09
Rhinoplasty	−2.71 ± 2.55	.29	5.46 ± 2.43	.03
Jaw and/or chin procedure	4.39 ± 3.84	.25	−0.71 ± 3.69	.85
Body contouring	14.14 ± 2.49	<.001	5.34 ± 2.51	.03

B, B-coefficient from univariate linear regression; s.e., standard error.
Positive B-coefficients mean that the predictor (or increasing values of the predictor) was associated with worse scores (higher expectations or more psychosocial distress), whereas negative B-coefficients suggested that the predictors (or increasing values of the predictor) was associated with better scores (lower expectations or less psychosocial distress).

Table 5. Multivariate Analysis for Expectations and Psychosocial Distress

Variables	B ± s.e.	*P*-value
Expectation score		
Body contouring	14.89 ± 2.65	<.001
Married or common-law	−9.44 ± 2.25	<.001
Injectable and/or skin treatment	−7.20 ± 2.88	.013
Psychosocial distress score		
Minimally invasive treatment	−10.07 ± 2.89	.001
Antiaging facial surgery	−7.11 ± 2.79	.011

B, B-coefficient from univariate linear regression; s.e., standard error.
Positive B-coefficients mean that the predictor (or increasing values of the predictor) was associated with worse scores (higher expectations or more psychosocial distress), whereas negative B-coefficients suggested that the predictors (or increasing values of the predictor) were associated with better scores (lower expectations or less psychosocial distress).

to examine predictive validity (ie, that high expectations and psychosocial distress are related to worse outcomes). Prospective outcomes studies that examine additional psychometric properties, including that of convergent and predictive validity, are called for. As research data are accumulated, we will be able to establish norms and interpretation guidelines.

CONCLUSION

To conclude, in treatments that aim to change someone's physical appearance for aesthetic rather than medical reasons, the use of pre-treatment instruments during a clinical encounter could help physicians to efficiently identify patients who may require education to ensure their expectations are appropriate and/or additional support or

psychological referral. Further research is needed to determine if the use of screening tools in cosmetic practice may improve quality of care, with better patient safety and outcomes.

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