

PERCEPTUAL BODY DISTORTION AND BODY DISSATISFACTION: A STUDY USING ADJUSTABLE PARTIAL IMAGE DISTORTION

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Abstract

The body image disturbance consists of two components (Garner & Garfinkel, 1981): perceptual disturbance and body dissatisfaction, which may operate independently or together. Previous studies show that the pressure to be thin from one's social environment increases body dissatisfaction, leading the individuals to be discontent with their physical appearance (Striegel-Moore, Silberstein, & Rodin, 1986); the perceived pressure to be thin predicts subsequent increases in body dissatisfaction (Stice & Bearman, 2001), constituting a risk factor for the development of eating disorders. In this research we analyze the body perception, the body dissatisfaction and the social environment influence on forty-seven students. Results show that participants tend to see their body as larger than real and to desire their body smaller than real, but different body parts can be differently affected by these judgments. Furthermore, the body dissatisfaction appears to be influenced by both the social influence and the body mass: the body dissatisfaction increases accordingly with these components, and the desire to change own body is reflected in body dissatisfaction.

Body image is a widely used multidimensional construct consisting of a variety of measured facets. In recent years, the development of measures of the various components of body image construct has grown rapidly with a particular explosion of interest in the last two decades (Thompson, 2004; Cash & Pruzinsky, 2002). This is because distortions of body image are one of many factors underlying eating disorders. One conceptual issue concerns the definition and measurement of "body image" or "body image disturbance."

According to Thompson (2004) there is a mislabeling of the specific aspect of body image that the measure actually assesses. One source of this error is due to the assumption that most measures address some aspect of subjective satisfaction. Indeed many of the available measures, especially those focused on size or weight, address satisfaction with specific weight-relevant body sites (waist, hips, thighs) or overall size/weight satisfaction. When researchers and clinicians refer about "body image," they are often thinking about body image evaluation or satisfaction. However, it is relevant to distinguish satisfaction with appearance from an investment or concern with appearance.

According to Garner and Garfinkel (1981) body image disturbance consists of two separate aspects: perceptual disturbance and body dissatisfaction. Perceptual disturbance involves the inability to assess the size of one's body accurately. Body dissatisfaction includes affective or attitudinal perceptions of one's body. Garner and Garfinkel (1981) have noted that these two factors of body image disturbance may operate independently or together. Currently, although there is no universally accepted definition of body image (Hsu & Sobkiewicz, 1991), most investigators agree with the distinction between: (1) the perceptual dimension, that is the mental representation of the shape and size of the body; and (2) cognitive-emotional dimension, concerning the attitudes, beliefs, expectations, and feelings toward the body.

Several studies have empirically investigated the role that the social influence has on body image and dissatisfaction (Striegel-Moore, Silberstein, & Rodin, 1986; Williamson, 1990). Research has revealed associations between sociocultural aspects (such as body ideals presented by the media) and women's reactions to these pressures of be thin. It has been proposed that pressure to be thin from one's social environment increases body dissatisfaction because when the message that one needs to be thinner is repeated, the individual will feel discontent with their physical appearance (Striegel-Moore, Silberstein, & Rodin, 1986). In addition, research has supported the view that perceived pressure to be thin predicts subsequent increases in body dissatisfaction (Stice & Bearman, 2001). Moreover, several studies found that these pressures in fact constitute a risk factor for the development of an eating disorder (Cash & Brown, 1987; Rosen, 1990).

The aim of this study is analyze the relations between perceptual body distortion, body dissatisfaction, social influence, Body Mass Index and the desire to change in a sample of young women.

Method

Participants

Forty-seven girls took part in the experiment on voluntary bases. Mean age was 21.70 years (st. dev. 1.43); on average, the BMI index was regular (20.15, st. dev. 1.86).

Materials

Participants performed a computer task using the Body Image Assessment Software (BIAS; Letosa-Porta, Ferrer-García & Gutiérrez-Maldonado, 2005). BIAS is a computer program for the evaluation of body image disorders. The program presents a scale image of the patient's body on the computer screen. A series of measurements corresponding to the real length and width of each of the parts into which the subject's figure is divided are recorded beforehand and entered into the database (Figure 1). As its unit of reference, the program uses the twip (the unit of measurement used by Microsoft Access; 567 twips = 1 cm). This unit allows for calculation to obtain a scale image using real measurements. The program proposes a silhouette whose measures are calibrated on the actual measures of experimental subject. Participant is asked to adjust the silhouette measures in different body parts (head, arm, breast, hip, leg and waist) both in a frontal perspective and in a side perspective.

There are two different tasks: 1) *assessment task* required to make the silhouette image as close as possible to how the participant perceived herself; 2) *desire task* required to make the silhouette image as close as possible to how the participant desire herself. Thus, the program output provides for each body part an "assessment" measure and a "desire" measure; each score is expressed in percentage of image change.

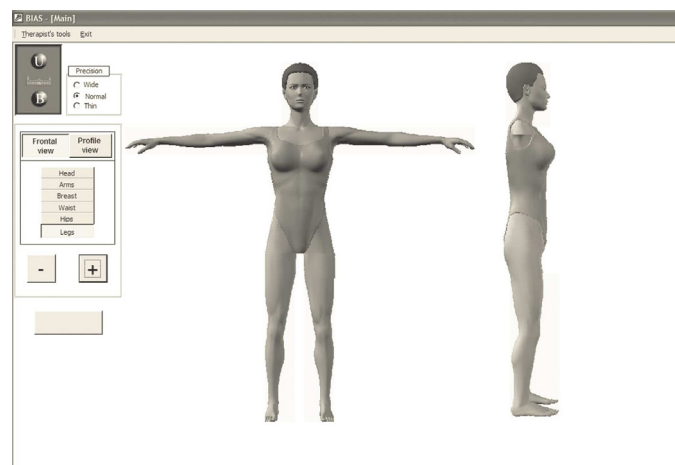


Figure 1: A screenshot of Body Image Assessment Software (BIAS; Letosa-Porta, Ferrer-García & Gutiérrez-Maldonado, 2005).

In addition, participants completed the Social Attitudes Towards Appearance Questionnaire (SATAQ; Heinberg, Thompson & Stormer, 1995) and the Body Shape Questionnaire (BSQ; Cooper, Taylor, Cooper and Fairburn, 1987). The SATAQ consists of fourteen items measuring the social influence on body image; the BSQ questionnaire consists of thirty-four items measuring the body dissatisfaction. Both SATAQ and BSQ require a response on five-point Likert scale.

Procedure

Participants were conducted individually in a designed laboratory. Here, the experimenter measured their head, arms, breast, hip, legs and waist, and entre this measures into the database of the BIAS program.

Participants completed the questionnaires, and sequentially the *assessment task* and the *desire task* from BIAS program. In both tasks, using the right button of the mouse and the keyboard “plus” and “minus”, participants can resize the silhouette dimension of the six body parts in a frontal perspective and only in four body parts (breast, hip, leg and waist) in the side perspective. The total time required to complete the task was 20 min.

Results

The scores obtained from the BIAS software are centred in the zero point. Thus, for the “Assessment” measures, positive scores indicate that the subject thinks to be larger than how he actually is, and negative scores indicate that the subject thinks to be thinner. Similarly, for the “Desire” measures, positive scores indicate that the subject desires to be larger, and negative scores indicate that the subject desires to be thinner. In the analysis, we considered only the scores for the frontal silhouette and four body parts: breast, hip, leg and waist. In fact, subjects tend to not modify the silhouette in the head and in the arm, so these parts show a low interest for the present research.

Preliminary analysis lead to identify and remove two anomalous subjects reporting an excessive score compared to our sample in body satisfaction (BSQ). Thus, analysis was performed on 45 subjects, using the software R version 2.11.1 (R Development Core Team, 2010).

As first step of data analysis, we explored the body evaluation and the desire to change own body. Two one-sample t tests were performed respectively to verify if the subjects perceive they body as it actually is and if the subjects desire to change their body dimension. The mean value of assessment (1.59 ± 6.27) is significantly different from zero ($t_{(179)} = 3.41, p < .001$): subjects tend to see their body as larger than real. Besides, the mean values of desire (-2.45 ± 6.27) is lower than zero ($t_{(179)} = -5.24, p < .001$): subjects desire their body to be smaller than real. As shown in figure 1, a paired tow-sample t test displays a difference between the body perception and the desire to change own body ($t_{(179)} = -5.24, p < .001$).

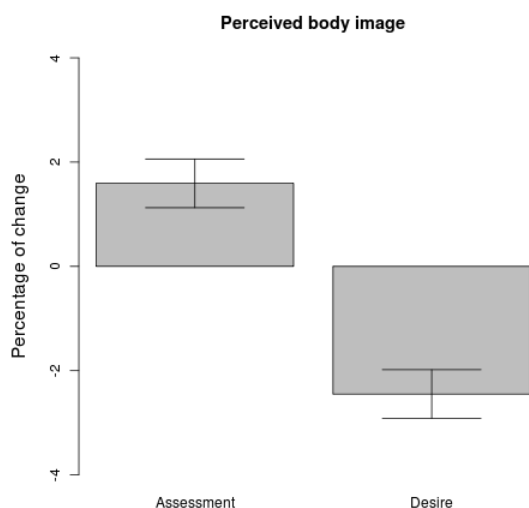


Figure 1: mean values and standard errors for the measures “body evaluation” and “desire of change own body”, considering only the scores for the frontal silhouette and the body parts: breast, hip, leg, waist.

Moreover, we performed two one-way ANOVA to check whether different body parts (breast, hip, leg, waist) can be affected by different judgments in assessment and in desire of change. As shown in figure 2 (left and right panels), both assessment ($F_{(3,132)} = 12.29, p < .001$) and desire judgments ($F_{(3,132)} = 3.61, p < .001$) vary according to the body part considered.

As third step, a robust regression model was fitted to analyze the influence of three variables on body dissatisfaction (BSQ total score): 1) social influence (SATAQ total score), 2) body mass index (BMI), 3) desire to change own body.

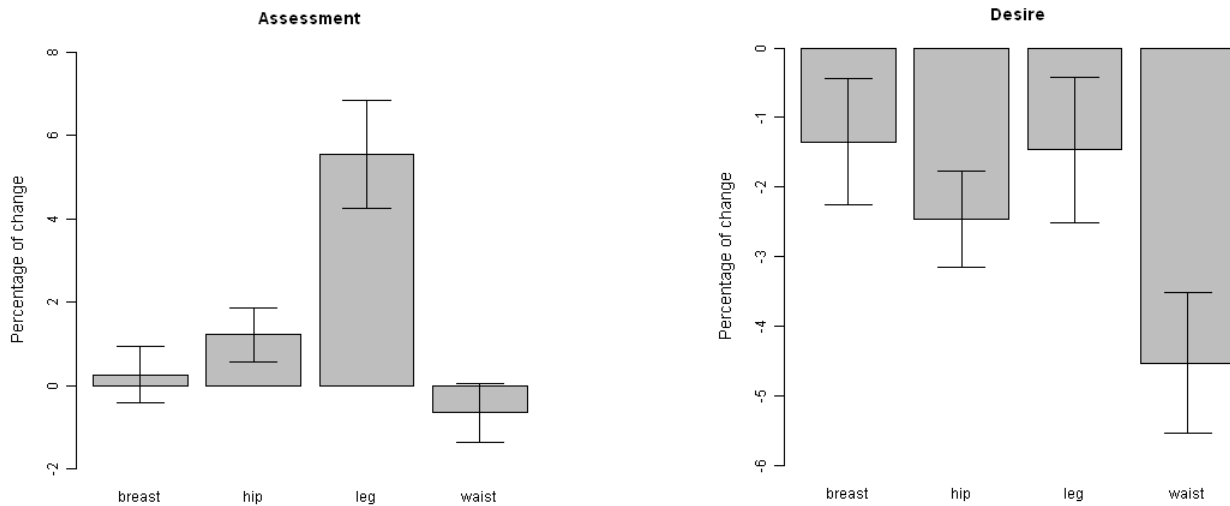


Figure 2: Mean values for the measures body evaluation and desire of change own body, considering the body parts: breast, hip, leg, waist.

In what concerns the desire of change own body, we expect that when the body dissatisfaction score increases, the desire to change should increase too. Thus, when the scores in desire tend both towards negative values and to positive values, the body dissatisfaction increases: in the first case subjects want to be thinner, in the second case subjects want to be larger; when the desire of change is zero, the body dissatisfaction should be minimal. Thus, the expected relation between two variables should not be linear but it should follow a quadratic trend. Regression model parameters and statistics are summarized in Table 1.

Component	Beta	Std. Error	<i>t</i> value (<i>df</i> = 175)	<i>p</i> value
Intercept	-45.21	12.27	-3.69	< .001
SATAQ	1.21	0.16	7.64	< .001
BMI	3.57	0.63	5.69	< .001
Desire (Linear)	-36.87	14.73	-2.50	< .05
Desire (Quadratic)	39.10	13.62	2.87	< .01

Table 1: Robust regression model for body dissatisfaction.

The model fit appears to be good: explained variance is $R^2 = 52.62\%$. The body dissatisfaction appears to be influenced by both the social influence and the body mass: when these two components increase, the body dissatisfaction increases too. Also, the desire to change own body is reflected in body dissatisfaction, and the measure obtained by the BIAS software seems to be a good measure for evaluating this process.

Discussion

Results show that participants tend to perceive their body as larger than real, and they desire their body to be thinner than real. This result is in accordance with a recent study of Mikolajczyk and colleagues (2010), they found that female students perceive themselves as “too fat” even when they have normal BMI. Moreover, it seems that different body parts (breast, hip, leg, waist) can be affected by different judgments in assessment and in desire of change. In fact, both assessment and desire judgments vary accordingly to the body part considered: in the assessment task participants judge above all their own legs fatter than the actual size, whereas in the desire task women desire to be thinner in waist and hip body part. Finally results show that body dissatisfaction appears to be influenced by both the social influence and the BMI: when participants present a high level of social influence and a high BMI their body dissatisfaction tends to increase. On the other hand, the desire to change own body is reflected in body dissatisfaction.

A weakness of this study is that it examines an essentially nonclinical sample of university students. However, given the relevant role of the body image disturbance and dissatisfaction on the onset and maintenance of eating disorders, it becomes an important preventative health aspect to investigate this issue. Thus, it seems essential to examine it in women with eating disorder.

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