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Body Image in Anorexia Nervosa

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The term 'body image' is used to refer to the picture we have in our minds of the size, shape and form of our bodies; and to our feelings concerning the size, shape and form of our bodies, and its constituent parts.

In particular two aspects of body image can be distinguished: (a) accuracy of body size estimation and (b) feelings towards the body and body parts (body dissatisfaction or body shape disparagement). The final part of this paper describes a recent study which shows that these two aspects of 'body image' are differentially related to measures of body fat.

Body image and anorexia nervosa

Bruch (1962) was the first person to argue for a fundamental role for body image disorder in anorexia nervosa. The first of her three key causal symptoms was referred to as "a disorder of delusional proportions in the body image and body concept"; she argued that a disturbance in size awareness was important both diagnostically and prognostically. These views and Crisp's view of anorexia nervosa as a kind of weight phobia (Crisp 1970), led to some of the early experimental studies.

In the late 1960s and early 1970s a series of cross-sectional (comparing groups at a single point in time) and longitudinal (monitoring changes in patients over time) studies were carried out (Slade & Russell, 1973). The major conclusions from these studies were that: (a) anorectics markedly overestimate their own body widths while non-anorectics are remarkably accurate, on average; (b) anorectics are much more accurate in judging the sizes of inanimate objects, their own height, or even the body widths of other females; (c) patients paradoxically show an improvement in their accuracy of body size judgement as they gain weight; although (d) patients on average still overestimate their body widths at the time of discharge; and (e) the extent of overestimation at the time of discharge from in-patient treatment was found to predict future relapse.

Subsequent work

Many studies which have been published since 1973 have led to the revision and qualification of some of the original conclusions. There are two major qualifications or revisions.

The accuracy of non-anorectic subjects

Since the original study (Slade & Russell, 1973) many investigators have found non-anorectic subjects to overestimate their body dimensions as well as anorectics. These include groups of normal female subjects (Crisp & Kallucy 1974; Garner *et al*, 1976; Button *et al*, 1977), neurotic controls (Pierloot & Houben, 1978; Strober *et al*, 1979), pregnant women (Slade, 1977) and patients presenting with secondary amenorrhoea (Friess, 1977). However, it has recently been concluded that, while all groups studied using size estimation techniques overestimate their body widths to some extent, anorectics do so to a significantly greater extent (Slade, 1985).

'Whole body' *vs* 'body part' methods

A number of different experimental procedures have been developed for measuring body image. One group of methods produce a distorted image of the 'whole body', the subjects' task then being to readjust the image to what they think and feel their body looks like. These methods include the distorting mirror (Traub & Orbach, 1964); the distorting photograph technique (Garner *et al*, 1976); and the distorting television image (Allebeck *et al*, 1976; Meerman, 1983; Freeman *et al*, 1984). These methods can be referred to generically as distorting image techniques.

By contrast with the above methods, size estimation techniques require the individual to make judgements about single body parts or usually body widths (i.e. distance across face, waist, hips, etc.). Two main methods have been used in making 'body-part' judgements: the visual size estimation or movable calliper task (Reitman & Cleveland, 1964) and the image marking procedure (Askevold, 1975).

In a recent review (Slade, 1985) it has been suggested that the image distorting and size estimation techniques (the whole body and body part methods) may be measuring different aspects of body image. It has been proposed that the former may be measuring *a relatively fixed, cognitive attitude to body size*, which in anorectics has all the hallmarks of an irrational (if not a delusional) belief; while the latter, in contrast, may be measuring a *fluid state of body size sensitivity*, which is strongly influenced by *affective/emotional factors* and which is responsive

to changes in both the external and the internal environment. This suggestion has been made on the basis of apparent differences between results using the two kinds of method, but has also been influenced by consideration of the nature of the two kinds of task. For example in the image distorting or whole body tasks, subjects are most likely to arrive at a judgement through the cognitive processing of many data. The final pathway is likely to be a cognitive one (unless, of course, subjects simply focus on one part of their body). By contrast, when the subject is required by the nature of the task to focus on one body part at a time, she/he has greater freedom to respond emotionally. Clearly there are issues here which can only be solved through further empirical research.

TABLE I

Pearson correlation coefficients between various measures of body composition

	Percentage fat 'tank' (n = 68)	*Percentage fat (electrodes) (n = 100)*	*Percentage fat 'circumference' (n = 98)*
Percentage fat 'electrodes'	0.64		
Percentage fat 'circumference'	0.50	0.69	
Weight	0.53	0.59	0.67
$Wt \div Ht^2$ (body mass index)	0.61	0.75	0.73

Some current work

Some work currently being carried out at Liverpool is concerned with the relationship between a number of fairly precise measures of body fat and measures of body image (Brodie & Slade, 1980). The former include underwater weighing (the Tank method), an electrical method for measuring the resistance of fatty tissue and a series of conventional anthropometric measurements (the Circumference method). The body image measures being used include two measures of body size accuracy (the distorting mirror and the movable calliper methods) and measure of body size dissatisfaction (one questionnaire method and one using the distorting mirror).

The first (pilot) study involved a sample of 100 female volunteers, of whom 26 were more than 30% 'overfat' a term which we use as a more precise description of the presenting medical problem. The findings and preliminary conclusions from the data collected from this sample can be summarised as follows:

(a) The relationship between the various measures of body fat (the outer person) are all positive and statistically significant (see Table 1). Moreover, all four methods gave very similar estimates of percentage body fat for the sample as a whole.

(b) On the other hand, the various measures of body image (the inner person) are virtually unrelated to each other. Measures of accuracy of size estimation derived from the mirror and the movable callipers are unrelated to each other and are also unrelated to measures of body dissatisfaction/disparagement.

(c) Measures of accuracy of body size estimation are unrelated to measures of body fat.

(d) However, significant positive correlations were found between measures of body dissatisfaction/disparagement and measures of body fat.

In conclusion, while overfatness is not related to an individual's capacity to make accurate judgements about their actual body size, it does appear to be related to their feelings about their body size and shape. In a nutshell, the more overfat the individual the more dissatisfied they are likely to be and the more they are likely to want to change. The distinction between accuracy of size estimation and body dissatisfaction/disparagement is discussed by Cooper & Taylor in this publication (pp. 32–36).

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