

Body Fat Perception in Eating-Disordered Men

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Abstract: Objective: We sought to assess the relative roles of body fat ideals and body fat perception in men with eating disorders. **Method:** We compared 27 men meeting criteria for a current eating disorder (17 with anorexia nervosa and 10 with bulimia nervosa), 21 male mountain climbers, and 21 control men, using a computerized test of body image, the "somatomorphic matrix." **Results:** When asked to choose the body that they "ideally would like to have," men with eating disorders selected an image with body fat closely comparable to that chosen by the control men. On perceived body fat, however, the groups differed dramatically. The eating-disordered men perceived themselves to be almost twice as fat as they actually were, whereas the control subjects showed virtually no such distortion. These findings resemble those of a previous study of women, which found that women dieters showed abnormal body fat perception, but not body fat ideals, when compared with nondieters. **Conclusion:** These observations suggest that distorted body perception, rather than body ideal, may be central to eating disorders in men. This distinction may be important for both research and therapy. © 2003 by Wiley Periodicals, Inc. *Int J Eat Disord* 35: 102–108, 2004.

Key words: body fat perception; body fat ideal; eating-disordered men; body image distortion

INTRODUCTION

Body image distortion is a central feature of eating disorders. There is a vast literature on body image abnormalities in eating-disordered females (Bruch, 1978; Cooper & Taylor, 1988; Slade, 1988), especially on body image distortion associated with unrealistic attitudes about body fat (Carter, Bulik, Lawson, Sullivan, & Wilson, 1996). However, these attitudes may be unrealistic in either or both of two ways. Individuals may perceive themselves to be fatter than they actually are or they may aspire to a body ideal that is

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inappropriately thin. It is difficult to assess the relative contribution of these two components to the development of eating disorders because they are often not explicitly separated in studies on eating-disordered individuals. We took advantage of a novel computerized test of body image, the "somatomorphic matrix" (Gruber, Pope, Borowiecki, & Cohane, 2000; Gruber, Pope, Lalonde, & Hudson, 2001; Pope et al., 2000), to segregate these two components in male patients with eating disorders as compared with two groups of nonpsychiatric male control subjects.

METHODS

We chose two groups of men, aged 19–43 years, currently in inpatient or outpatient treatment for an eating disorder. The first group consisted of 17 men meeting criteria for current anorexia nervosa (AN; 11 men with the restricting type and 6 men with the binge eating/purging type; 2 inpatients, 15 outpatients) as outlined in the 4th ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV; American Psychiatric Association, 1994). The second group consisted of 10 men meeting DSM-IV criteria for current bulimia nervosa (BN; 6 men with the purging type and 4 men with the nonpurging type; 10 outpatients). We chose two age-matched nonpsychiatric comparison groups, one athletic and the other nonathletic. We included the former group to assess whether athletes might share the body concerns of eating-disordered men. The athletes consisted of 21 mountain climbers who worked out at least two times per week for climbing for a minimum of 2 years. They were recruited from local gymnasiums in Innsbruck with climbing walls. The nonathletes were 21 healthy men with no intensive athletic activity, most of whom were nonclimbing acquaintances of the mountain climbers. No subject in either comparison group reported a history of an eating disorder. All subjects signed written informed consent for the study, which was approved by the ethics committee of the University of Innsbruck. Subjects were compensated 8 Euro (approximately 8 US dollars) for participation.

We measured each subject's height, weight, and body fat, and then calculated his fat-free mass index (FFMI), an index of muscularity (Kouri, Pope, Katz, & Oliva, 1995). We then administered the somatomorphic matrix, a computerized test assessing body image on the two separate axes of fat and muscularity, as described in previous papers (Gruber et al., 2000, 2001; Pope et al., 2000). This instrument presents the subject with a drawing of a male body that he can "morph" through 10 levels of muscularity and 10 levels of body fat (i.e., a total of 100 possible images). We asked each man to choose images representing his best estimate of (1) his own body, (2) the body that he ideally would like to have, (3) the body of an average man of his age, and (4) the male body that he believed women would like best.

We evaluated the differences between group means on six indices of body fat and FFMI (measured, perceived, ideal, perceived minus measured, average man, and women's preferred), as well as on demographic variables, using analysis of variance (ANOVA), with Tukey's test for post-hoc pairwise comparisons. We evaluated differences between groups on categorical variables using a chi-square test.

RESULTS

The four groups were similar in demographic features (Table 1). As expected from definition criteria, weight history distinguished the four groups, showing eating-disordered

Table 1. Characteristic features

	Anorexic Males [1] N = 17	Bulimic Males [2] N = 10	Mountain Climbers [3] N = 21	Nonathletic Controls [4] N = 21	p Value for Comparisons ^a					
					Overall ^b 1/2/3/4	Pairwise				
						1 and 2	1 and 3	1 and 4	2 and 3	2 and 4
Age, years, <i>m</i> (<i>SD</i>)	27.9 (6.2)	28.6 (7.3)	27.9 (3.4)	29.4 (3.4)	.745					
Age of onset of disorder	22.0 (5.9)	22.4 (4.8)	xx	xx	.952 ^c					
Education (%)										
Matura or university level	9 (46)	4 (40)	13 (65)	13 (62)	.378					
BMI, kg/m ² , <i>M</i> (<i>SD</i>)										
Current	16.8 (2.3)	22.5 (2.0)	21.4 (1.2)	23.1 (2.7)	.000	.000	.000	.000	.564	.882
Highest	23.5 (5.0)	29.2 (3.5)	22.1 (1.8)	24.3 (2.6)	.000	.000	.595	.882	.000	.002
Lowest adult	15.5 (2.2)	21.1 (2.3)	21.4 (1.1)	20.9 (1.8)	.000	.000	.000	.000	.548	.993
Bi-sexual/homosexual (%)	3 (18)	0	0	1 (5)	.097					

Note: BMI = body mass index.

^aFor continuous variables: one-factor analysis of variance (overall), Tukey's test (pairwise); for categorical variables: chi-square test (overall), Fisher's exact test (pairwise).

^bDegrees of freedom = 3.

^cDegrees of freedom = 2.

males to have the strongest fluctuations among current, highest, and lowest weight compared with the other two groups.

On indices of muscularity (FFMI), we found few differences among groups (Table 2), with the predictable exception that anorexic men displayed significantly lower measured and perceived FFMI than the other men. Notably, on perceived minus measured FFMI, we found no significant differences among groups, suggesting that all four groups accurately perceived their levels of muscularity.

On fat indices, we found no significant differences among groups on body fat ideals, as judged by the levels of body fat that subjects chose for the ideal male body or by the male body that they believed women preferred (Table 3). However, the groups exhibited striking differences on perceived minus measured body fat. For example, the anorexic and bulimic men perceived themselves to be almost twice as fat as they actually were, whereas the control groups showed almost no such distortion.

DISCUSSION

We compared two groups of men with eating disorders and two groups of nonpsychiatric control men without eating disorders, using a computerized measure of body image, the somatomorphic matrix. We hypothesized that when compared with control subjects, men with eating disorders would select a thinner body ideal and would perceive themselves as fatter than they really were.

The first of these hypotheses was rejected entirely. Men with eating disorders chose a body ideal with the same amount of fat as control men. Similarly, when asked to choose the body that they believed women preferred, the men with eating disorders chose a body with at least as much fat as that chosen by controls. The second hypothesis, however, was confirmed. Men with eating disorders perceived themselves to be almost twice as fat as they actually were, whereas control men exhibited virtually no such distortion. Overall, these findings suggest that men with eating disorders have a realistic body fat ideal, but an unrealistic perception of their body fat.

It is unclear whether these findings would extend to women with eating disorders. However, Gruber et al. (2001) observed similar results in a recent study of normal-weight college women. They used the same computerized test to compare those who reported having dieted with those who had not. In their study, the groups did not exhibit differences in body fat ideals. However, dieters perceived themselves as much fatter than they actually were, whereas controls showed no such distortion—a finding that closely parallels the findings of the current study of eating-disordered men.

The current study is limited by the modest sample size, due to the rarity of eating disorders in males, and by the fact that subjects were not screened for other psychiatric disorders. However, neither of these limitations would seem likely to compromise the validity of the findings.

These findings collectively suggest that it is important, both in research and therapy, to discriminate carefully between body ideals and body perceptions in individuals with eating disorders. In particular, it appears that men with eating disorders may not need to be re-educated about the levels of body fat that are reasonable and appropriate. Rather, their perceptions of their own bodies require revision.

Table 2. Indices of muscularity

Muscle Indices (kg/m ²) ^c	Anorexic Males [1] N = 17	Bulimic Males [2] N = 10	Mountain Climbers [3] N = 21	Nonathletic Controls [4] N = 21	<i>p</i> Value for Comparisons ^a					
	M (SD)				Pairwise					
					Overall ^b 1/2/3/4	1 and 2	1 and 3	1 and 4	2 and 3	2 and 4
Measured body	16.1 (2.0)	19.0 (1.8)	18.2 (3.7)	19.2 (1.2)	.002	.02	.07	.002	0.8	0.9
Perceived body	18.3 (2.3)	20.9 (2.1)	20.4 (1.6)	20.2 (1.5)	.001	.004	.003	.01	.93	.81
Perceived minus measured	2.1 (3.0)	1.8 (2.4)	2.3 (4.4)	1.1 (1.8)	.58					
Ideal body	20.9 (2.5)	22.7 (2.6)	21.7 (1.5)	21.6 (1.9)	.23					
Average body	20.6 (1.7)	20.7 (2.1)	19.5 (1.8)	20.1 (1.7)	.27					
Women's ideal	22.1 (2.0)	22.4 (2.5)	22.1 (1.7)	22.4 (2.0)	.96					

^aFor continuous variables: one-factor analysis of variance (overall), Tukey's test (pairwise).

^bDegrees of freedom = 3.

^cMuscularity—fat-free mass index (FFMI) in kg/m². FFMI of 18 represents a man with slight build with low muscularity; FFMI = 20 represents a man of roughly average muscularity; FFMI = 22 represents a man with distinct muscles; FFMI = 25 represents approximately the upper limit of muscularity than can be attained without use of anabolic steroids or drugs.

Table 3. Indices of body fat

Body Fat Indices (%) ^c	M (SD)				p Value for Comparisons ^a					
	Anorexic Males [1] N = 17	Bulimic Males [2] N = 10	Mountain Climbers [3] N = 21	Nonathletic Controls [4] N = 21	Pairwise					
					Overall ^b 1/2/3/4	1 and 2	1 and 3	1 and 4	2 and 3	2 and 4
Measured body	5.1 (2.6)	13.3 (5.2)	10.3 (2.0)	16.0 (5.5)	<.001	<.001	.001	<.001	.23	.28
Perceived body	8.7 (6.8)	22.4 (10.4)	12.0 (4.2)	17.3 (8.5)	<.001	<.001	.52	.003	.003	.29
Perceived minus measured	3.6 (6.9)	9.1 (7.9)	1.7 (4.9)	1.3 (7.1)	.02	.16	.79	.69	.02	.01
Ideal body	13.0 (5.6)	13.6 (7.8)	12.2 (4.3)	15.2 (5.2)	.34					
Average body	21.2 (7.3)	17.6 (6.3)	22.7 (5.1)	23.2 (4.5)	.07					
Women's ideal	16.7 (5.7)	12.8 (8.2)	16.8 (5.9)	16.2 (4.6)	.32					

^aFor continuous variables: one-factor analysis of variance (overall), Tukey's test (pairwise).

^bDegrees of freedom = 3.

^cBody fat—in percent of body weight: body fat < 10% = underweight; 10%–20% = normal weight; >25% = overweight, obese.

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