Research Paper

Construction and Standardization of a Questionnaire on Perception of Body Image among Adolescents and Young Adults

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ABSTRACT

Objective: The existing questionnaires on body image perception were either too clinically targeted on few specific disorders or concentrated around only the physical attributes of an individual. This necessitated the construction of a valid and reliable instrument that was relevant in determining the effects of both self-evaluation and social pressure on the perception of body image. **Method:** Based on the feedback and review sessions by the experts, a questionnaire was designed which was further used in a pilot study to validate the items and reduce their number. Spearman Brown and Cronbach's alpha coefficients were employed to establish the reliability of the instrument based on a sample of 262 subjects with equal number of boys and girls of 17-25 years of age. Results were computed both in general and gender specific terms. **Results:** Using Cronbach's alpha, the internal consistency was found to be excellent at 0.903 for the entire set of items and to be good in categorical responses at 0.84 for self-evaluation and 0.81 for social pressure. A high split half reliability index of 0.857 was also obtained. The mean of scores of girls, boys and entire sample was found to be 68.81, 80.43 and 74.62 respectively whereas the standard deviation came out to be 20.32, 26.27 and 24.15 for the same. **Conclusion:** A valid, reliable and standardized instrument was successfully constructed that is not limited to clinical settings and can be effectively used to gauge one's perception of body image and progress in self-assessment.

Keywords: *Construction, Standardization, Questionnaire on Perception, Body Image, Adolescents*

T he perception of body image among young adults and adolescents hasn't been studied comprehensively in India even though such studies have been predominant in parts of Asia for a long time.

Body Image is a multi-dimensional build that represents how persons imagine, sense and perform to their own bodily attributes (Muth & Cash, 1997). The subjective picture of one's own physical appearance is established both by self-observation and by noting the reactions of others. Body image experiences vary across life span and situational contexts (Tiggeman, 2004; Quittkat et. al., 2019). Body Image is prejudiced by individual experiences, biological, emotional and social factors (Durkin & Paxton, 2002).

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The existing questionnaires available on body image have mostly been used to diagnose body dysmorphia, eating disorders etc. in clinical settings like the Body Dysmorphic Symptoms Inventory (BDSI; Buhlmann et al., 2009) or are too centered around broad physical attributes of the individual like the Body Image Questionnaire (BIQ). None of them appropriately address the concerns regarding body image stemming from self critique by and societal construct around the individual. Thus, a need arises to undertake a pilot study for the construction of a valid and reliable instrument that has been standardized to serve as an evaluation criterion of perception of body image. Such an instrument must be inclusive of both the facets of perception of body image:- Self evaluation and Societal Pressure.

- **Self Evaluation:** It refers to the self perceived ranking or measure one has towards themselves. It is a continuous process of determining personal growth and progress which can be raised or lowered by the behaviour of others. It involves assessment of aspects that are important to or form parts of one's identity. Often self-assessment is closely aligned with self monitoring and reflection on actions.
- **Social Pressure:** It is defined as the influence exerted on a person or a group by another person or group. It includes rational arguments, persuasion, conformity and demands. It arises from mere identifiability of results and performance evaluation by others which in turn create an anxiety and fear of failure. Societal pressure is also a part of the implicit demands that our culture or society makes on us and the expectations that we will conform to in certain ways.

METHOD

The study is of instrumentation nature as it is aimed at the construction, validation and standardization of a valid and reliable instrument for the measurement of body image perception. To meet this objective of the study, a quantitative approach to survey methodology was used which involved the elaboration and validation of the survey questionnaire first. Thus, a carefully and diligently constructed list of 80 items including lie score questions was initially subjected to expert review (n1=4) which was followed by the items being tested in a pilot study.

Sample: For the pilot study, a sample composed of 300 subjects was used. There were equal number of males and females within the age of 17-25 years from diverse socio-economic background, caste, religion and opted educational streams. Out of this, only 262 samples (Mean$_{age}$=20.58; SD=1.89) were selected based upon the completion of the entire survey and low value on lie-score questions (n2=262). The sample statistics based on the age and gender of the participants is given in the Table 1 below.

Table 1: Sample Statistics based on age of participants

	Total		*Girls*		*Boys*
Measure					
Mean	20.58397		20.51145		20.65649
Standard Error	0.117098		0.151472		0.178981
Median	20		21		20
Mode	20		21		20
Standard Deviation	1.895399		1.733677		2.04853
Sample Variance	3.592539		3.005637		4.196477
Kurtosis	0.653706		0.206803		0.698678
Skewness	0.694092		0.380703		0.850988

	Total		Girls		Boys
Range	17-25		17-25		17-25
Count	262		131		131

Scoring; Classification & Interpretation: The items were organized on a Likert Scale ranging from Strongly Agree with a value of 4 to Strongly Disagree with a value of 0. Certain items which featured reverse scoring had been marked beforehand and were scored accordingly.

The items were primarily classified into two dimensions: Self evaluation and Social Pressure. These sub-scores or categorical were also calculated separately along with the total scores for each subject in the sample. A high score in self evaluation category depicts a poorer self assessment or low self image whereas a high score in social pressure category signifies a greater adherence or conformity to societal expectations and standards. An overall high score thus corresponds to a negative perception of body image.

Procedure:
The subjects were voluntary participants in the study who were asked to fill in their responses to a survey questionnaire. They were instructed on how and what their responses correspond to on a Likert Scale. There was no time limit but most of them managed to complete it within 10-20mins.

The entire set of responses to the survey questionnaire for each subject was manually entered into excel sheets for appropriate statistical operations and computations. The data analysis on the entire data set was also carried out using the same.

The individual item scores were then correlated with the total scores of an individual using Pearson Product Moment Correlation for item validation. The items with correlation coefficient r below the critical value had to be discarded.

The reliability of the entire test was studied based on Cronbach's Alpha coefficient and further by Split-half reliability using Spearman Brown Formula.

The Cronbach's Alpha was also used to analyze the Self evaluation and Social pressure dimension under which items of the test had been classified.

The results were computed and analysed using various descriptive statistics for the entire sample as well in gender specific terms. The mean values of total and categorical scores obtained on the test were compared using T-test assuming equal variance. Interpretation criteria for raw scores based on normal distribution curve was defined after checking kurtosis and skewness of obtained scores of the sample.

RESULTS

After the initial review carried out by experts for the face and content validity, recommended modifications were made in the wording and structuring of the items for better comprehension by the subjects and to avoid any ambiguity in their understanding. However the number of items remained the same.

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In the pilot study, only 262 samples were selected out of 300 as others were either incomplete or had high lie score value. The mean age of the total sample was 20.58 with standard deviation of 1.89. The mean age for girls was 20.51 with SD of 1.73 whereas the same for boys was 20.65 with SD of 2.04.

On a sample size of 262 subjects, the critical value of Pearson Product Moment correlation at 0.01 significance level for df (degree of freedom) 250 and 300 was found to be 0.161 and 0.148 respectively. Items were discarded accordingly. The items that made the cut of significance were scrutinized again to remove the lie score questions and effectively bringing the count of items down to an even 50. The selected items have been presented below in table 2 and table 3 as per their dimensional classification and correlation coefficient. A total of 26 items remained for self evaluation and 24 for social pressure dimension.

Table 2: Dimension 1: Self Evaluation

Num	Items	Item-Total *r*
1	Fitness for me means having abs or flat stomach.	0.3843
3	I notice people based on their looks.	0.4241
8	Laser treatment for acne is a good long term solution.	0.3930
9	People like me because of my looks.	0.4361
14	I spend a lot of money on makeup/hair & skin care products/supplements/ perfumes.	0.4116
15	I count calories or fats of whatever I am eating.	0.4414
16	I avoid social gatherings because I'm conscious of my looks.	0.4998
17	Social media makes me feel insecure about my appearance.	0.4675
18	My physical appearance affects my dating life.	0.4875
19	I often use photo editor apps to edit my photos.	0.3724
20	I have changed my diet based on the videos I watch.	0.3762
23	Looks matter to me while choosing a partner.	0.4371
25	I will opt for cosmetic surgery to look better in my 40s or 50s.	0.4841
27	I would rather opt for laser eye surgery than wear specs.	0.2938
29	My friends don't post pictures online with me because of how I look.	0.3995
30	I will choose surgery to correct a body part I'm not happy with.	0.3975
32	I feel unattractive as compared to my friends.	0.4406
33	I don't have many friends because I am not good looking.	0.4228
35	I eat less in front of people because I feel overweight.	0.4278
36	I look dull when I don't groom myself/wear makeup.	0.5006
37	If I have a scar or mark on my face, I will hide it or get it removed.	0.4703
38	I often starve myself to lose weight.	0.4689
40	I will breakup with my girlfriend/boyfriend if they become unattractive.	0.4535
43	I constantly check likes and comments on my pictures that I post online.	0.3009
47	I will lose confidence in myself if I go bald.	0.3518
49	I check my weight frequently.	0.3480

Source: Item Analysis & Validation

Table 3: Dimension 2: Social Pressure

Num	Items	Item-Total *r*
2	Women should get facial & body hair removed permanently.	0.4041
4	Mocking fat people helps them lose weight.	0.4117
5	People who can't lose weight normally should opt for fat removal surgery.	0.4637
6	I try to look like the people on my social media.	0.5237
7	Girls should wear makeup while going out.	0.4786
10	I must have protein shakes if I'm going to the gym.	0.3813
11	I will be asked to lose weight before my marriage.	0.4449
12	Overweight people can take medication to lose weight.	0.3710
13	It's hard to find a good match if you have a dark complexion.	0.4450
21	Models are supposed to be skinny.	0.4091
22	Wrinkles make people look unattractive.	0.4899
24	Friends criticize you on your looks because they want you to look better.	0.3756
26	I constantly compare my body with those of models.	0.5237
28	Colouring of hair is a must if your hair turns gray or white at an early age.	0.4260
31	People make you feel bad for eating too much.	0.4290
34	I would trust advice on diet and supplements promoted on social media.	0.4275
39	Muscular women are unattractive.	0.4256
41	Social media helps people know what others think of their looks.	0.3519
42	Other people's comments on my looks affect me.	0.3557
44	Feminine guys are unattractive.	0.3516
45	Men should grow a beard.	0.3005
46	Boys shouldn't wear makeup.	0.2570
48	I will not date a shorter guy/taller girl.	0.3374
50	People who are insecure about their looks don't post their pictures on social media.	0.2284

Source: Item Analysis & Validation

The reliability was tested using both Cronbach's alpha coefficient and Split half Reliability. The Cronbach's alpha came out to be 0.903 indicating a high internal consistency. The Split half reliability was calculated at 0.755 correlation value using Spearman Brown Formula [2r/(1+r)] and came out to be 0.857 which again depicts high level of internal consistency.

The Cronbach's alpha coefficient for primary classification category Self Evaluation is 0.84 which is considered to be good and for Social Pressure is 0.81 which again is considered to be good.

This has been reported in table 4 given below.

Table 4: Reliability Index

Reliability of	Type	Value	Evaluation
Total Sample	Split Half	0.857	High
Total Sample	Cronbach's Alpha	0.903	Excellent
Self Evaluation Dimension	Cronbach's Alpha	0.84	Good
Social Pressure Dimension	Cronbach's Alpha	0.81	Good

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The sub scores for self evaluation and social pressure along with the total scores were analysed to compute the mean, standard deviation, standard error, kurtosis, skewness and other statistical measures for the entire sample size. The data for this has been presented in table 5. Similar analysis was carried to compile gender specific data for the same statistical measures as well which has been presented in table 6 and table 7 for girls and boys respectively.

Table 5: Descriptive Statistics for entire sample (N=262)

	Self Evaluation	Social Pressure	Total
Measure			
Mean	35.82443	38.79389	74.61832
Standard Error	0.825491	0.741568	1.492015
Median	35	39	74
Mode	38	35	78
Standard Deviation	13.36174	12.00333	24.15038
Sample Variance	178.5361	144.08	583.2407
Kurtosis	0.375022	0.13685	0.471033
Skewness	0.351461	0.043435	0.260296
Range	74	68	142
Minimum	3	6	9
Maximum	77	74	151
Count	262	262	262
Confidence Level (95.0%)	1.62547	1.460218	2.937919

Table 6: Descriptive Statistics for girls (N=131)

	Self Evaluation	Social Pressure	Total
Measure			
Mean	32.74046	36.0687	68.80916
Standard Error	0.988993	0.91572	1.775713
Median	32	36	69
Mode	30	35	77
Standard Deviation	11.31955	10.48089	20.32396
Sample Variance	128.1321	109.8491	413.0633
Kurtosis	0.737706	0.302337	0.878088
Skewness	0.302672	0.010379	0.145977
Range	71	59	130
Minimum	3	6	9
Maximum	74	65	139
Count	131	131	131
Confidence Level(95.0%)	1.956605	1.811642	3.513035

Table 7: Descriptive Statistics for boys (N=131)

	Self Evaluation	Social Pressure	Total
Measure			
Mean	38.9084	41.51908	80.42748
Standard Error	1.269566	1.120426	2.294854
Median	39	42	82
Mode	38	46	96

	Self Evaluation	Social Pressure	Total
Standard Deviation	14.53084	12.82387	26.26581
Sample Variance	211.1454	164.4516	689.8928
Kurtosis	0.066386	0.084528	0.162668
Skewness	0.155607	-0.14856	0.071373
Range	73	67	139
Minimum	4	7	12
Maximum	77	74	151
Count	131	131	131
Confidence Level(95.0%)	2.511684	2.21663	4.540095

The table 8 summarizes the above provided statistics on the basis of mean and standard deviation only for Total, Self Evaluation and Social Pressure scores.

Table 8: Summary

Measure	*Girls*	*Boys*	*Sample*
Mean(μ)	68.81	80.43	74.62
Total			
Self Evaluation	32.74	38.91	35.82
Social Pressure	36.07	41.52	38.79
Standard Deviation(σ)			
Total	20.32	26.27	24.15
Self Evaluation	11.32	14.53	13.36
Social Pressure	10.48	12.82	12.00

Source: Study of sample of 262 subjects with equal number of girls and boys

The mean values obtained for girls and boys are compared using T-test to establish whether the difference between them is significant. By conventional criteria, the difference obtained in the means of total (t=4.004), self evaluation (t=3.833) and social pressure (t=3.767) scores for p<0.01 level between girls and boys can be considered to be extremely statistically significant against the critical table value of 2.594 at 260 degree of freedom. The computed data has been elaborately depicted in table 9.

Table 9: Comparison of means of girls & boys using t-test for p<0.01 at df=260 with 2.594 table value

Score	Girls	Boys	T-value	p-value
Total	68.81	80.43	4.004	0.00008
Self Evaluation	32.74	38.91	3.833	0.00015
Social Pressure	36.07	41.52	3.767	0.00020

Type: Two-tailed t-test assuming equal variance

As is evident from the mean scores, the boys consistently scored higher on the total score as well as on both the categorical scores than the girls. Their scores are also more dispersed than that of girls. It can be inferred that boys are more dissatisfied with their body image and tend to have a poorer self evaluation than the girls. They also experience more social pressure and tend to conform more to the societal standards or expectations than their counterpart. Both boys and girls are more influenced by and conform to social expectations than their own self assessment.

The raw scores obtained can be interpreted according to table 10 based on the normal distribution curve since the distribution of values of the sample have acceptable kurtosis and skewness values. The interpretation of the total score obtained by an individual can range from highly positive to highly negative.

Table 10: Interpretation of raw scores

Range of scores for			Evaluation
Girls	**Boys**	**Neutral**	
Below 29	Below 28	Below 27	**Highly Positive**
29-48	28-53	27-50	**Positive**
49-56	54-63	51-59	**Positively Moderate**
57-82	64-96	60-90	**Moderate**
83-89	97-106	91-99	**Negatively Moderate**
90-109	107-132	100-123	**Negative**
Above 109	Above 132	Above 123	**Highly Negative**

CONCLUSION

The study has successfully achieved its aim in the construction of a valid and reliable instrument for the perception of body image among young adults and adolescents. The two stage validation process allowed the instrument to be debugged and modified to ensure that the items were targeted at measuring body image perception of an individual. The pilot study also conclusively established the instrument to be highly reliable both in over-all assessment as well as in the facets or dimensions of body image perception namely Self evaluation and Social Pressure. The norms have been specified both in general as well as in gender specific terms which make it convenient to calculate and evaluate an individual's body image perception index directly from the raw scores obtained on the test as required in appropriate context.

In future, the sample can be expanded for a new study with more diverse cultural, geographical and national background of the subjects. Furthermore, having an effective instrument to gauge the perception of body image through a self administered questionnaire will be useful in serving as a tool for self assessment and progress even in a social or casual setting instead of being solely a clinically relevant instrument.

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