The Derriford Appearance Scale (DAS-59): A new scale to measure individual responses to living with problems of appearance

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Objectives. To develop a reliable and valid self-report scale which (1) will assess the distress and difficulties experienced in living with a problem of appearance; (2) can be used with clinical and non-clinical populations; and (3) facilitates clinical decision-making and research through good standardization, sensitivity and discrimination.

Design. Cross-sectional survey designs using clinical and non-clinical populations and a pre-post intervention design using plastic surgery patients.

Method. A large initial item set was refined through a controlled pre-post surgery study and a cross-sectional study of a plastic surgery waiting list (606). The resulting 59-item scale was administered to 1740 patients with problems of appearance and to a representative general population sample (1001).

Results. Principal component and factor analyses identified a stable five-factor structure accounting for 63.5% of the variance, with a primary factor of self-consciousness of appearance. Internal consistency was high ($\alpha = .98$) and test–retest reliabilities (three months) were good (.75 (general population); .86 (patients)). Correlations with existing tests showed appropriate criterion validity (.74–.62). Good construct validity was evidenced in pre- and post-operative changes, in differences between patients and controls and in convergent and divergent correlation patterns. The general population data reveal widespread concerns about appearance.

Conclusions. The DAS-59 provides a widely acceptable, psychometrically robust, factorial self-report scale to assess distress and dysfunction in problems of appearance across the full range of 'visibility' and aetiologies. It is sensitive to therapeutic change and discriminates well between patient groups.

Appearance is central to social experience and social interaction. The physically attractive receive preferential treatment during childhood and adulthood in all social situations

(Berscheid, 1981). Appearance communicates information about ethnicity, character, and physical and emotional states. Disfigurements caused by congenital malformations, disease and its treatment, trauma and burns put visibly different people at a social disadvantage with a risk of social and interpersonal difficulties, stigmatization and isolation (Rumsey, 1997). Clinical experience indicates that even apparently minor problems of appearance such as skin blemishes, obesity, disproportional growth of features and the effects of child-bearing or ageing can generate severe distress and behavioural dysfunction in many people.

In view of the social importance of appearance, there has been little attention hitherto to the definition, assessment and understanding of problems of appearance or to their physical or psychological treatment. For surgical interventions, evidence of benefit has been largely anecdotal or inferred from pre- and post-operative photographs. Recent reviews of approaches to assessment in disfigurement (Carr, 1997a, 1997b) have revealed a dearth of relevant psychometric scales. Studies which have used psychometric assessments have relied principally upon existing measures of mental health status, personality or quality of life, and there has been only a very limited, and recent, choice of measures which focus on problems of appearance (e.g. the Appearance Schemas Inventory (ASI; Cash & Labarge, 1996); the Multidimensional Body-Self Relations Questionnaire (MBSRQ; Brown, Cash, & Mikulka, 1990); the Body Image Avoidance Questionnaire (BIAQ; Rosen, Srebnik, Saltzburg, & Wendt, 1991) and the Body Dysmorphic Disorder Examination (BDDE; Rosen, Reiter, & Osoran, 1995)).

Of these more relevant measures, the ASI is focused upon the meaning and importance of appearance and is standardized only on female college students. The BDDE requires an extensive structured interview with the respondent which renders it largely impractical for most applications. The MBSRQ is a set of 11 short scales including measures of appearance satisfaction, feelings of attractiveness and interest in appearance. Other scales of much less relevance to appearance are included (e.g. attitudes to health and fitness), and there has been only limited investigation of the psychometric properties of the various scales (Brown, Cash, & Mikulka, 1995). Essentially the MBSRQ is a broad measure of interest and satisfaction with one's body, including appearance. It does not represent the concerns of a clinical sample and provides no index of behavioural and social dysfunction and distress associated with problems of appearance. The BIAQ was designed to extend the assessment of body-image disturbance to include 'an extensive assessment of the avoidance behaviours and grooming habits that are associated with negative body-image' (Rosen *et al*., 1991, p. 33). The scale shows good validity and reliablity and a stable four-factor structure. However, standardization is limited almost wholly to young, female students and the item content is similarly dominated by the concerns of that population (i.e. weight and body-size). The authors acknowledge the limitation of a self-report scale as an assessment of behaviour, but report a good correlation (.72) between scores on the scale and peer ratings of respondents' behaviours and concerns. The scale has clear utility in the field of eating disorders and with young, female samples, but it is correspondingly of limited application to problems of appearance unrelated to weight and body-size to males, or to samples of wider age-range and socio-economic status.

Overall, existing measures suffer from low content validity, impracticability and limited psychometric development. Inevitably, this has restricted our understanding of the emotional and behavioural issues associated with problems of appearance. Similarly,

evaluation of the effectiveness of existing therapies and the development of new approaches to treatment have been limited by the absence of appropriate measures. With very few exceptions (e.g. Robinson, Rumsey, & Partridge, 1996; Rosen *et al.*, 1995; Veale *et al.*, 1996) there has been virtually no adequate therapeutic outcome research in this field. It was in recognition of the limitations resulting from the lack of appropriate measures that the present work was undertaken.

STUDY 1

The original selection of items was based primarily upon Harris (1982). This study of a representative clinical sample had demonstrated sufficient commonality of experience in patients living with problems of appearance to suggest that a specifically designed scale, focused on these experiences, was a feasible proposition. This original item selection gave the scale a firm basis in the experiences of patients living with problems of appearance and ensured that the appropriate domains were sampled. The range of items suggested three areas of enquiry which prompted the design of three initially separate scales: (1) the Clinical Rating Scale (CRS) comprised 72 items describing avoidance behaviours, other coping strategies and the effects of a problem of appearance on lifestyle and self-esteem; (2) the Personal Distress Scale (PDS) comprised 26 items relating to emotional responses arising from a problem of appearance; and (3) the Personal Rating Scale (PRS) comprised 38 items relating to distress arising from feeling visibly different and from being unable to do things that normal-appearing people can do.

Method

After an initial pilot study ($N = 72$) and minor amendments to syntax and layout, the three new scales were administered to 50 pre-operative plastic surgery in-patients who were concerned about their noses, breasts or hands/forearms and a control sample of 41 pre-operative general, dental and ENT surgery in-patients, matched for age and gender. A number of other measures were included in the test package: the Eysenck Personality Questionnaire (EPQ; Eysenck & Eysenck, 1991), the Crown Crisp Experiential Inventory (CCEI; Crown & Crisp, 1979), the Social Anxiety and Distress Scale (SAD; Watson & Friend, 1969), the Strait-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, Vagg, & Jacobs, 1983), and the Beck Depression Inventory (BDI; Beck & Steer, 1987). The test package was administered 24 hours pre-operatively and three months post-operatively.

Results

The three new scales intercorrelated strongly (CRS:PRS $= .77$; CRS:PDS $= .78$; PRS:PDS $= .73$) and good criterion validity was demonstrated by moderate, positive correlations with social anxiety (SAD:CRS $= .74$; PDS $= .74$; PRS $= .62$). Good convergent construct validity was shown by positive correlations with state anxiety (STAI:CRS $= .54$; PDS $= .54$; PRS $= .43$), trait anxiety (STAI:CRS $= .58$; PDS $= .58$; PRS $= .48$), neuroticism (EPQN:CRS $= .50$; PDS $= .49$; PRS $= .44$) and depression (BDI:CRS $= .63$; PDS $= .63$; PRS $= .51$). Divergent construct validity was shown by negative correlations with extraversion (EPQE:CRS $= -.27$; PDS $= -.24$; PRS $= -.19$) and by independence from hysteria (CCEIH:CRS $= .17$; PDS $= .11$; PRS $= .13$).

Construct validity of the new scales was further supported by the finding that mean pre-operative scores for the plastic surgery patients were significantly higher than those for the pre-operative control surgery patients on all three scales (e.g. CRS: 128.3–95.3; $t = 6.2$, $p < .001$) and the pre-post operative changes for the plastic surgery patients were large and significant (e.g. CRS: 128.3–99.1; $t = 5.1$, $p < .001$).

These results clearly indicated that the new scales had excellent potential to provide an appropriate instrument to meet the present aims. Feedback from the plastic surgery patients was strongly positive regarding the scales' content which they judged to encompass satisfactorily all relevant aspects of appearance-related distress and dysfunction. However, the scales were too long in their existing form and some ambiguities in wording needed improvement.

STUDY 2

All patients aged 18–60 on the plastic surgery waiting list at Derriford Hospital, Plymouth were mailed revised versions of the CRS, PDS and PRS and an explanatory letter over a three-month period. Of 1010 patients mailed, 606 patients had responded after one follow-up letter. This clinical sample reflected the typical range of plastic surgery cases and consisted of patients with aesthetic problems of appearance (small/large breastedness, nasal deformities, loose abdominal skin, etc.; $N = 415$), patients with congenital and acquired disfigurements and deformities (e.g. naevi, scars, facial palsy; $N = 213$) and patients waiting for treatment of conditions which were not principally problems of appearance (e.g. functional hand surgery; $N = 88$). Thirty non-responders, chosen at random and contacted by telephone, indicated that their failure to respond related to the length of the test material and limited time available. None was distressed by the content of the scales.

The three scales were refined first by within-scale item analyses, retaining items with item–whole correlations of .5 or higher and by within-scale factor analyses (principal components and varimax) retaining items which loaded higher than .5. From the retained items, those which duplicated similar clinical information in more than one scale were identified and those with the higher item–whole correlations and greater face validity on the basis of clinical experience were retained. Finally, the items which had not been retained were reviewed and some with particularly high face validity for a clinical population, which had been excluded by these procedures ($N = 3$), were identified for inclusion in the refined item set. Of the 136 original items, 57 were thus retained. Scores on the 57 retained items were extracted from the original 606 data sets and their total correlated with the original scale totals yielding high coefficients (CRS = .98; PDS = .96; PRS = .96).

The refined set of 57 items was reorganized into a single scale. As many disfigurements can be associated with physical discomfort and difficulty, two new items were added to assess these dimensions and to improve the acceptability of the refined scale for clinicians. The 59 items are briefly described in Table 3, reported in the results for Study 3 below. They are constructed to appropriately assess the frequency and intensity of relevant aspects of affect, cognition and behaviour associated with living with problems of appearance. A Likert-style response format is used throughout, including a 'not applicable' option. The time frame of the items is contemporary, with respondents

indicating their current state. Full-scale scores range between 8 and 262, with higher scores indicating greater distress and dysfunction in living with a problem of appearance. The refined scale was titled the Derriford Appearance Scale (DAS-59). The acceptability of the new DAS-59 to users was assessed in 28 patients with a problem of appearance who returned a mailed questionnaire. No problems were identified and the new format was acceptable to all respondents.

STUDY 3

The third study was undertaken in order to investigate the psychometric properties of the new scale, to widen the range of conditions included in the total clinical database and to ensure the effectiveness of the scale when used with a non-clinical population. Accordingly, two large databases were generated: one clinical and one from the general population.

Method

Clinical sample

The clinical sample ($N = 1740$) was composed from three separate sources.

The DAS-59 was included in a booklet of tests administered to 271 out-patients and sent to 680 waiting list patients in a UK multicentre trial of adjustment in problems of appearance (Moss, 1997a). Patients were aged 18 years or over and the conditions represented in the 459 respondents (68%) included trauma, congenital malformation, disease and developmental growth, with face, trunk/chest, head and lower limb being the main body-sites involved. These aetiologies and body-sites fully sampled those in the total sample. Non-responders were followed up and reported the booklet's size and apparent inappropriateness for them as the main reasons for non-response.

Between 1993 and 1997, DAS-59 scales were administered to 1029 patients aged 18 years and over attending DLH plastic surgery clinics for consultations under the NHS (pre-operative = 434, post-operative = 108) and privately (pre-operative = 329, post-operative = 158). These patients were selected to reflect a broad cross-section of clinical conditions associated with mild to major problems of appearance (e.g. cleft lip, birthmarks, facial palsy, mastectomy, skin blemishes, post-burn and post-traumatic scarring, facial ageing, abdominal stretch marks and small and large breastedness).

The DAS-59 was included in a test booklet sent pre-operatively to 400 patients aged 16 years and older, consulting any of the nine plastic surgeons in the Oxford region for aesthetic operations of the breast, chest, nose, ear or abdomen (Klassen, Fitzpatrick, Jenkinson, & Goodacre, 1996). The overall response rate was 69.2% and, after excluding incomplete returns, 252 responses were included in this sample. According to the authors, non-responders tended to be younger, male and less distressed.

These three sources allowed representation of a wide range of body-sites, of aetiologies, of the visibility of the appearance problem, of pre- and post-operative patients and of NHS and private patients. The details of the clinical sample are shown in Table 1.

Item and factor analyses using clinical sample

Items were retained if they correlated with the scale total at .5 or better ($N = 1740$). This criterion indicated that the majority of items should provisionally be retained. The Cronbach alpha of .97 for the complete item set confirmed a high level of scale homogeneity. The data matrix was then subjected to a principal components analysis, scree plot and varimax rotation. The scree plot indicated four or five meaningful factors and a long 'tail' of very small factors which clearly corresponded to individual clinical conditions or body-sites. On the basis of the scree plot, four- and five-factor varimax solutions were calculated for consideration. Each solution accounted for similar proportions of the total variance (58.2% and 59.6% respectively) and

Table 1. Clinical sample (*N* = 1740)

	Pre-operative				Post-operative		All clinical total
	NHS		Private		NHS	Private	
	Multi-centre	Oxford	Plymouth	Plymouth	Plymouth	Plymouth	
Number	459	252	434	329	108	158	1740
Male	126 (27%)	56 (22%)	103 (24%)	38 (12%)	27 (25%)	14 (8%)	364 (21%)
Mean age (SD)	39.9 (14.6)	28.3 (10.8)	33.6 (15.4)	38.8 (13.6)	27.3 (15.6)	47.1 (15.6)	33.8 (14.8)
Female	333 (73%)	196 (78%)	331 (76%)	291 (88%)	81 (75%)	144 (92%)	1376 (79%)
Mean age (SD)	36.2 (12.2)	35.2 (13.0)	35.0 (13.2)	41.7 (13.6)	38.2 (12.4)	42.8 (13.6)	37.8 (13.3)
Features of concern							
Sexual	180 (39%)	109 (43%)	165 (38%)	116 (35%)	29 (27%)	27 (17%)	626 (36%)
Facial	211 (46%)	65 (26%)	201 (46%)	190 (58%)	27 (25%)	32 (20%)	726 (42%)
Other	64 (14%)	58 (23%)	53 (12%)	23 (7%)	8 (7%)	8 (5%)	214 (12%)
None	4 (0%)	20 (8%)	15 (4%)	0 (0%)	44 (41%)	91 (58%)	174 (10%)
DAS-59 total score mean (SD)	106.58 (39.84)	97.61 (31.47)	105.21 (50.99)	95.72 (43.98)	67.06 (45.51)	50.42 (33.46)	

each included virtually all the items in the scale when a minimum loading criterion of .4 was used. The five-factor solution had the advantage of identifying, as the fifth factor, a small number of items concerning facial appearance. In view of the importance of the face in human interaction and in clinical work, the five-factor solution was chosen in preference.

The factors were clinically meaningful and identified as general self-consciousness of appearance (GSC), social self-consciousness of appearance (SSC), sexual and bodily self-consciousness of appearance (SBSC), negative self-concept (NSC), and facial self-consciousness of appearance (FSC). The factor contents are shown in Table 3, together with factor loadings for the combined data set and factor locations of items in the separate clinical and general population sample analyses.

The majority of items loaded at .6 or better and, at a minimum criterion loading of .4, all but one of the items are included in a five-factor solution. The factors have acceptable eigenvalues (22.6–1.7), good homogeneity (Cronbach alphas = .97–.73) and the total explained variance is 59.6%. These results from a large clinical sample provisionally confirm the selection of 59 items and indicate a meaningful factorial structure. In view of the need for a scale that will enable comparisons between clinical and non-clinical populations, and which will facilitate explorations of problems of appearance in all contexts, it was necessary to examine the performance of the scale with a general population sample.

General population sample

With the cooperation of South & West Devon Health Authority, a representative general population sample was constructed from a served population of 470, 600. After an initial pilot study to explore response rates, the target sample (2990) was stratified by age and gender. Postcode was used to ensure appropriate sampling of urban and rural respondents and broad categories of socio-economic status. The general population sample is described in Table 2.

Table 2. General population sample ($N = 1001$)

	Concerned by appearance	Not concerned by appearance	Total general population
Number	473	528	1001
Male	155 (33%)	286 (54%)	441 (44%)
Mean age (SD)	39.2 (16.5)	50.7 (17.1)	46.7 (17.8)
Female	318 (67%)	242 (46%)	560 (56%)
Mean age (SD)	40.5 (15.2)	46.3 (18.3)	43.0 (16.8)
Features of concern			
Sexual	108 (23%)	0 (0%)	108 (11%)
Facial	193 (41%)	0 (0%)	193 (19%)
Other	172 (36%)	0 (0%)	172 (17%)
None	0 (0%)	528 (100%)	528 (53%)
DAS-59 total score mean (SD)	79.70 (37.08)	29.20 (20.92)	53.10 (38.92)

Item analyses and principal components analyses with varimax rotations were carried out on the 1001 general population data sets as they had been for the 1740 clinical respondents. With an item–whole correlation criterion of .5 once again the majority of items were provisionally retained. Retaining the complete item set gave a Cronbach alpha of .98 which confirmed good scale homogeneity. The best factor solution was again a five-factor structure, with the same factor meanings. However, the factors emerged in these analyses with different strengths to those which had emerged from the clinical population. Nevertheless, the core factor meanings clearly are the same in the two analyses (see Table 3). In particular, self-consciousness of appearance, as measured by the DAS-59, occurs in the general non-clinical population in much the same form as it does in the highly 'selected' clinical population as indicated by the very similar factor contents obtained with both analyses. Also, the mean total scores and variances for the general population (53.1; SD = 38.9) and for the post-operative clinical population (56.9; SD = 38.6) are

extremely similar, as are the maxima and minima for the pre-operative clinical and the general populations (246–10 and 223–8, respectively). These scores reveal a high degree of similarity and overlap between the clinical and general population samples in terms of the nature and presence of self-consciousness of appearance. On this basis, and in order to ensure the applicability of factor scores across both populations, item analyses and principal component analyses were repeated on the combined data set.

Results

The combined data set

Details of the 2741 respondents in the combined data set are given in Tables 1 and 2. Principal component analysis and subsequent scree test indicated an optimum five-factor solution accounting for 63.5% of the variance. A varimax rotation specifying five factors identified three main factors (general self-consciousness of appearance (20.05%), social self-consciousness of appearance (18.47%), and sexual and bodily self-consciousness of appearance (12.26%)), and two weaker factors (negative self-concept (7.14%) and facial self-consciousness of appearance (5.61%)). These factors were virtually identical with those appearing in earlier analyses but were a little more inclusive of scale items. The factor loadings and item–whole correlations can be seen in Table 3. Of the items, 90% load at .5 or better and items were assigned to factors according to their strongest loadings. The few items with appreciable cross-factor loadings (e.g. 29 and 32) were carefully reviewed in the light of their factor loadings and locations in the earlier separate sample analyses to ensure consistency of assignment here and a good match with factor meanings. With a minimum loading criterion of .4, all but two items are included in this five-factor solution. Both excluded items (53 and 59) have adequate item–whole correlations (.43 and .53) and are clinically descriptive with good face validity for the clinical population. Also, a slightly more liberal loading criterion of .33 would have included these items in the factor solution (in Factor 1, General self-consciousness of appearance). On these grounds it was decided to retain these items but not to assign them to a factor.

Reliabilities

Full-scale test–retest reliability for the general population was obtained by remailing the scale to a random sample of 350 original respondents after a period of three months. In all, 168 replies were received, giving a retest reliability of .75, which is adequate for a non-clinical population not typically concerned about their appearance. Test–retest reliability for a clinical sample was obtained from Study 2, in which 259 of 365 responders available from the original 606 replied to a three-month retest. This gave a good test–retest reliability of .86. Internal reliability was calculated on the combined sample, giving a Cronbach alpha of .98 which confirms the scale's high level of homogeneity. Test–retest reliabilities for the factors ranged from .79 (GSC) to .51 (FSC) (SSC = .70; SBSC = .73; NSC = .70) and Cronbach alphas from .98 to .74 (Table 3).

Validities

Good content validity was achieved by basing the original set of items upon patients'

Table 3. Rotated factor loadings (varimax) and item–whole correlations for combined data set ($N = 2741$), including factor locations of items in separate analyses of clinical and general population data

	Item–whole correlation	Factor 1 F1	Factor 2 F2	Factor 3 F3	Factor 4 F4	Factor 5 F5	Clinical	General population
Factor 1: General self-consciousness of appearance (GSC)								
(eigenvalue = 24.30; variance = 20.05%; $\alpha = .96$)								
35. Distress when others make remarks	.76	**.81**	.22	.21	.15	.14	F1	F1
1. Self-conscious of feature	.75	**.80**	.11	.27	.21	.09	F1	F1
27. Made to feel unattractive	.77	**.80**	.21	.30	.21	.05	F1	F1
34. Distress when others stare	.78	**.79**	.23	.25	.13	.19	F1	F1
30. Made to feel embarrassed	.80	**.78**	.22	.36	.20	.06	F1	F1
12. Hurt by others comments	.70	**.74**	.31	.19	.13	.08	F1	F1
36. Distress when others ask about the feature	.73	**.74**	.26	.22	.12	.17	F1	F1
41. Distress when seen in a mirror/window	.78	**.71**	.22	.34	.20	.13	F1	F1
38. Distress when seen in a particular view	.74	**.67**	.26	.34	.14	.18	F1	F1
31. Made to feel inferior	.79	**.64**	.41	.35	.15	.03	F1	F1
42. Distress when meeting strangers	.75	**.61**	.45	.14	.15	.25	F1	F1
15. Raising the feature in conversation	.59	**.60**	.23	.17	.10	.05	F1	F1
8. Special interest in others' features	.60	**.60**	.28	.16	.12	.07	F1	F1
28. Made to feel unlovable	.80	**.56**	.46	.43	.15	.01	F2	F2
10. Avoidance of photography	.67	**.53**	.42	.15	.18	.12	F1	F2
17. Being made irritable at home	.79	**.50**	.47	.43	.17	.07	F1	F2
58. Feeling hurt	.64	**.50**	.26	.28	.25	.13	F1	F4
Factor 2: Social self-consciousness of appearance (SSC)								
(eigenvalue = 3.86; variance = 18.47%; $\alpha = .95$)								
14. Avoid leaving the house	.62	.14	**.81**	.15	.08	.19	F2	F2
6. Avoiding pubs/restaurants	.64	.21	**.76**	.23	.08	.18	F2	F2
3. Difficulty making friends	.62	.26	**.72**	.13	.11	.10	F2	F2
7. Avoiding parties/discos	.66	.22	**.71**	.25	.12	.13	F2	F2
13. Avoiding department stores	.60	.14	**.71**	.24	.09	.17	F2	F2
5. Avoiding school/collge/work	.48	.13	**.70**	.04	.05	.12	F2	F2
19. Previously avoided school/college/work	.58	.23	**.70**	.06	.08	.15	F2	F2
2. Avoiding children in the street	.46	.19	**.69**	−.04	.02	.17	F2	F2
22. Worrying about sanity	.62	.25	**.62**	.31	.10	.07	F2	F2
20. Feeling an embarrassment to friends	.70	.38	**.62**	.26	.08	.16	F2	F2
16. Closing into a shell	.75	.41	**.61**	.29	.17	.09	F2	F2
40. Distress when on public transport	.62	.36	**.56**	.09	.05	.31	F2	F2
33. Feeling useless	.71	.40	**.56**	.41	.10	.12	F2	F1

Table 3. (continued)

	Item–whole correlation	Factor 1 F1	Factor 2 F2	Factor 3 F3	Factor 4 F4	Factor 5 F5	Clinical	General population
18. Being misjudged	.66	.45	**.55**	.16	.06	.12	F2	F1
29. Feeling isolated	.78	.52	**.54**	.38	.12	.09	F2	F1
39. Distress when going to school/college/work	.57	.36	**.53**	.06	.10	.27	F2	F2
32. Feeling rejected	.79	.52	**.53**	.39	.12	.06	F2	F1
50. Distress when not able to go to pubs/restaurants	.61	.18	**.51**	.33	.07	.51	F2	F5
21. Feeling a freak	.75	.44	**.49**	.45	.14	.05	F2	F2
47. Distress when not able to go to social events	.66	.21	**.46**	.44	.07	.50	F2	F5
Factor 3: Sexual and bodily self-consciousness of appearance (SBSC) (eigenvalue = 2.58; variance = 12.26%; α = .90)								
43. Distress from being unable to wear favourite clothes	.59	.35	.01	**.75**	.09	.10	F3	F3
45. Distress from being unable to go swimming	.62	.28	.08	**.72**	.09	.34	F3	F5
4. Avoid undressing in front of partner	.59	.27	.20	**.72**	.11	–.10	F3	F3
9. Avoid communal changing rooms	.59	.30	.18	**.68**	.13	–.07	F3	F3
37. Distress when going to the beach	.67	.46	.08	**.65**	.13	.10	F3	F3
46. Distress from being unable to play games	.55	.18	.17	**.65**	.07	.40	F3	F1
23. Adverse effect on sex life	.69	.38	.36	**.62**	.16	–.04	F3	F5
24. Adverse effect on marriage	.50	.23	.29	**.52**	.06	–.06	F3	F1
49. Distress from being unable to look in a mirror	.68	.43	.27	**.49**	.15	.27	F3	F5
Factor 4: Negative self-concept (NSC) (eigenvalue = 2.21; variance = 7.14%; α = .89)								
55. How cheerful do you feel?	–.42	–.18	–.11	–.09	**–.82**	–.02	F4	F4
56. How normal do you feel?	–.47	–.22	–.11	–.17	**–.81**	–.05	F4	F4
54. How secure do you feel?	–.38	–.14	–.10	–.09	**–.81**	–.03	F4	F4
52. How confident do you feel?	–.40	–.21	–.07	–.06	**–.79**	–.05	F4	F4
57. How feminine/masculine do you feel?	–.45	–.21	–.11	–.15	**–.77**	–.04	F4	F4
Factor 5: Facial self-consciousness of appearance (FSC) (eigenvalue = 1.77; variance = 5.61%; α = .74)								
51. Distress from being unable to go out in windy weather	.36	.07	.23	.12	.04	**.76**	F5	F5
44. Distress from being unable to change hairstyle	.37	.27	.26	–.12	.04	**.65**	F5	F5
48. Distress from being unable to answer front door	.47	.03	.43	.24	.04	**.63**	F2	F5
11. Avoid getting hair wet	.33	.17	.37	–.11	.02	**.40**	F5	F2
53. How irritable do you feel?	.43	.37	.24	.31	.23	.10	–	F4
59. How hostile do you feel?	.53	.33	.31	.26	.22	.14	–	F4

descriptions of living with problems of appearance (Harris, 1982) and by ensuring that all aspects of patients' experience were sampled in the scale. The effectiveness of this strategy is reflected in the consistently positive feedback received from patients and in the high level of internal consistency of the scale. Good construct validity is revealed by the change between clinical pre-operative and post-operative mean full-scale scores (101.8–56.9; $t = 15.6$, $p < .001$) and the comparison with general population mean full-scale scores (101.8–53.1; $t = 28.5$, $p < .001$). The same pattern is repeated for each of the five factors in terms of mean full-scale scores (e.g. general self-consciousness of appearance pre-operative (39.7), post-operative (21.2) and general population (18.0)).

Using data from Study 2, criterion validity is shown in a good positive correlation (.63) between the DAS-59 items total and the total SAD Scale score. Convergent construct validity is shown in moderate positive correlations with depression (.52; BDI), anxiety (.54; CCEI), trait anxiety (.48; STAI) and neuroticism (.51; EPQ). Divergent construct validity is shown in the negative correlation with extraversion (−.21; EPQ) and the effective independence of hysteria (.12; CCEI).

Norms

Table 4 shows a selection of normative and comparative data for males and females, younger and older responders and for two clinical conditions.

Discussion

This study describes the development of a reliable and valid scale to assess the difficulties experienced by people in living with a problem of appearance. The scale is highly homogenous and measures an underlying construct that the present authors have called 'self-consciousness of appearance'. The factorial structure of the scale is stable across populations and reveals that this construct is reflected in a general factor of self-consciousness of appearance and in four further dimensions: self-consciousness of appearance in social situations, self-consciousness of sexually significant features of the body, low self-esteem, and self-consciousness of facial features. The scale discriminates effectively between clinical and non-clinical populations and between pre- and post-operative plastic surgery patients. Good construct validity and face validity have been achieved by developing items from patients' reports (Harris, 1982). The scale covers the full range of dysfunction and distress arising from problems of appearance, from patients whose lives are dominated by their self-consciousness of appearance to people for whom physical appearance is unimportant. It is highly acceptable to people with a problem of appearance and to those without, to people whose problem of appearance is easily visible to others and to those whose problem is apparent only to themselves.

It is reassuring that the item contents, although originally derived from patients' post-operative accounts of their experience of living with problems of appearance, allow people without any concerns about appearance to respond effectively (Tables 2 and 4) and do not elicit from them any discernible adverse response. It is likely that this results from the structure of the scale's introductory section, in facilitating responding by people unconcerned about their appearance, and by the provision of a 'not applicable' response category throughout. Post-operative patient samples were included in the standardization

Table 4. Mean (SD) full-scale and factor scores for the pre-operative clinical and general populations

	Total	GSC	SSC	SBSC	NSC	FSC
Clinical population (N = 1474)						
Males (N = 323)	92.70 (45.01)	37.27 (18.42)	23.40 (17.12)	8.60 (7.23)	14.89 (4.67)	3.84 (4.03)
Females (N = 1151)	104.28 (42.63)	40.30 (17.43)	23.15 (15.87)	18.26 (11.04)	14.97 (4.49)	2.90 (3.36)
Age 22–30 (N = 363) (M&F)	110.65 (43.48)	42.53 (17.48)	25.84 (16.23)	18.29 (11.18)	15.66 (4.59)	3.20 (3.67)
Age 41–50 (N = 274) (M&F)	98.90 (42.69)	39.38 (17.67)	22.20 (16.65)	14.99 (10.36)	14.72 (4.13)	3.06 (3.56)
Small breasts (N = 66)	120.38 (39.80)	48.27 (15.17)	24.68 (15.18)	23.89 (9.59)	16.86 (4.34)	2.02 (2.67)
Mastectomy (N = 65)	93.17 (38.32)	32.86 (16.77)	19.69 (12.40)	19.09 (9.64)	15.14 (4.08)	1.77 (1.86)
General population (N = 1001)						
Males (N = 441)	47.54 (13.66)	13.66 (13.79)	11.75 (11.75)	5.35 (6.00)	10.96 (4.09)	1.88 (2.36)
Females (N = 560)	57.55 (41.37)	19.13 (16.62)	11.91 (12.68)	8.24 (8.93)	12.28 (4.25)	1.94 (2.75)
Age 22–30 (N = 134) (M&F)	63.91 (38.39)	20.96 (15.73)	14.97 (11.67)	9.07 (8.12)	12.12 (4.20)	2.29 (2.62)
Age 41–50 (N = 186) (M&F)	57.67 (44.42)	18.10 (17.26)	13.17 (13.75)	7.82 (9.31)	12.34 (4.01)	2.06 (2.90)
Concerned by breasts (N = 37) (F)	100.54 (37.81)	36.16 (14.08)	21.24 (13.22)	19.95 (8.14)	15.19 (5.17)	2.49 (2.64)
Concerned by appearance (N = 473) (M&F)	79.70 (37.08)	29.10 (13.55)	17.81 (12.98)	11.45 (8.66)	13.57 (4.03)	2.65 (2.93)
Not concerned by appearance (N = 528) (M&F)	29.20 (20.92)	5.57 (6.24)	6.41 (8.54)	2.92 (4.12)	10.02 (3.68)	1.25 (2.01)

GSC = general self-consciousness of appearance; SSC = social self-consciousness of appearance; SBSC = sexual and bodily self-consciousness of appearance; NSC = negative self-concept; FSC = facial self-consciousness of appearance.

of the scale and no difficulties were encountered in their use of the scale. Clinical observation, their low scores on the scale and simple probability argue for a substantial majority of these post-operative patients being happy with their appearance and, again, no difficulties were encountered with the item contents. However, note that the standardization samples did not include individuals who had overcome major problems of appearance without surgical intervention, either through their own efforts or with psychotherapeutic assistance. It is possible that the problem-oriented nature of the majority of the items might be less acceptable to this group and this will only be clarified through further research. It was the authors' intention to devise a scale that provided an effective measure and description of the difficulties associated with living with a problem of appearance and this appears to have been achieved.

Previous work on self-consciousness (e.g. Fenigstein, Scheier, & Buss, 1975) was concerned with non-clinical populations and with drawing distinctions between internal (private) and external (public) states of awareness or self-consciousness. This is not a dimension that has emerged in the present factorial structure of self-consciousness of appearance. Factorial studies of self-consciousness by Fenigstein *et al*. (1975) did identify a social anxiety factor, and more recent factorial work by Russell (1996) has also revealed a social, appearance-evaluative dimension in everyday experiences of self-consciousness. Self-consciousness of appearance, as it has emerged in this study, clearly has features in common with social-evaluative concerns, but includes a wider range of experience and behaviour and is powerfully characterized by general and specific issues of appearance.

Table 4 shows that the degree of distress and dysfunction experienced by people with a problem of appearance is not determined by the site of the feature or by the cause of the problem: small-breasted 'cosmetic' surgery patients can be as distressed and their lives as disturbed by their self-consciousness of appearance as patients with objectively severe disfigurements and scarring (e.g. mastectomy). This independence of distress and dysfunction from the degree of visible disfigurement has been observed by a number of authors (e.g. Moss, 1997b) and underlines the need for a scale such as the DAS-59. It also argues for a more positive attitude towards people whose concerns about appearance appear to be 'out of proportion' or not justified by adequate visible cause.

The widespread occurrence in the general population sample of concerns about appearance illustrates the importance that people ascribe to physical appearance. Table 2 shows that, of those responding, 35% of men and 57% of women reported concern or sensitivity about one or more aspects of their physical appearance and concerns about facial appearance were the most common (41%). There can be little doubt that current media promotion of the ideal of youth, fitness and beauty is responsible for much contemporary unease about appearance (Rumsey, 1997). Nevertheless, appearance has always played an important part in human culture (Shaw, 1981) and the essential normality of some concern about physical appearance places the concerns of patients on a continuum with those of the population at large. This commonality of experience and behaviour has emerged as the primary factor of general self-consciousness of appearance in the DAS-59.

It is hoped that this new scale will facilitate further research into the efficacy of treatment approaches for problems of appearance and that early investigations of therapeutic outcome (e.g. Rosen *et al*., 1995; Veale *et al*., 1996) will be developed by more focused and better standardized measurements. Although a psychometric scale

cannot substitute for a comprehensive clinical assessment, it is to be hoped that routine clinical assessments may also be improved by the inclusion of an effective, psychometric scale such as the Derriford Appearance Scale (Carr, 1997a). There is much work to be done on the aetiology of problems of appearance and there is a wide range of specific conditions which have been largely ignored from a psychological perspective (e.g. neurofibromatosis, facial palsy and thyroid eye disease). Also, much will be gained by the routine collection of data. To facilitate this, a short form of the Derriford Appearance Scale (DAS-24) has been devised and standardized and will be reported subsequently.

Acknowledgements

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