BODY SIZE ESTIMATION IN ANOREXIA NERVOSA PATIENTS: THE SIGNIFICANCE OF OVERESTIMATION

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Abstract—Using the video distortion method on a life-size screen, we have studied body size estimation in 100 female restricting anorexia nervosa patients. About half of the patients were accurate in estimating their own body dimensions and only 20% clearly showed overestimation. We then tested whether differences in accuracy of estimation were related to scores on the following questionnaires: Eating Disorder Inventory; Body Attitude Test; and Symptom Checklist (SCL-90). Overestimators reported a more negative body attitude and a more "neurotic profile" on the SCL-90. These differences might have both prognostic and therapeutic implications. © 1998 Elsevier Science Inc.

INTRODUCTION

The notion of body image in anorexia nervosa patients and its operationalization in perceptual research has been criticized in recent years [1, 2]. For too long a time the discussion about this issue has been simplified to the question of whether these patients overestimate their own body size. The contradictory results in the literature are usually attributed to differences in methodology. After extensive research [3–5] we have developed a reliable and clinically relevant method: the *video distortion method on a life-size screen.* The subjects are asked to adjust the previously distorted image of themselves on a life-size screen until it corresponds to what they "think," "feel," or "wish" to look like. The videotaped images can be distorted in two ways: from narrow to wide, and vice versa. This method has yielded high to very high reliability scores (consistency and test–retest stability). It may also be considered as the most "naturalistic" of the existing methods to estimate one's own body size, because the subjects are confronted with their life-size image as if they are looking in a mirror.

Using the video distortion method, from the very beginning we found diverging results within the same diagnostic subgroups. Hence, we were wondering what these differences could mean. Is under/overestimation of body size related to current weight or body composition (e.g., percentage body fat)? Do these differences in

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Table I.—Number of patients ($n = 100$) in the different
categories for the three video distortion tasks

	"Think" (CR)	"Feel" (AR)	"Wish" (OR)
<90%	9	28	25
90–94%	15	5	13
95–105%	48	28	29
106–110%	8	5	13
>110%	20	34	20

CR = cognitive response; AR = affective response; OR = optative response.

body estimation reflect specific body attitudes or are they related to other psychological features such as perfectionism and mood?

METHOD

A total of 100 female patients admitted to our eating disorder unit participated in this study. All patients met the *DSM-IV* criteria [6] for anorexia nervosa, restricting type, and were tested in a standardized manner within 1 week after their admission to our in-patient eating disorder unit. None had prior experience with body size estimation tests.

The *video distortion on a life-size screen* is accomplished by using a video camera, connected via a video recorder to a large video projector. The video image is projected onto a retroprojection screen (1.8×2.4 m). A technical operation on the resistance of the tube camera allows a distortion of the image ranging from 65% to 160% (1% distortion corresponds to 4 mm on the screen). The extent of the distortion can be read by the researcher from a voltmeter. Details of the instrument and its application have been described elsewhere [4, 5]. Subjects have to adjust the previously distorted image of themselves (in a black bikini) on the life-size screen until it corresponds to what they "think" they look like in reality (*cognitive response*, or CR), and to what they "wish" to look like (*optative response*, or OR). In the third task, following the suggestions made by other researchers [7–9], the subject is asked to adjust the width of the image until it corresponds to what they "feel" they look like (*affective response* or AR). The CR is meant to indicate the subjects' actual awareness of their body shape, in contrast to the AR, which relates more to their feelings about it. The OR reflects the subjects' desired or ideal body shape. The raw data from the different trials are converted into an index, reflecting the relation to the undistorted image (=100% accuracy).

In addition to the video distortion method, patients filled out different questionnaires. The *Body Attitude Test*, or BAT [10], is a self-report measure developed for female eating disorder patients; in addition to a total attitude score it assesses negative appreciation of body size, lack of familiarity with one's own body, and general dissatisfaction. The *Eating Disorder Inventory*, or EDI [11], is a widely used questionnaire aimed at assessing psychological features commonly found in eating-disordered patients: drive for thinness, ineffectiveness, interoceptive awareness, bulimia, perfectionism, maturity fears, body dissatisfaction, and interpersonal distrust. The EDI and the BAT use the same six-point answering possibilities from "always" to "never." The well-known *Symptom Checklist*, or SCL-90 [12], yields a global measure of "psychoneuroticism" (total score), as well as measures of various psychiatric symptoms such as anxiety, agoraphobia, depression, somatization, insufficiency, sensitivity, hostility, and sleeplessness.

RESULTS

The results for the cognitive task (CR) of the video distortion method reflect the subject's actual body image ("how they think they are"). Accuracy then means a body size estimation between 95% and 105% using the real (undistorted) image as point of reference: about half of the patients fell in this group; about 24% showed underestimation and 28% overestimation. Our previous studies [3–5] have shown that a deviation of more than 10% is clearly a perceptual distortion. Because the