

Body Image and Obesity in Adulthood

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The body image concerns of obese individuals first were described in the late 1960s [1]. Initially, body image disturbance was thought to be limited to persons who experienced a prepubescent onset of obesity, those who received negative appearance evaluations from parents and siblings, and those with the presence of an emotional disturbance. After 25 years of relatively little discussion, the last decade has witnessed a dramatic growth in empirical attention to the relationship between body image and obesity [2,3]. This research has focused on the prevalence and nature of body image dissatisfaction and its clinical significance.

Prevalence of body image dissatisfaction

Dissatisfaction with physical appearance appears to be more the rule than the exception. Based on the results of the 1996 survey published in *Psychology Today* [4], most women (56%) and almost half (43%) of men are dissatisfied with their overall appearance. Two-thirds of women and more than half of men report dissatisfaction with their body weight. Features likely to be affected negatively by excess body weight, such as the abdomen, hips, and thighs, generate greater dissatisfaction among women.

The validity of findings from surveys like this frequently is called into question [5]. Magazine surveys are often subject to sample biases; it is

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unknown how representative the readers of *Psychology Today* magazine who responded to this survey are of the general population. Studies that have used sampling strategies to ensure a more representative sample of the American population [6] have found lower levels of body image dissatisfaction relative to the *Psychology Today* surveys from 1985 [7] and 1996 [5]. Still, a substantial percentage of women reported being discontented with various aspects of their body—especially their midtorso (51%), lower torso (47%), and weight (46%).

As the prevalence of overweight and obesity has increased [8], it is logical to expect that rates of body image dissatisfaction would rise similarly. No evidence of a recent worsening of body image, however, exists. Prospective and cross-sectional studies suggest a recent modest improvement of college women's body satisfaction despite their heavier weights [9–11]. Perhaps the threshold for weight-related body dissatisfaction has shifted upwards as the population has become heavier. This hypothesis, however, awaits further study.

Body image dissatisfaction is common but varies across different groups. Women, who have been the focus of most of the research, typically are far more dissatisfied with their body image than men [12,13]. Differences also exist across ethnic groups. African American women, as compared with Caucasian women, typically report less body image dissatisfaction [14]. Among other ethnic groups, body image dissatisfaction appears to be related to the degree of acculturation. As Asian and Hispanic American individuals acculturate to American customs, body image dissatisfaction appears to increase and mirror that of Caucasian Americans [15].

The nature of body image dissatisfaction

Overweight and obese women report greater body image dissatisfaction than normal weight women [16]. In a society that puts such premium on thinness for women, this observation is not surprising. Counter to intuition, several studies [17–21], but not all [22], have found no relationship between body image dissatisfaction and body mass index (BMI) in overweight and obese women. This finding is consistent with theories of body image, which have suggested that there may be little relationship between what one thinks about the body and the objective reality of one's appearance [23,24]. It may be that some overweight or obese individuals experience a threshold effect with regard to body image dissatisfaction [25,26]. As individuals become overweight or obese, they experience an increase in body image dissatisfaction. Similarly, if they lose weight, they experience an improvement in body image. If they continue to gain or lose weight beyond the threshold, however, their body dissatisfaction may remain stable. This interpretation, however, must be made cautiously. Each of the studies cited used truncated distributions of overweight and obese individuals, typically excluding those with extreme obesity. Studies investigating large samples of individuals with

a wide range of BMIs are need to clarify the relationship between body mass and body image dissatisfaction.

Certain characteristics and experiences of obese individuals appear to be associated with increased body image dissatisfaction [15,16]. Childhood onset of obesity and experience of weight-related teasing are related to increased body image dissatisfaction in adulthood [27,28]. Adults with binge eating disorder, a history of weight cycling, and those who reported being stigmatized secondary to their obesity also report greater body image dissatisfaction [21,29–31].

For many women, the degree of dissatisfaction is profound and adversely affects behavior. More than 80% of overweight women who sought body image therapy scored greater than one standard deviation above the norms of the Body Dysmorphic Disorder Examination and the Body Shape Questionnaire [32]. A significantly greater percentage of obese women than nonobese women reported, on more than half of the days of the month, camouflaging their bodies with clothing, changing their posture or body movements, avoiding looking at their bodies, and becoming upset when thinking about their appearance [20]. Similarly, a greater percentage of obese women also reported moderate-to-extreme embarrassment in social situations, such as work or parties, because of their weight [20].

Perhaps the degree of distress associated with excess body weight is illustrated best by the extremely obese. Men and women who underwent bariatric surgery were asked if they would prefer to return to their previous level of obesity or be of a normal weight and have one of the following disabilities: deafness, severe acne, heart disease, dyslexia, diabetes, blindness, or losing a leg [33]. Typically, most persons presented with this forced-choice question will select their own worst-handicap (in this case, obesity) rather than a new disability. No patient elected a return to extreme obesity over being deaf, dyslexic, or diabetic, or over having severe acne or heart disease. Five patients selected obesity over blindness, and four patients selected obesity over losing a leg. Although this study did not specify the reasons why persons almost exclusively chose another disability over obesity, the fact that 100% of the participants reported improvements in body image following surgery suggests that the body image dissatisfaction experienced preoperatively may have contributed to this decision.

Clinical significance of body image dissatisfaction

Several studies have found a relationship between increased body image dissatisfaction, increased depressive symptoms, and decreased self-esteem among obese women who sought weight loss treatment [18,20,27]. These relationships appear to occur independently from the degree of obesity. Sarwer et al [20] found that while obese women and nonobese women differed in body image dissatisfaction, they did not differ on self-reported

depressive symptoms or self-esteem. In a nonclinical sample, Annis et al [29] also found no differences among currently, formerly, and never-overweight women on depressive symptoms or social anxiety. Compared with their nonobese counterparts, obese adolescent girls reported greater dissatisfaction with their weight and figure, but not greater symptoms of depression [34]. In contrast, Cash et al [35] recently found that increasing BMI levels were related to a poorer body image quality of life among women. This finding underscores the need for additional study of the relationships between body weight, body image dissatisfaction, and psychological symptoms.

A small minority of obese women, however, appears to experience extreme body image dissatisfaction. Eight percent of obese women reported a degree of body image dissatisfaction consistent with the diagnosis of body dysmorphic disorder (BDD) [20]. BDD is defined as a preoccupation with an imagined or slight defect in appearance that causes clinically significant distress or impairment in social, occupational, or other important areas of functioning [36]. Five of the six women were concerned with their appearance as it related to their obesity. As a result, the formal diagnosis could not be applied, as it requires that the preoccupation and distress be focused on a slight defect in appearance. The *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revised (DSM-IV-TR)* does not have a diagnostic category for patients with marked distress about medical conditions that affect physical appearance. These women also reported significantly more depressive symptoms compared with other obese women. Thus, a subset of obese women experiences body image dissatisfaction to an extent that entails clinically significant psychological impairment.

Motivation for weight loss and body image dissatisfaction

Regardless of the relationship of body image dissatisfaction and psychological symptoms, body image dissatisfaction has been hypothesized to play a significant role in motivating people to lose weight. Heinberg et al [37] have suggested that individuals with a moderate degree of dissatisfaction might be motivated to lose weight or improve health status by changing their diet and physical activity. In contrast, those with a low level of dissatisfaction might not be inclined to change these behaviors. Of importance here is the possibility that highly body-dissatisfied obese individuals, because of their perceived inability to lose weight, might actually give up and not attempt healthy eating and exercise behaviors.

For many overweight and obese adults, weight reduction may be the most popular form of body image therapy [38]. Although some individuals may be motivated to lose weight to improve their health, most people do so to improve physical appearance [39]. Even among the extremely obese who

seek bariatric surgery (who often present with serious obesity-related comorbid health problems such as hypertension, diabetes, and osteoarthritis), improving appearance, and not health, is the primary motivator for weight loss [40,41].

Assessment of body image in obese adults

Body image is considered a multi-dimensional construct [15,42–44]. The assessment of body image dissatisfaction is also multi-dimensional and includes the measurement of subjective (dis)satisfaction, cognitive distortions, affective reactions, behavioral avoidance, and perceptual inaccuracy [43]. The number of assessment tools for such aspects of body image has increased substantially over the past 20 years, producing a wide variety of measures [45–48]. The following discussion will focus rather selectively on those instruments most relevant for the particular appearance concerns of obese individuals (ie, body weight and shape).

One of the first considerations in the assessment of body image is to ensure that the measure under consideration actually indexes the particular dimension of body image of interest [42]. Just because a measure has body image, body dissatisfaction, or some similar body-related word or phrase in its title does not mean that the measure assesses the same aspect of body image as a different scale with a similar name. The authors suggest that investigators and clinicians scan the items of a measure to ensure that the name of the measure adequately captures the content of the instrument.

Additionally, it is important to realize that subscales of a particular measure may capture different components of body image. For instance, the widely used Multi-dimensional Body Self-Relations Questionnaire (MBSRQ) [45,49] has two subscales (Appearance Evaluation [AE] and Appearance Orientation [AO]) that index orthogonal aspects of body image. The AE scale captures a general subjective satisfaction with appearance, whereas the AO scale assesses one's investment in appearance. In a study that readily demonstrates the distinction between the two dimensions, Smith et al [50] found that Caucasian men and women had higher levels of appearance evaluation than African American men and women, whereas African Americans had higher levels of appearance orientation. In terms of the practical application to research and clinical endeavors, this example illustrates that care should be taken in the selection of a body image measure and the interpretation of the results.

Measures of weight satisfaction

Table 1 describes some of the more commonly used measures that index weight (dis)satisfaction. These measures include scales such as the Eating Disorder Inventory—Body Dissatisfaction scale and the Body Shape

Table 1
Measures of body satisfaction and related concepts

Name of instrument	Author(s)	Description	Author address
Figure Rating Scale	Stunkard et al (1983)	Select self and ideal percepts from nine figures varying from underweight to overweight	Albert J. Stunkard, MD, University of Pennsylvania, 3535 Market Street, Philadelphia, PA 19104-2648
Contour Rating Scale	Thompson and Gray (1995)	Select self and ideal percepts from nine male and nine female schematic figures ranging from underweight to overweight	James J. Gray, PhD, Department of Psychology, Asbury Building, American University, Washington, DC 20016-8062
None given	Collins (1991)	Select self and ideal from seven boy and seven girl figures that vary in size	M.E. Collins, HSD, MPH, Centers for Disease Control and Prevention, 4770 Buford Highway, NE, Mailstop K26, Atlanta, GA 30341-3724
Body Image Assessment Procedure	Williamson et al (1989)	Select self and ideal from nine figures of various sizes	Donald A. Williamson, PhD, Department of Psychology, Louisiana State University, Baton Rouge, LA 70803-5501
Somatomorphic Matrix	Gruber et al (1999)	Computer program allows selection of self and ideal bodies from 100 male and 100 female schematic figures, ranging on muscularity and fatness	Amanda J. Gruber, McLean Hospital, 115 Mill Street, Belmont, MA 02478
Eating Disorder Inventory, Body Dissatisfaction subscale	Garner et al (1983)	Rate degree of agreement with statements about body parts being large (seven items)	David M. Garner, PhD, c/o Psychological Assessments Resources, Inc., P.O. Box 998, Odessa, FL 33556

Multidimensional Body-Self Relations Questionnaire, Appearance Evaluation (AE) subscale and Body Areas Satisfaction Scale (BASS)	Cash (2000)	AE: seven-item scale that measures overall appearance evaluation; BASS: assesses satisfaction with nine body areas/attributes	Thomas F. Cash, PhD*, Department of Psychology, Old Dominion University, Norfolk, VA 23529
Body Satisfaction Scale	Slade et al (1990)	Indicate degree of satisfaction with 16 parts (three subscales: general, head, body)	P.D. Slade, PhD, Department of Psychiatry and Department of Movement Science, Liverpool University Medical School, P.O. Box 147, Liverpool L69 3BX, England
Body-Esteem Scale-Revised	Mendelson et al (1998)	23-item scale with three subscales: appearance, attribution, and weight	Beverly K. Mendelson, PhD, Department of Psychology, Concordia University, 7141 Sherbrooke Street, Montreal, Quebec, H4B 1R6, Canada
Body Image Ideals Questionnaire	Szymanski & Cash (1995)	Assesses extent of discrepancy from ideals for 11 physical characteristics weighted by each ideal's importance	Thomas F. Cash, PhD*, Department of Psychology, Old Dominion University, Norfolk, VA 23529
Body Shape Questionnaire	Cooper et al (1987)	34 Items on concerns with one's body shape	Peter Cooper, PhD, Department of Psychiatry, University of Cambridge Addenbrooke's Hospital, Hills Road, Cambridge CB2 2QQ, England
Self-Image Questionnaire for Young Adolescents, Body Image subscale	Peterson et al (1984)	Designed for 10 to 15-year-olds; 11-item body image subscale assesses positive feelings toward the body	Anne C. Peterson, PhD, College of Health and Human Development, Pennsylvania State University, 101 Henderson Building, University Park, PA 16802

(continued on next page)

Table 1 (continued)

Name of instrument	Author(s)	Description	Author address
Body Image States Scale	Cash et al (2002)	Six items assess momentary evaluative/affective body image states	Thomas F. Cash, PhD* Department of Psychology, Old Dominion University, Norfolk, VA 23529
Physical Appearance State and Trait Anxiety Scale	Reed et al (1991)	Rate anxiety associated with 16 body parts (eight weight-relevant, eight non weight-relevant); trait and state versions available	J. Kevin Thompson, PhD, Department of Psychology, University of South Florida, 4202 Fowler Avenue, Tampa, FL 33620-8200
Physical Appearance Behavioral Avoidance Test	Thompson et al (1994)	Approach own body image in a mirror, from a distance of 20 ft; subjective units of distress ratings and approach distance are dependent measures	J. Kevin Thompson, PhD, Department of Psychology, University of South Florida, 4202 Fowler Avenue, Tampa, FL 33620-8200
Situational Inventory of Body Image Dysphoria–Short Form	Cash (2002)	Rate how often one experiences negative body image emotions in 20 situations	Thomas F. Cash, PhD*, Department of Psychology, Old Dominion University, Norfolk, VA 23529
Appearance Schemas Inventory–Revised	Cash, Melnyk, and Hrabosky (2004)	20-Item assessment of one's psychological investment in one's appearance (two subscales)	Thomas F. Cash, PhD*, Department of Psychology, Old Dominion University, Norfolk, VA 23529
Body Image Quality of Life Inventory	Cash and Fleming (2002)	19 Items that measure negative-to-positive effects of one's body image on one's life	Thomas F. Cash, PhD*, Department of Psychology, Old Dominion University, Norfolk, VA 23529

Drive for Muscularity Scale	McCreary and Sasse (2000)	15 Items assessing attitudes and behaviors related to the pursuit of a muscular appearance	Dr. Don McCreary, PhD, Stress & Coping Group, Defense R&D, Canada—Toronto 1133 Sheppard Avenue West, P.O. Box 2000, Toronto, Ontario Canada M3M 3B9
Muscle Appearance Satisfaction Scale (MASS)	Mayville et al (2002)	Rate symptoms of muscle dysmorphia on 19-items with five subscales	Donald A. Williamson, PhD, Department of Psychology, Louisiana State University, Baton Rouge, LA 70803-5501

* Available at www.body-images.com for a nominal fee.

Questionnaire. These scales appear to be ideal for use with obese samples, because the focus is on the subjective rating of weight-related aspects of the body.

Another method to assess body image dissatisfaction involves the use of schematic figure rating methodologies. These consist of a range of figures varying in size from thin/underweight to obese. Generally, individuals rate the figures using an instructional protocol designed to determine their ideal body size and their current or actual body size. The discrepancy between the two ratings is used as the index of dissatisfaction, which has been shown to be correlated highly with questionnaire measures of satisfaction [48]. These measures include the Figure Rating Scale, the Contour Rating Scale, and the Body Image Assessment Procedure. Unfortunately, most of these assessments have limited gradation in the depiction of obesity and other psychometric limitations [47,51].

Measures of appearance satisfaction

The broader notion of body image dissatisfaction can be assessed by measures of overall appearance satisfaction. These measures may focus on nonweight-related features, such as discrete body parts or muscularity, or include items that attempt to assess an individual's conception of how he or she looks in clothes or appears to other people. The MBSRQ AE scale is likely the most widely used measure of more general appearance satisfaction. This scale and other measures may be particularly useful, as they provide information regarding the generality or specificity of the obese individual's appearance concerns. For instance, it might be clinically useful to determine if satisfaction is specific to certain body areas (for example, using the Body Areas Satisfaction Scale of the MBSRQ or the Body Image Ideals Questionnaire) [45,49] or generalized to other aspects of appearance. Similarly, it might be relevant to examine the extent to which people experience negative body image emotions in specific day-to-day-life contexts with the Situational Inventory of Body Image Dysphoria [45,52]. Moreover, it may be especially useful to measure how individuals' psychosocial functioning is influenced by his or her body image using the Body Image Quality of Life Inventory [35,45,53].

Measures of body image investment

Equating people's body image experiences purely with their level of satisfaction or dissatisfaction with appearance has a limited perspective. Cash et al [54,55] have maintained that one also should take into account the extent to which people are invested in their appearance psychologically. The AO subscale of the MBSRQ provides a general assessment of appearance investment. Recent investigation has suggested that this dimension may consist of two cognitive-behavioral facets, as measured by

the Appearance Schemas Inventory-Revised [45,55]. One facet is termed “motivational salience” and refers to the extent to which people value appearance management (ie, pay attention to their looks and engage in grooming behaviors). The second facet, called “self-evaluative salience,” reflects how much one’s physical appearance defines self-worth. The latter seems to be a more pivotal determinant of psychological functioning and body image quality of life. Most research on body image and obesity has focused on body image satisfaction and has ignored body image investment.

Measures of size perception

No discussion of body image assessment is complete without some reference to perceptual aspects of body image. This is perhaps the most controversial area in body image assessment. Many of the early studies of people with eating disorders noted a tendency of anorexics to actually overestimate the size of their bodies. As a result, the field of body image was somewhat dominated by interest in this phenomenon until the late 1980s [56]. Recent work has questioned the specificity of overestimation to any diagnostic group (eating disordered or obese) and has demonstrated that perceptual ratings are affected by attitudinal and affective factors [44]. Many of the perceptual assessment methods are costly and logistically impractical, making the inclusion of such a strategy difficult for many clinicians. Finally, these measures do not appear to be associated strongly with body image satisfaction. [43,51].

General considerations

A measure of weight or shape satisfaction may be the most appropriate initial screening instrument for an obese individual. Results from a weight satisfaction measure should provide a general picture of the body image of an obese person. Based on the analysis of these data, overall appearance scales, cognitive measures, or behavioral indices of body image could be included to provide more detailed information. In addition, a useful adjunctive strategy might involve the addition of a self-monitoring form, such as the Body Image Diary [57], designed to allow for daily self-monitoring of body image experiences. Finally, the aforementioned Body Image Quality of Life Inventory is valuable in assessing how and to what extent the person’s body image affects his or her life and psychosocial functioning.

Gender and ethnicity should be considered when choosing a body image assessment tool (or any psychological test), as the instrument may have been developed and validated on a sample with different characteristics. This may be particularly true for the assessment of body size. Many of the measures listed in Table 1 were developed, normed, and validated on college students. Certainly, these samples contained some proportion of overweight or obese individuals; however, studies often have failed to provide information on the

body mass of the respondents or to evaluate the psychometric characteristics of the scales that assessed body weight. Similarly, the psychometric qualities of a scale developed on nonpatient samples may not generalize to patient samples. For these reasons, the authors recommend contacting the authors of specific scales and requesting any normative and psychometric data for obese samples, by gender and ethnicity.

Treatment of body image dissatisfaction in obese adults

The treatment of body image concerns of obese people is still in the developmental stages. Through 1990, no study in the obesity treatment literature had addressed body image specifically [58,59]. Since that time, several studies have investigated the efficacy of psychotherapeutic interventions to improve body image. Perhaps as a result, many comprehensive behavior modification weight loss interventions now address body image concerns [26].

Nevertheless, the specific role of body image treatment in behavioral weight control programs has not been determined fully. Studies have shown that improvements in the body image of obese people occur with weight loss. Other studies have shown that body image improvements can occur without weight reduction. The importance of body image in satisfaction with weight loss treatment and long-term weight maintenance is unknown.

Improvements in body image accompanying weight loss

Several studies have assessed changes in body image in obese people during weight loss. Cash [60] reported significant improvements in the body image of obese women who achieved an average weight loss of 22 kg. Foster et al [18] assessed changes in body image in women following 48 weeks of weight loss. At the midpoint of treatment, women had lost an average of 19 kg and reported significant improvements in body image. A weight regain of approximately 3 kg from weeks 24 to 48 was associated with a slight but significant worsening in body image. Nevertheless, at the end of treatment, patients reported significant improvements in body image as compared with baseline. These improvements were related only modestly to the amount of weight lost.

Another approach to understanding body image in relation to obesity and weight loss involves a cross-sectional comparison of overweight/obese, formerly overweight/obese, and never overweight/obese cohorts, in which the latter two groups are of equal average weight [61]. This methodology examines the proposition that the body image experiences associated with obesity may not be lost fully when the weight is lost, a phenomenon termed “phantom fat” or “vestigial body image.” Annis et al [29] found that relative to never overweight women, currently overweight women reported

more body dissatisfaction/distress, overweight preoccupation, and dysfunctional appearance investment, in addition to greater binge eating pathology, poorer social self-esteem, and less satisfaction with life. Consistent with a phantom fat interpretation, formerly overweight women were comparable to currently overweight women but worse than never overweight women on overweight preoccupation and dysfunctional appearance investment. On the other hand, formerly and never overweight women did not differ on body satisfaction.

Several studies have suggested that extremely obese patients who undergo bariatric surgery experience improvements in body image [62–65]. Two cross-sectional investigations have documented improvements in body image using the AE subscale of the MBSRQ [64,65]. Anecdotal reports, however, suggest that some bariatric surgery patients report dissatisfaction with their bodies following the massive weight loss. Some may experience phantom fat, reflecting vestigial body image concerns. Others may be experiencing a different type of body image dissatisfaction, perhaps related to body frame size or other nonweight-related concerns, such as the development of loose or sagging skin at different areas of the body [66,67].

Improvements in body image without weight loss

Several studies have investigated the efficacy of improving body image in overweight and obese people without weight loss. Roughan et al [68] reported significant improvements in body image, self-esteem, and depressive symptoms following a program designed to promote weight acceptance and decrease overeating and dietary restraint. Obese women enrolled in a similar “Undieting” program reported improvements in self-esteem and depression, but did not find improvements in body image [69]. One possible explanation for the difference in body image findings may be that Roughan et al’s participants lost 3 kg, while Polivy et al’s participants gained approximately 6 kg.

Based in large part on the work of Cash et al [57,70,71], Rosen et al developed an extensive cognitive-behavioral body image therapy program specifically tailored for overweight and obese individuals [32]. Obese women treated by this approach reported marked improvements in body image and self-esteem compared with the nontreatment condition [32]. They did not, however, experience weight loss. At the end of treatment, 70% of women in body image intervention demonstrated significant improvements on the body image measures, with scores moving from the clinically severe range (at pretreatment) to within the normal range. Subsequently, Strachan et al [72] examined the outcomes of a self-directed cognitive-behavioral body image improvement program in which one-third of the participants were obese. Participants did not lose weight, and obese and nonobese persons reported equivalently favorable body image improvements.

More recently, Ramirez et al [73] combined their body image therapy program with a 16-week behavioral weight control intervention to assess if the combined treatment, as compared with behavioral weight control alone, would be more effective in improving body image. Following treatment, both groups lost approximately 10% of their initial weight and reported significant improvement in body image, self-esteem, and eating concerns. During the 1-year follow-up period, the two groups did not differ on weight maintenance or body image. Thus, it appears that weight reduction alone is as effective in improving body image as a combined weight loss/body image treatment.

Cooper et al [74] and Sarwer et al [26] have suggested that the treatment of body image concerns may be most useful during the maintenance phase of treatment. As such, it may improve long-term weight maintenance. Several studies of the efficacy of body image therapy to improve weight maintenance are in progress.

In summary, a growing number of interventions exist to help people improve their body image with or without losing weight. The utility of these interventions for people with a variety of more general body image concerns is unquestioned. Their ultimate usefulness for obese individuals, however, remains undetermined. Many obese people have significant medical comorbidities that are made worse by their excess body weight. For these individuals, weight reduction is clearly more than an aesthetic issue. Enhancing the body image of these people may be a less critical issue compared with improving their overall health through weight reduction.

Summary

Research on the relationship between body image and obesity is relatively new. Several areas await additional investigation. Many obese individuals have body image concerns, but these concerns are not universal. Furthermore, there appears to be little relationship between the degree of obesity and the intensity of the dissatisfaction. The nature of the obesity and its effect on body size and shape may moderate the relationship with the degree of body image dissatisfaction. Similarly, obesity-related comorbidities, such as osteoarthritis, may contribute to body image dissatisfaction further.

The clinical significance of body image dissatisfaction also warrants additional study. Among obese women, body image dissatisfaction appears to be related to lower self-esteem and increased symptoms of depression. For most people, it does not appear to be related to clinically significant depression. Furthermore, such body image dissatisfaction cannot be equated with body image disturbance necessarily, which entails dissatisfaction that also produces significant distress and psychosocial impairment [5]. A small minority of obese persons, however, reports body image

disturbance consistent with that of body dysmorphic disorder. Major depression and extreme body image dissatisfaction, and significant social anxiety, may not only prevent individuals from seeking weight loss but also may compromise the potential effectiveness of certain treatment approaches.

Most body image studies have relied heavily on paper-and-pencil measures of general body image dissatisfaction. As a result, the perceptual component of body image has been neglected somewhat. Recently developed computer programs that allow for the morphing of body features may provide interesting opportunities to assess body image in obese persons. This technology potentially could be used to assess patients' expectations about changes in body size and shape following weight loss. Future studies also should incorporate other important body image dimensions, such as body image investment (or schematicity) and body image quality of life. Investigators should strive to include a wider range of subgroups of obese individuals, including those with binge eating disorder and the rapidly increasing number of extremely obese individuals who pursue bariatric surgery. Most research in this area has focused on obese women. There has been some research on obese children and adolescents [75,76], but comparatively little study of men [77].

Treatment for body image dissatisfaction in obese people has drawn heavily from cognitive-behavioral models of psychotherapy. Most studies support their effectiveness; however, there has been little study of the components of treatment that are most critical to success. It is unclear if the behaviorally based strategies, such as exposure to avoided situations and behavioral changes to promote body acceptance, or if the cognitive elements of treatment, such as cognitive restructuring or coping skills training, play a more central role in treatment outcome. Ultimately, studies of the differential effectiveness of these strategies may provide important information on the treatment of body image dissatisfaction.

Presently, it appears that two separate camps of research on the relationship between obesity and body image are developing. The first group is looking primarily at changes in body image that accompany weight loss. These investigators are focusing more on how changes to the physical body influence the body image. The second group is looking more specifically at changes in body image, through the use of psychotherapy, often independent of weight loss. The focus of this group is changing the body image without changing the body. Although both areas have evidence to support their effectiveness, it may turn out that the combination of both approaches—changing the body and the body image simultaneously—may lead to the most successful outcomes. Alternatively, ongoing research ultimately may suggest that body image interventions play their most important role during weight maintenance. Regardless, the relationship between obesity and body image likely will continue to generate much research and clinical interest.

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