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AN EXPLORATION OF OBESITY: CHILDHOOD ONSET OBESITY & ADULT  
ONSET OBESITY

by  
S. Shahed Hasheminejad

A Thesis

Submitted in partial fulfillment of the requirements of the  
Master of Arts Degree  
of  
The Graduate School  
at  
Rowan University  
May 7, 2009

Approved by

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## ABSTRACT

S. Shahed Hasheminejad

AN EXPLORATION OF OBESITY: CHILDHOOD ONSET OBESITY AND ADULT  
ONSET OBESITY

2008/2009

Dr. Roberta Dihoff

Master of Arts in School Psychology

The prevalence of obesity in the United States can be considered alarming, given its dramatic increase over the past twenty years. A large percentage of the obese population suffers from both medical and psychological side effects. This study focused on how non-obese and obese individuals perceive one's own body. Based on research, it was hypothesized that obese individuals are more likely than non-obese individuals to perceive one's body negatively. It was also hypothesized that obese individuals who suffer from childhood onset obesity as opposed to adult onset obesity are more likely to perceive one's body negatively. Participants were recruited from a medical office located in a middle-upper class suburban town of South Jersey. Body shape attitudes were attained through the Body Shape Questionnaire. Through a One-Way ANOVA, it was found that non-obese females view their bodies more favorably than obese females. No significant results were found to support a relationship between childhood and adult onset obesity.

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## CHAPTER I

### Introduction

#### Statement of the Problem

The United States population suffers from obesity, more so than any other country around the globe. The Center for Disease Control and Prevention (CDC) (2008) noted that in 2007 over 25% of the population of thirty states was considered obese. Only Colorado had a prevalence of obesity less than 20%. Given its correlation to diabetes, hypertension, and heart disease (The American Heart Association [AHA], 2008), the prevalence of obesity can be considered alarming. The rate of increase after all has been dramatic for the past twenty years. In fact, no states in 1990 had a prevalence of obesity greater than 15%. Only ten states had a prevalence of 10% or less. In the United States today, 33% of adult males, 35% of adult females, and approximately 16% of male and female teens are considered obese (CDC, 2008).

A large percentage of this obese population suffers from the medical side-effects of obesity along with the psychological side-effects. The American Heart Association noted a correlation between Type II Diabetes, hypertension, and heart disease to obesity (AHA, 2008). Studies with obese individuals revealed obesity as strongly correlated with low self-esteem, body dissatisfaction, anxiety, and depression (e.g., Paxton, Norris, Wertheim, Durkin, & Anderson, 2005; Ohring, Graber, Brooks-Gunn, 2001; Tanofsky-Kraff, Yanovski, Wilfley, Marmarosh, Morgan & Yanovski 2004;). At times, the thin



ideal has been so greatly internalized in Western culture that even non-obese individuals strive for a thinner figure and suffer from the same body dissatisfaction and low self-esteem as obese individuals. In one study with 9 to 12 year-old girls, Clark and Tiggemann (2006) discovered that 49% of their participants desired a thinner figure. Less than 15% of the 49% were actually overweight. Research supports Clark and Tiggemann's findings that even a non-overweight population strives for a thinner ideal and is dissatisfied with one's body (e.g. Stice & Bearman, 2001; Gardner, Sorter & Friedman, 1997; Sands & Wardle, 2003).

The thin ideal has been internalized in Western culture. Research has shown how watching certain television shows, reading certain magazines, and talking about certain body image issues with peers and parents produces greater levels of low self-esteem and body dissatisfaction (e.g. McCabe et al., 2005; Jones, Vigfusdottir & Lee, 2004; Keery, Boutelle, Van den Berg & Thompson, 2004) . If the thin ideal has produced levels of dissatisfaction with a non-overweight population in Clark and Tiggemann's study (2006), the impact it may have on obese and overweight adolescent minds maybe even more detrimental.

Essentially, research argues that the earlier one has been exposed to the thin idealization the greater its impact on self-esteem and body image. In other words, a person who has been obese in their childhood is more likely to be dissatisfied with their body than a person who has become obese in their adulthood. There have been a few studies supporting this theory. Wardle, Waller, and Fox (2002) surveyed over a 100 British women and discovered that developing obesity by the age of 16 leads to a greater

body dissatisfaction than adult onset obesity. Adami et al. (1997) carried out a clinical study with obese patients. They separated the subjects in four groups. First criteria depended on whether subjects suffered from childhood or adult onset obesity, and the second criteria depended on whether or not they underwent biliopancreatic diversion to lose weight. The study also included a control group where subjects were never obese at any time in their lives. The findings were similar to those of Wardle, Waller, and Fox's study (2002), but the groups did not control for factors such as gender. Terms such as childhood obesity and adult obesity were also never operationally defined.

#### Purpose of the Study

The purpose of this research study was to explore childhood and adult onset obesity and control for variables such as gender. The thin ideal has been most prevalent among females in the upper and middle socio-economic class. Therefore, participants in this study were female patients from an upper and-middle class socio-economic background. The participants were be divided into five groups, similar to the five groups in the study carried out by Adami et al. (1997). A detailed description of the participants and groups have been given in Chapter 3.

#### Hypotheses

These were the following hypotheses for this study: 1) Non-obese females are more likely to be satisfied with their bodies than obese and post-obese females 2) Obese females with adult onset obesity are more likely to be satisfied with their bodies than

obese females with childhood onset obesity 3) Post-obese females are more likely to be satisfied with their bodies than obese females 4) Post-obese females with adult onset obesity who lost some significant weight will be satisfied with their bodies just as non-obese females.

## Definitions

**BMI:** As explained by AHA (2008), the Body Mass Index referred to the mathematical calculation used to determine obesity.  $\text{Body weight/height}^2 \times 703$ .

**Obese/Overweight Adult:** An adult with a BMI value of over 25.

**Normal Weight Adult:** An adult with a BMI value between 18.5 and 25.

**Body Dissatisfaction:** One's perception of one's body. This was determined by one's answer on the Body Shape Questionnaire-34 item.

**Childhood:** For the purpose of this study, childhood was considered to be 9 to 18 years of age.

**Childhood Onset Obesity:** A child who has been continuously obese for a continuous period during childhood. The obese/overweight adult and normal weight adult determined based on their own standards if they were overweight/obese as children. They were asked about their perceptions of their childhood bodies on the survey.

**Adulthood:** For the purposes of this study, adulthood was considered to be 30 to 55 years of age.

**Adult Onset Obesity:** An adult who has been obese for a continuous period during adulthood. The obese/overweight adult and normal weight adult determined based on

their own standards if they were overweight/obese at any point during their adulthood. They were asked about their perceptions of their adult bodies on the survey.

### Limitations

Like other studies on obesity, this too was limited in the sense that much of the data was based on self-reports. There was no access to medical records to determine childhood obesity, and participants were asked to remember their childhood and the perception of their bodies. The study was also limited because participants were mostly recruited from one physician. The patients of Salartash Surgical Associates do however fit the criteria of being mostly from middle to upper class socioeconomic background.

### Summary

The next chapter focused on past research. Issues of gender and race were analyzed in terms of obesity along with the possible causes for body dissatisfaction. Chapter 2 served to explain concepts of Chapter 3- The Design. Here, a description of the participants and research design was given. Chapter 4 presented the results of the study along with some visual aids. Chapter 5 discussed the implications of the study, some of its limitations, and provided suggestions for further research in this field.

## CHAPTER II

### Literature Review

Approximately, one out of three adults and one in ten teens is overweight or obese in the United States. The figures have been rising so drastically over the past twenty years that obesity has been considered an epidemic (CDC, 2008).

### Obesity and Medicine

Adults with normal weight are defined as having a body mass index (BMI) of 18.5 to 25. Overweight adults have a BMI of 25 through 29, obese adults have a BMI of 30-40, and morbidly obese adults have a BMI over 40 (CDC, 2008).

As mentioned in the introduction, obesity has been related to a number of medical problems such as hypertension, dyslipidemia, sleep apnea, diabetes, cardiovascular and pulmonary complications (Haque, Gadre, Taylor, Haque, Freeman & Duarte, 2008). The mortality rate of obese patients has grown exponentially as a result of these conditions. In fact, research has found that deaths for adults younger than 55 years of age has been directly linked to obesity, specifically BMI values of 21 kg/m<sup>2</sup> for women and 23 kg/m<sup>2</sup> for men (American College of Physicians, 2008). One study in particular autopsied the bodies of obese individuals and compared them to a control group of non-obese patients. Haque et al. (2008) discovered that 72% of the obese subjects suffered from some form of pulmonary or cardiovascular complication.

It comes as no surprise that much attention has been dedicated to preventing obesity. Medical journals have encouraged obese patients to diet and exercise regularly. Some studies have even suggested drug treatments such as Orlistat, Rimonabant, and Sibutramine for gradual weight loss. Current surgical treatments of obesity include the gastric bypass and lap-band placement. Both procedures have been considered for obese patients, who have failed previous weight loss treatments and have serious co-morbidities such as hypertension and diabetes. With gastric bypass, the stomach has been cut and reduced to decrease the patient's physiological need for food. Several complications, including death, have been resulted from this procedure (Powell, Calvin & Calvin, 2007); hence, most patients today choose to do the lap-band. With this non-invasive surgical treatment, patients have a surgical device placed in the top portion of their stomach to decrease food intake. Not only does the lap-band involve less serious side effects, the device can be removed and hence the procedure itself can be reversed. A large percentage of the subjects in this research project were in fact patients who have had lap-band surgery.

#### The Psychological Effects of Obesity

This study along with previous research looked at obesity from a psychological perspective. Most research focused on two psychological aspects: how obese people are perceived and treated and how obese individuals perceive themselves and their bodies.

## Perceptions of Obesity

Studies discovered that obese individuals are often perceived as ugly, lazy, and unpopular. Cramer and Steinwert (1998) discovered that children as young as three are likely to have negative stereotypes of obese/overweight individuals. The study looked at 113 preschool children in terms of playmate preferences, personal body attitudes, and performance on a story and attribution task. Cramer and Steinwert discovered that children, specifically between the ages of three to five, were likely to identify overweight targets as “mean,” “stupid,” “ugly,” and “sloppy.” Brylinsky and Moore (1994) also looked at young children and discovered that children as young as three identified overweight targets as “chubby,” “ugly,” “lazy,” “sad,” and unpopular.

Indeed, studies show popularity to be associated with thinness. Wang, Houshyar and Prinstein (2006) asked a sample of 441 adolescents, grades 11 through 12, questions about weight and body shapes. The researchers used the popular Ideal Body Subscale Test - a measure often used in many studies looking at body image perceptions, where numbers are associated with silhouettes. The numbers and silhouettes range from very thin to very obese and subjects are asked to indicate their perceived body size and their ideal body size. Wang, Houshyar and Prinstein asked subjects about their perceived ideal body size and then used a multiple regression to see the relationship with popularity. Results revealed that larger body shapes were associated with lower levels of peer-reported popularity.

Puhl and Latner (2007) suggests that the stigma associated with being overweight continues in the school environment and the real world. Recent studies have focused on teacher's attitudes on overweight children. Neumark-Sztainer et al. (1999) examined the attitudes of 115 middle and high school teachers and discovered that 20% of these teachers believed that obese individuals are untidy, less successful, more emotional, and more likely to have family problems compared to thinner individuals. Forty-three percent of the teachers described feeling uncomfortable when associating with obese people. In an earlier study with elementary school principals, similar attitudes were found toward obese individuals. Price, Desmond and Stelzer (1987) surveyed 227 elementary school principals and discovered that over half of them believed obese people lack self-control and suffer psychological problems as a result of obesity. However, 25% of the 227 principals did not support establishing school-based treatment programs to help obese children.

### Obesity and Discrimination

Society seems to lack empathy when it comes to obesity. Teachman et al. (2003) notes that even today, with an increased understanding of obesity, society continues to lack compassion and empathy for obese individuals. In one study, Teachman et al. (2003) informed their participants that obesity is caused predominantly by overeating and a lack of exercise. In another study that same year, Teachman et al. explained to participants that obesity may be due to genetic factors and had a group of subjects read stories about discrimination against obese individuals. Surprisingly, Teachman et al.



observed that anti-fat biases and anti-fat attitudes persisted across studies. It seems that anti-fat attitudes are embedded in Western culture and are difficult to eliminate. In this society, “fat people” are seen as relatively lazy and unworthy of empathy.

Overall, studies suggest that obese individuals are often discriminated in society. King et al. (2006) looked at how obese individuals are treated compared to normal weight adults in terms of customer service. They argued that “subtle” discrimination occurs frequently but “direct” discrimination rarely occurs. In terms of customer service, an example of direct discrimination would be refusal for help. Subtle discrimination was considered in terms of friendliness, eye contact, and interaction time. King et al. discovered that obese individuals are more likely to suffer from subtle discrimination than average weight shoppers. The study also supported the notion that direct discrimination towards obesity does not occur in Western society.

### Eating Disorders

Regardless, the negative attitudes associated with obesity and its unpopularity are enough to affect adolescent behavior. An issue often dealt with teens is indeed eating disorders. Research has focused primarily on two eating disorders: anorexia nervosa and bulimia nervosa.

Anorexia refers to an eating disorder in which the individual fears gaining weight and will fall below the normal weight range because of dietary restrictions. Bulimia is an eating disorder in which the individual uncontrollably consumes large amounts of food and then regulates body weight through purging, laxatives, and excessive exercise

(Wilson, Grilo & Vitousek, 2007). Extensive research has been dedicated to eating disorders. Studies like that of Burrows and Cooper (2002) and Tanofsky-Kraff et al. (2004) revealed that overweight girls are more susceptible to developing eating disorders. Both men and women who are dissatisfied with their bodies and who are criticized by peer and family members are also more susceptible in developing eating disorders (Stice, Presnell & Spangler, 2002; Wade & Lowes, 2002; Presnell, Bearman & Stice, 2004).

Stack and Lester (2007) went as far as to show a relationship between suicide and body mass. They took data from National Mortality Followback Survey, representative of deaths among 25 year-olds in the United States in 1986. They interviewed the significant others of each decedent and discovered 373 of the deaths were resulted from suicides, 84 females and 289 males. Stack and Lester used deaths from motor vehicle accidents as the control group. Unlike cancer or AIDS, deaths resulting from motor vehicle accidents did not involve any form of weight loss. Stack and Lester compared the BMI of motor vehicle victims to the BMI of suicidal victims. The relationship was significant for females. In fact, they discovered that female suicidal victims had a greater BMI than females in motor vehicle accidents. Other criteria like substance abuse were also taken into account; however, the relationship between female obesity and suicide was significant enough to consider female obesity linked to suicide.

#### Obesity: Ethnicity & Gender

In terms of gender and race, studies have shown that Caucasian females in this country are indeed more likely to be dissatisfied with their bodies and suffer from low

self-esteem than any other group (e.g., Ricciardelli & McCabe, 2001; Rozin, Bauer & Catanese, 2003; Jones, Vigfusdottir & Lee, 2004).

### Obesity and Ethnicity

First of all, European and American societies have been found to associate attractiveness with a small body size and shape (e.g. Weeden & Sabini, 2005; Swami, Neto, Tovee & Furnham, 2007; Marsh, Hau, Sung & Yu, 2007). Marsh et al. (2007) looked at body perceptions of 763 Chinese children, ranging from 8 to 15 years of age. Through the Physical Self Description Questionnaire and the popular silhouette scale, Marsh et al. measured physical self-concept, self-esteem, and body image. They discovered that Chinese boys and girls seek a normal weight, as opposed to Westernized children who strive for the thin ideal. Furthermore, Chinese associate weight with only health, as opposed to Westernized culture where weight closely relates to both health and self-esteem. In fact, Warren (2008) looked at body perceptions of Euro-American males and Hispanic males. She discovered that men in both cultures have internalized body image awareness. Similarly, Swami et al. (2007) looked at females in three European countries and discovered that females in all three countries internalized the thin ideal.

Ambwani et al. (2008) suggest that Americans are more likely to place an emphasis on weight, and they fear becoming obese more so than any other Westernized country. Ambwani et al. looked at responses of students in Spain and students in the United States. Using the Goldfarb Fear of Fat Scale, an instrument used to identify individuals susceptible for the development of an eating disorder, Ambwani et al.

discovered that Americans were more likely to “fear fatness” than European subjects. Even though both societies strive for the thin ideal and are very much aware of one’s body image, it seems that Americans are much more likely to obsess over obesity.

In the United States, Caucasians are more likely to be dissatisfied with their bodies and suffer from low self-esteem than African-Americans and Hispanics. Ironically, African-Americans, and Hispanics are more likely to be overweight than Caucasian individuals. Statistics show that approximately 77% of African-Americans are overweight. Of the overweight African-Americans, 50% percent of them are obese and approximately 15% of them are morbidly obese. CDC looked at Mexican-Americans and discovered that approximately 72% of Mexican-Americans are overweight. Of the overweight Mexican-Americans, 40% of them are obese (CDC, 2005).

Most studies have shown how African-American females tend to prefer a larger body size than Caucasians. African-American males and females are also more likely to be satisfied with their bodies. Adams et al. (2000) surveyed 1,597 children in South Carolina. Through silhouettes, they discovered that African-American children tend to choose larger frames as an ideal body size than Caucasian children. Furthermore, African-Americans report less personal concern for losing weight. In the study, Caucasians were more likely to diet and strive to lose weight than African-Americans. Paxton, Eisenberg and Neumark-Sztainer (2006) supported these findings. They carried out a five year longitudinal study with over 1,500 adolescent boys and girls. They discovered that African-American boys and girls were indeed more satisfied with their bodies than their Caucasian peers.

Overall, recent research questions the size of these racial differences. Grabe and Hyde (2006) looked at sample studies of Caucasian women and compared their responses to Asian-Americans, African-Americans, and Hispanics. They did this by retrieving articles from PsycINFO regarding body-image issues. They then coded the measures used in each study and coded for each reported statistics in the studies. Overall, Grabe and Hyde looked at 98 articles with a comprised sample of 42,667 participants and 222 effect sizes. In a meta-analysis, six main effect sizes were obtained for differences among Asian Americans, African-Americans, Hispanics, and Caucasians. The only significant difference found was that between African-Americans and Caucasians. However, even this difference of 0.29 supported the notion that racial differences between Caucasians and African-Americans, in terms of body-dissatisfaction, are not as significant as popularized in other studies. Roberts et al. (2006) proposes that possibly racial differences regarding body dissatisfaction have decreased over time. They carried a meta-analysis of articles related to body satisfaction and ethnicity, research ranging from 1967 to 2002. The results on effect size revealed that racial differences are diminishing in terms of body dissatisfaction.

### Obesity and Gender

In terms of gender, there have been no questions or doubts. Research has revealed that females are more likely to strive for a thin figure as opposed to males who strive for a muscular and bulky figure. McCabe and Ricciardelli (2004) asked 344 adolescent boys and 246 adolescent girls to complete surveys revolving around body

image and weight loss strategies. Through a series of measures, McCabe and Ricciardelli discovered that adolescent girls are more likely to be dissatisfied with their bodies than adolescent males. In fact, the females in their study increased their weight loss strategies as opposed to males who decreased their strategies over a period of eight months. McCabe and Ricciardelli's study also supported the belief that females strive for a thin ideal and males are likely to strive for muscularity.

Studies on adult females and males have supported McCabe and Ricciardelli's research (2004). A study carried out with middle-age women showed how women are obsessed with the thin ideal. Indeed, only 25% of women surveyed in the European study were satisfied with their bodies. Seventy-one percent of the participants desired to be thinner, even though 73% of them were considered to be at a normal weight (Allaz et al., 1998). In 2003, Rozin, Bauer, and Catanese looked at food attitudes and eating behavior with over 2,000 undergraduate students from six different college campuses. Their results revealed that only 34% of females were happy with their weight, as opposed to 58% of male students. A study with 68 undergraduate male students at the University of Wisconsin showed a similar trend. Indeed, approximately half of the participants claimed to be happy with their bodies. However, like previous research, males were more likely to strive for a muscular figure. In fact, over 90% of the participants wanted to be more muscular (Frederick et al., 2007).

## Body Image Awareness and Development

Body image awareness seems to develop as young as five years of age. Davison and Birch (2002) looked at approximately 200 Caucasian girls between the ages of five to nine. At different times in the study, the girls were administered the Pictorial Scale of Perceived Competence and Social Acceptance for Young Children, intended to measure factors including peer acceptance and perceived competence. The girls were also asked to take the Body-Esteem Scale, a measure of physical appearance and self-concept. Davison and Birch found that girls as young as five years old who were overweight reported lower self-esteem and lower perceived cognitive ability. By age seven, the girls reported lower self-concept in all domains.

Research does seem to support the notion that body-image awareness and body dissatisfaction increases over time (e.g. Hargreaves & Tiggemann, 2002; Dohnt & Tiggemann, 2005; Sands & Wardle, 2003). Dohnt and Tiggemann (2005) recruited a sample of 81 Caucasian girls from five to eight years of age to look at body dissatisfaction in young girls. Only 18% of these girls were either overweight or obese. To look at body dissatisfaction, Dohnt and Tiggemann used the Children's Figure Rating Scale since it does not involve any sophisticated verbal ability on the part of the children. They discovered that girls as young as five report body dissatisfaction. Most importantly, Dohnt and Tiggemann discovered that body dissatisfaction increases over time. Indeed, the older girls in their study, around the age of seven, demonstrated a greater sense of body-dissatisfaction and dieting awareness.

## Adult Body Image

In terms of adults, body dissatisfaction increases and then in mid to later adulthood it decreases. Landa and Bybee (2007) studied the responses of 52 undergraduate women from a national sorority and compared them to 34 alumnae from the same sorority. The undergraduate students were mostly Caucasians, ranging from 18 to 22 years of age. The alumnae consisted of mostly Caucasians, ranging from 32 to 35 years of age. Landa and Bybee assessed self-image through a measure containing self-esteem items, rated on a seven point scale from “very untrue currently” to “very true currently.” The Multidimensional Perfectionism Scale consisted of 35 items, scored on a five point scale ranging from “strongly agree” to “strongly disagree.” Based on the data, Landa and Bybee concluded that the sorority girls were at high risk for anorexia and bulimia. However, they discovered that the alumnae from the same sorority were better adjusted in terms of eating pathology. Furthermore, the alumnae felt better about themselves and their bodies, as opposed to the undergraduate girls.

McKinley (2006) compared young adults to older adults and continued to see the trend that body satisfaction increases over time. They surveyed 74 middle-aged women. The subjects were first surveyed around 27 to 30 years of age. The same measures of Body Esteem, Body Surveillance, and Scale of Psychological Well Being were administered to the subjects around to 50 to 68 years of age. Most of the sample consisted of European and American women. After ten or more years, McKinley discovered that women’s body surveillance and body shame decreased. Ironically, body satisfaction increased over time despite an increase in body size.



With age, it seems that body satisfaction relates more to body function than body appearance. In 2000, the National Health, Lung and Blood Institute sponsored the Activity Counseling Trial (ACT), a program designed to examine the promotion of active lifestyle in middle-age and older adults. As part of the testing, ACT established a measure of body satisfaction that incorporated items related to both body appearance and body function. Reboussin et al. (2000) looked at the satisfaction measures of 854 subjects, 471 males and 383 females ranging from 35 to 75 years of age. They discovered that as one gets older body satisfaction increases. The ACT results revealed that adults place a greater emphasis on body function than body appearance. McAuley (1994) also found that adults in the early 60s were less concerned with their body images than adults in their 50s. Overall, it seems that somewhere around the mid-50s attitudes change regarding one's body.

### Influences in Body Image Development

People develop negative self-body images for several reasons, according to researchers. Some contributing reasons include early menstruation, peer teasing, opposite sex relationships, family dynamics, pressures from the media, and dieting awareness.

### BMI and Medical Reasons for Negative Body Image

Westernized countries place an emphasis on the thin figure; therefore, it comes as no surprise that a high BMI has been considered the primary reason for a negative self-

image. Dohnt and Tiggemann (2005), who looked at body dissatisfaction and dieting behavior of five to eight year olds, accounted 29.9% of body dissatisfaction to BMI. Surprisingly, Kostanski and Gullone (2007) reported that BMI independently contributed to 29% of body image dissatisfaction scores. When Davison and Birch (2002) looked at girls self-concepts, they discovered that girls at any age reported negative self-concept when having a high BMI. In other words, girls are dissatisfied with their bodies because they have internalized the thin ideal and they are indeed overweight.

Other reasons for negative self-body image do play a role; otherwise, thin and normal weight individuals would not have negative views towards their bodies. A few studies looked at early menarche to see its relationship with body dissatisfaction. Stice and Whitenton (2002) carried out a longitudinal study with 496 adolescent girls and found no relationship between early menarche and body dissatisfaction. Stice, Presnell, and Bearman (2001) discovered that early menarche, prior to 11.6 years of age, was related to depression, substance abuse, and a few other disorders. However, they too did not see a relationship between early menarche and body dissatisfaction or eating disorders such as anorexia and bulimia.

### Peer and Family Influence

Most studies have focused on criticism coming from peers and family members. First of all, peer relations seem to affect both boys and girls in terms of body perception. Jones (2004) studied 158 middle school students and 146 high school students. She looked at the type of conversations the children had with each other, the amount of

teasing directed towards one another, looked at their self-perception among peers, and their comparisons to peers. Jones found that both high school males and females have greater body dissatisfaction, have more conversations regarding their appearance, and compare themselves more often to their peers than middle school males and females. However, statistical analysis showed appearance conversations and social comparisons played a bigger role in body dissatisfaction among high school females than males.

Based on these studies, researchers have come to support the Tripartite Influence Model. The theory suggests that the primary sources of influence in one's body image are peers, parents, and media (Van Den Berg, Thompson, Obremski-Brandon & Covert, 2002). Kostanski and Gullone (2007) focused on peer teasing in terms of body image. They looked at 431 children, age ranging from seven to ten years. They focused on the prevalence, type, and impact of teasing on children's perceived body image satisfaction. Overall, 15.3% of the children reported being teased about their weight. Kostanski and Gullone found that teasing leads to greater body dissatisfaction, regardless of BMI. It seems, however, that teasing affects girls more so than boys. In fact, girls were more dissatisfied with their bodies even though boys were more teased than girls.

After peer relations, family relationships also seem to affect self body-image perceptions (e.g. Van Den Berg, Thompson, Obremski-Brandon & Covert, 2002; Byely et al., 2000; Franko et al., 2008). Fulkerson et al. (2007) looked at over 1,300 adolescents who were at risk for obesity. Things like family connectedness, mealtime environment, and weight commentaries were looked at in this study. Fulkerson et al. discovered that weight-based teasing and parental encouragement to diet were

significantly associated with poor psychological health, low self-esteem and depressed mood, for both male and female participants. Franko et al. (2008) looked at the relationship of childhood family meals to adolescent health issues. In a ten year longitudinal study of 2,379 African-American and Caucasian girls from nine to ten years of age, Franko et al. discovered that family cohesion produces less drive for thinness and bulimic symptoms in adolescent girls.

### Media's Role in Body Image Dissatisfaction

The third source impacting one's body image according to the Tripartite Influence Model is society and media. Most studies have focused on adolescent and young adults, especially females. One recent study looked at girls between the ages of five to eight. Dittmar, Halliwell, and Ive (2006) looked at the effects of Barbie dolls on 162 girls. To expose the girls to three different images, the researchers had one group play with Barbie dolls, another group with Emme dolls, and the third group was exposed to neutral images. Emme dolls contained no information about bodies so were considered neutral dolls. Dittmar, Halliwell and Ive discovered that exposure to Barbie dolls leads to heightened body dissatisfaction among very young girls, but not exposure to Emme dolls or neutral images. The study suggests that exposures to thin figures like Barbie dolls and Laura Croft in Tomb Raider may negatively affect young girls.

Media's role was looked at in terms of television and models. Both overweight figures, slim figures, and normal weight figures were observed in television programs. Greenberg et al. (2003) looked at five episodes of the top ten rated prime time television

shows in 1999-2000; they had two teams, of five coders each, code all character behaviors. In the television shows, approximately 14% of female adults and 24% of male adults were overweight. With the coded behaviors, Greenberg et al. observed that overweight characters were more likely to be viewed by other characters in the television program as unattractive and unpopular. It comes as no surprise then that exposure to these images would produce body self-awareness and perhaps contribute to body dissatisfaction.

Anschutz et al. (2008) focused on slim images in television commercials. They recruited 124 average weight female students from Radboud University Nijmegen. Participants were asked to watch a 45 minute movie and pretend like they were relaxing at home. The movie contained two commercial breaks. One group received a commercial break with slim models and diet products, while the other group received a commercial promoting a car or video camera. In front of the participants, Anschutz et al. placed two bowls containing crisps, M&Ms, and a glass of water. Factors like mood, attitudes toward the ads, eating behavior, hunger, and food intake were observed. Like other studies, Anschutz et al. found that restrained eaters were likely to eat more when presented with slim images and diet products. Gurari, Hetts and Strube (2006), who conducted a similar study, observed that exposure to slim images results in an increase in snacking among participants. They came to believe that attractive images may influence participants to concentrate on weight and dieting. In other words, slim images in the media affect individuals in a negative way. With restrained eaters, slim images may

increase their unhealthy binge eating; with regular eaters, slim images may increase dieting and body image dissatisfaction.

One study compared slim images with normal weight images. Tsai and Chang (2007) had 30 female and 30 male undergraduate students rate a series of pictures on attractiveness. After recruiting 120 female and 120 male undergraduates from a college in Taiwan, Tsai and Chang assigned participants to either a group where an underwear ad was presented with a moderately attractive model or to a group where an underwear ad was presented with a very attractive model. For both males and females, moderately attractive models were more effective than very attractive models. Overall, research does show that females, in particular, are negatively affected when they compare themselves to beautiful models (e.g. Anschutz et al., 2008; Bower, 2001; Martin & Gentry, 1997).

### Opposite Sex Influence

Surprisingly, not much research has focused on body image and intimate relationships. Presnell, Bearman and Stice (2004) found that teasing or conversations regarding body weight coming from the opposite sex do not play a major role in body image development. These relationships are not as important in childhood as they would be in adulthood. Therefore, intimate relationships may come to affect body image in adulthood. Overall, research shows that women who are in satisfying intimate relationships have higher body satisfaction (Friedman et al., 1999; Markey, Markey & Birch, 2001; Boyes, Fletcher & Latner, 2007). It would be difficult to distinguish if body satisfaction leads to successful intimate relationships or if successful intimate

relationships leads to body satisfaction. The relationship exists, but no evidence of causality.

### Childhood and Adult Onset Obesity

Some of the factors that affect one's body image occur in childhood, such as peer teasing and family environment. Furthermore, adults who have been obese since childhood are more likely to go through several failed diets (Applebaum, 2008).

Therefore, it is possible that adults who have been obese since childhood are more likely to have a more negative body-image than adults who have become obese in adulthood.

There have been a few studies looking at the relationship of childhood onset obesity and adulthood onset obesity that have supported this theory (Grilo, Wilfley, Brownell & Rodin, 1994; Adami et al., 1998; McLaren, Hardy & Kuh, 2003).

One study in particular looked at body image of obese patients who have been either obese since childhood or obese since adulthood. Adami et al. (1998) observed the attitudes of obese patients who underwent biliopancreatic diversion two years prior to the study and lost weight as a result of the procedure. The study consisted of 110 obese patients and 131 formerly obese patients. Of the obese and non-obese patients, Adami et al. divided the groups in subjects who were obese during childhood and subjects who became obese during adulthood. Adami et al. found support that adults with childhood onset obesity are more likely to be dissatisfied with their bodies than adults with adult onset obesity. Indeed, post-obese patients with adult onset obesity in Adami's study had similar attitudes about their weight as patients who were never obese. However, post-

obese patients with childhood onset obesity scored higher on Body Dissatisfaction measures than post-obese patients with adult onset obesity and slightly lower than obese patients. Adami et al. did not control for the actual weight loss, because research has shown that the actual amount does not affect body satisfaction (Foster, Wadden & Vogt, 1997).

### Summary

Obesity impacts one's self-esteem and body-image. Research has shown that Caucasian women are more likely to be dissatisfied with their bodies, more so than any other group. Body-image awareness develops in childhood, around five to seven years of age. Throughout this time, peer and family relationships along with the media may come to impact a child self-perception. Research has shown that negative attitudes in childhood may impact one in adulthood. This study focused on this relationship. The goal of the project was to see if females were more likely to be dissatisfied with their bodies if their obesity began during childhood.



## CHAPTER III

### Methodology

#### Sample

The participants of this study were female patients of a medical office located in middle to upper class suburban town of Southern New Jersey. Patients ranged from 30 to 55 years of age. Eighty-two questionnaires were distributed to patients and all 82 questionnaires were returned. Based on the patients' responses, we identified 52 participants as Caucasian, 18 participants as African-American, and 12 participants as Hispanic. In other words, 63.4% of the participants were Caucasians, 22% were African-American, and 14.6% were Hispanic. The participants include 17 non-obese, 33 obese females, and 32 post-obese females. Thirty-one females were obese since childhood, and 34 females were obese since adulthood. The participants were divided into five groups. First group consisted of 17 non-obese females, second group consisted of 16 obese females who had been obese since childhood, third group consisted of 17 obese females who had been obese since adulthood, fourth group consisted of 15 females who had been obese since childhood but had lost some significant weight in the past two years, and the last group consisted of 17 females who had been obese since adulthood but had lost some significant weight in the past two years.

All patients at the medical office were asked to participate in the study. The research project and its objective were explained through a letter to all participants prior to the study.

## Measures

Each participant's demographic information, such as gender, race and weight, was acquired through the questionnaire. A BMI chart was attached to the questionnaire to help individuals assess obesity levels. Like other studies on body perceptions, this study depended on self-reported data. In fact, no past medical records were acquired to determine the accuracy and truthfulness of the patients' responses.

The Body Shape Questionnaire was used to determine individuals' attitudes and self-body perceptions. The Body Shape Questionnaire is a self-report measure of body-shape preoccupations. It was first used in The Development and Validation of the Body-Shape Questionnaire article by Cooper, Taylor, Cooper and Fairburn (1986). The questionnaire's copyright rests with these four individuals. Peter Cooper granted permission to use the 34-item version of this questionnaire in this study.

The range of scores in the 34-item version of Body Shape Questionnaire varies from 34 to 204. Scores less than 80 show no concern with body shape, scores between 80 to 110 indicate mild concern over body shape, scores of 111 to 140 reveal moderate concern over body shape, and scores over 140 show a significant concern over body shape.

The Body Shape Questionnaire has been used in numerous studies. Studies like those of Rosen et al. (1996) and Dowson and Henderson (2001) looked at scores of obese and non-obese individuals and reported on the validity and reliability of the questionnaire. Both studies showed strong scores for reliability and validity for the Body Shape Questionnaire.

### Design

The dependent variable in the study was the score on the Body Shape Questionnaire. There were two independent variables. The first variable looked at whether or not the participant was non-obese, obese or post-obese, and the second variable looked at whether the participant's obesity was onset during childhood or adulthood.

The study consisted of five groups, with 10-17 participants in each condition group. The participants were either classified in the non-obese, obese, or post-obese condition. The obese and post-obese conditions were further divided based on their obesity onset.

A One-Way ANOVA was used to analyze the data.

### Hypotheses

This study hypothesized that non-obese females are more satisfied with their body shapes than females who are obese or post-obese. The second hypothesis was that females who have had obesity since childhood are more preoccupied with body shapes

than patients who have had obesity since adulthood. Third, post-obese females are more likely to be satisfied with their bodies than obese females. And fourth, post-obese females with adult onset obesity who have lost some significant weight were satisfied with their bodies as non-obese females.

The null hypothesis was that obesity onset and obesity level have no effect on body-shape preoccupations, as measured by the Body Shape Questionnaire. This study rejects the null hypothesis at the 95 percent confidence level.

### Analysis

For the first hypothesis, the scores on the Body Shape Questionnaire of non-obese individuals were compared to those of obese and post-obese individuals. For the second hypothesis, scores of individuals with childhood-onset obesity were compared to those patients who had adult-onset obesity. The third hypothesis was tested by comparing scores of post-obese females to those of obese patients. The fourth hypothesis was tested by comparing scores of post-obese females with adult onset obesity to scores of non-obese females.

Descriptive statistics were run for each of the five conditions, and a One-Way ANOVA was used to analyze any interactions between the groups.

### Summary

This study analyzed the relationship between childhood and adult-onset obesity. Chapter 3 discussed in details the sample and procedure used to run the study. Not only

did this chapter explain the validity of the study, but it also provided detail information for experimenters if they choose to replicate the results. In chapter 4, the results of the questionnaires were analyzed in each of the five conditions. Descriptive statistics and results of the ANOVA were presented in chapter 4. Chapter 5 explored the implications of the results, the limitations of the study, and the implications this study may have on future research.

## CHAPTER IV

### Findings

#### Review of Study and Restated Hypothesis

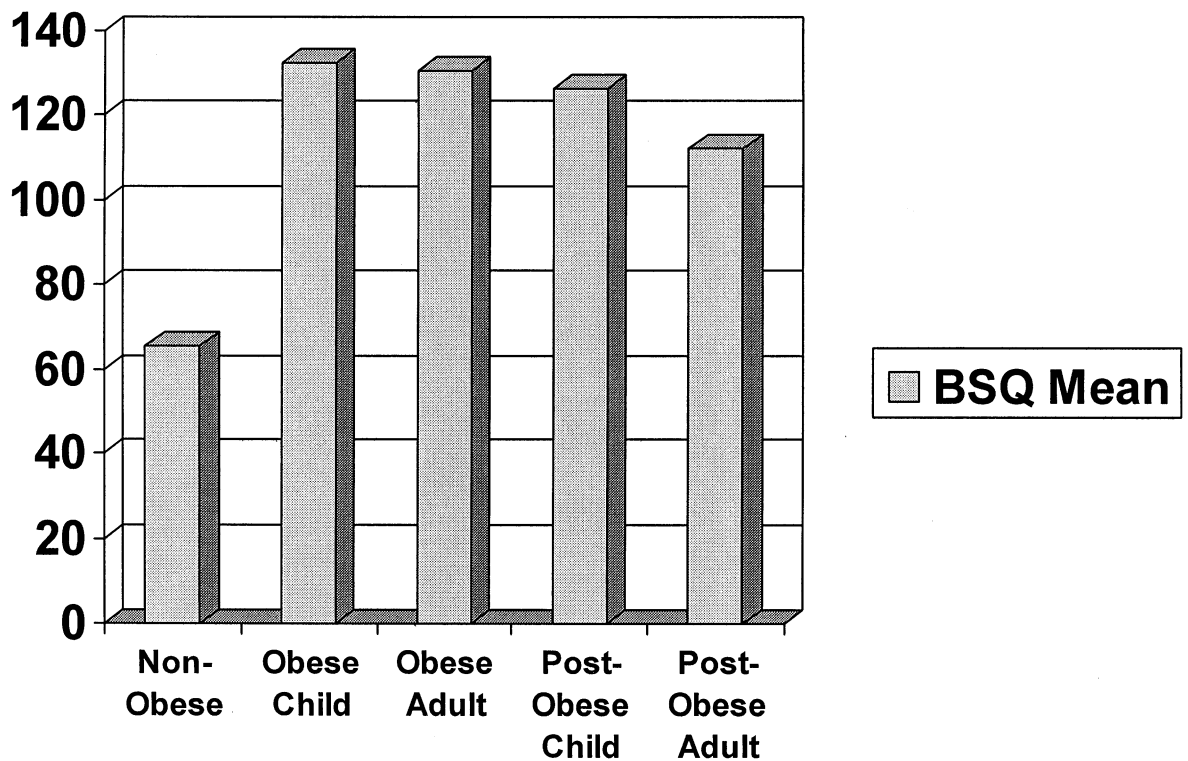
This study examined self-perceptions of non-obese and obese individuals. It was predicted that non-obese participants would have higher self-body perceptions than obese individuals. Research has also shown that individuals with childhood onset obesity tend to view their bodies less favorably than individuals with adult onset obesity. This research study focused on this relationship. Indeed, it was predicted that individuals with childhood onset obesity would view one's body less favorably than individuals with adult onset obesity. Furthermore, it was predicted that individuals who recently lost some significant weight would view their bodies more favorably than individuals who continue to be obese. The last hypothesis of the study focused once again on childhood and adult onset obesity. It was predicted that individuals with adult onset obesity who lost some significant weight would not significantly differ in self-perception than non-obese individuals.

#### Results

Non-obese individuals scored lowest on the Body Shape Questionnaire ( $M=65.53$ ,  $SD=22.38$ ) as opposed to obese individuals with childhood onset obesity ( $M=132.31$ ,  $SD=28.78$ ), obese individuals with adult onset obesity ( $M=130.24$ ,  $SD=36.98$ ), obese

individuals with childhood onset obesity who lost some significant weight (M=126.07, SD=28.94), and obese individuals with adult onset obesity who lost some significant weight (M=112.21, SD=39.40). The mean response of each group can be seen in Figure 4.1

Figure 4.1 Mean Response Scores by Condition



A One-Way ANOVA indicated a main effect of obesity on Body Shape Questionnaire,  $F(4,76)=13.576, p<0.01$ . Post-hoc testing indicated non-obese individuals scored significantly less than all other conditions on the Body Shape Questionnaire. Significance was found at the 0.01 alpha level.

## Summary

Even though significant results were only found for the first hypothesis, there is some support for the other three. In fact, Figure 4.1 shows an interesting interaction between the five groups. The implications of these results were discussed in the next chapter. Chapter 5 addressed some of the limitations of the study and provided suggestions for further research.



## CHAPTER V

### Summary, Conclusions, and Recommendations

#### Analysis of the Results

This study looks at several different aspects of obesity. For one, non-obese females were considered to be more satisfied with their bodies than obese females. The findings of this study supported this first hypothesis. Indeed, scores on the Body Shape Questionnaire lower than 80 indicate no concern with body shape, and the mean average response on the Body Shape Questionnaire for females in the non-obese group was 65.5. The scores for the non-obese females ranged from 34 to 125. The presence of scores over 80 in the non-obese group supported previous research that even females who are non-obese have some concerns with their body image.

The second hypothesis of the study looked at the relationship between childhood and adult onset obesity. Previous research suggested that individuals with childhood onset obesity are more likely to be dissatisfied with one's body. Some studies have looked at this relationship and have found that individuals who have been obese since childhood are more likely to go through several failed diets. In terms of the Tripartite Influence Model, the primary sources of influence in one's body image are peers, parents, and media. All three play an important role during childhood; therefore it seems natural that females with childhood onset would be more likely to be dissatisfied with their body image than females with adult onset obesity.

Even though this study did not find any significant results for the relationship between childhood and adult onset obesity, it did find some interesting trends that may support previous research findings. Females with adult onset obesity had an average score of 130 on the Body Shape Questionnaire, whereas females with childhood onset obesity had an average score of 132. Female patients who lost some significant weight in the past two years who had their obesity onset during adulthood scored 112 on the Body Shape Questionnaire, whereas female patients who lost some significant weight in the past two years and had their obesity onset during childhood scored 126. On the Body Shape Questionnaire, scores between 80 to 110 indicate mild concern over body shape. Scores between 111 to 140 reveal moderate concern over body shape, and scores over 140 show a significant concern over body shape. Surprisingly, no category indicated significant concern over body shape. Like previous findings, it seems that females with adulthood onset obesity are less concerned with their body-image than female adults with childhood onset obesity. Like the study carried out by Adami et al. (1998), patients who lost some significant amount of weight and their obesity began during adulthood scored the lowest of all four obese categories.

#### Connections to Previous Research and Future Research

Overall, the findings of this study supported previous research that females regardless of obesity tend to have concerns over body image. Indeed, there were individuals in each of the five categories that scored over 80 on the Body Shape Questionnaire, indicating some concern over body shape. There were also individuals in

each category, regardless of their BMI, scored lower than 80 on the Body Shape Questionnaire, indicating no concern over body shape. In other words, BMI seems to play an important role in one's own body perception. However, this study supported the current research that low body-perception cannot be entirely accounted to a high BMI.

Researchers believe that people develop negative self-body images for several reasons. Like stated in Chapter 2, some contributing reasons include peer teasing, opposite sex relationships, family dynamics, pressures from the media, and dieting awareness. All of these reasons in addition to BMI influence body image; otherwise, thin and normal weight individuals would not have negative views towards their own bodies nor would overweight and obese individuals have positive views towards their bodies.

Few researchers have looked at the relationship between childhood and adult onset obesity. Adami et al. (1998) observed the attitudes of obese patients who underwent biliopancreatic diversion. Adami et al. divided subjects into four groups. One group consisted of patients who had their obesity onset during adulthood, the second group consisted of patients who had their obesity onset during childhood, the third group consisted of patients who had their obesity onset during adulthood but within the past two years had lost a significant amount of weight as a result of biliopancreatic surgery, and the fourth group consisted of patients who had their obesity onset during childhood and had lost a significant amount of weight as a result of biliopancreatic surgery. Adami et al. also included a control group, which consisted of subjects who had never been obese at any point during their lives.

This study replicated the study of Adami et al (1998). Even though no significant results were found to support a relationship between childhood and adult onset obesity, the trends of this study did support the findings of Adami et al. Significance might not have been found due to the small sample size. Furthermore, this study differed from that of Adami et al. because it solely focused on female patients.

Though the findings of this research study provided some insight on the relationship between childhood and adult onset obesity, more research needs to be carried out in this area. Ideally, each category should consist of a larger sample size to see if there are any significant interactions between the groups. To have valid results, it would be recommended that this study be carried out longitudinally for a period of two years and that the same subjects be used in each category. In other words, the results of obese subjects with adult onset obesity would be analyzed once and then they would be re-analyzed again two years later after some significant weight loss. The same analysis would be carried out for obese subjects with childhood onset obesity. Such a design would control for individual differences. In the future, research should also control for weight loss method, as the study by Adami et al. (1998). Indeed, all patients in their research underwent biliopancreatic surgery, whereas patients in this study differed in their weight loss strategies. The majority of the patients underwent lap-band surgeries, a small portion underwent gastric by-pass, and few patients lost weight solely through exercise and dieting.

## Conclusion

Obesity has been extensively studied and analyzed in the past years. However, very little research has been dedicated to study the relationship between childhood and adult onset obesity. The little research that has been done in the field has not controlled for factors such as race or socio-economic level. It would be interesting to see if there is any relationship between childhood onset obesity and adult onset obesity in terms of race and socio-economic status, given that both factors have played a role on one's body perception. Also no research to date has looked at this relationship in terms of intimate relationships. Previous findings have suggested that intimate relationships come to affect body image in adulthood and those women who are in satisfying intimate relationships indeed have higher body satisfaction. It would be interesting to control for such factors when looking at adult-onset obesity and childhood onset obesity.

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APPENDIX A

BSQ-34

We should like to know how you have been feeling about your appearance over the **PAST FOUR WEEKS**. Please read each question and circle the appropriate number to the right. Please answer all the questions.

**OVER THE PAST FOUR WEEKS:**

	Never		Rarely		Sometimes		Often		Very often		Always
1. Has feeling bored made you brood about your shape?.....	1		2		3		4		5		6
2. Have you been so worried about your shape that you have been feeling you ought to diet?.....	1		2		3		4		5		6
3. Have you thought that your thighs, hips or bottom are too large for the rest of you?.....	1		2		3		4		5		6
4. Have you been afraid that you might become fat (or fatter)?.....	1		2		3		4		5		6
5. Have you worried about your flesh being not firm enough?.....	1		2		3		4		5		6
6. Has feeling full (e.g. after eating a large meal) made you feel fat?.....	1		2		3		4		5		6
7. Have you felt so bad about your shape that you have cried?.....	1		2		3		4		5		6
8. Have you avoided running because your flesh might wobble?.....	1		2		3		4		5		6
9. Has being with thin women made you feel self-conscious about your shape?.....	1		2		3		4		5		6
10. Have you worried about your thighs spreading out when sitting down?	1		2		3		4		5		6
11. Has eating even a small amount of food made you feel fat?.....	1		2		3		4		5		6



- |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| 12. Have you noticed the shape of other women and felt that your own shape compared unfavourably?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 13. Has thinking about your shape interfered with your ability to concentrate (e.g. while watching television, reading, listening to conversations)?..... | 1 | 2 | 3 | 4 | 5 | 6 |
| 14. Has being naked, such as when taking a bath, made you feel fat?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 15. Have you avoided wearing clothes which make you particularly aware of the shape of your body?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 16. Have you imagined cutting off fleshy areas of your body?.....   | 1 | 2 | 3 | 4 | 5 | 6 |
| 17. Has eating sweets, cakes, or other high calorie food made you feel fat?   | 1 | 2 | 3 | 4 | 5 | 6 |
| 18. Have you not gone out to social occasions (e.g. parties) because you have felt bad about your shape?.....   | 1 | 2 | 3 | 4 | 5 | 6 |
| 19. Have you felt excessively large and rounded?.....   | 1 | 2 | 3 | 4 | 5 | 6 |
| 20. Have you felt ashamed of your body?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 21. Has worry about your shape made you diet?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 22. Have you felt happiest about your shape when your stomach has been empty (e.g. in the morning)?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 23. Have you thought that you are in the shape you are because you lack self-control?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 24. Have you worried about other people seeing rolls of fat around your waist or stomach?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 25. Have you felt that it is not fair that other women are thinner than you?.   | 1 | 2 | 3 | 4 | 5 | 6 |
| 26. Have you vomited in order to feel thinner?.....   | 1 | 2 | 3 | 4 | 5 | 6 |
| 27. When in company have you worried about taking up too much room (e.g. sitting on a sofa, or a bus seat)?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 28. Have you worried about your flesh being dimply?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 29. Has seeing your reflection (e.g. in a mirror or shop window) made you feel bad about your shape?.....   | 1 | 2 | 3 | 4 | 5 | 6 |
| 30. Have you pinched areas of your body to see how much fat there is?.....  | 1 | 2 | 3 | 4 | 5 | 6 |
| 31. Have you avoided situations where people could see your body (e.g. communal changing rooms or swimming baths)?.....                                   | 1 | 2 | 3 | 4 | 5 | 6 |

32. Have you taken laxatives in order to feel thinner?..... 1 2 3 4 5 6
33. Have you been particularly self-conscious about your shape when in the company of other people?..... 1 2 3 4 5 6
34. Has worry about your shape made you feel you ought to exercise?..... 1 2 3 4 5 6

**Please describe yourself, in terms of:**

Gender	Age	Ethnicity	
Male <input type="checkbox"/>	Under 30 <input type="checkbox"/>	Caucasian <input type="checkbox"/>	Asian <input type="checkbox"/>
Female <input type="checkbox"/>	30-55 years old <input type="checkbox"/>	African-American <input type="checkbox"/>	Hispanic <input type="checkbox"/>
	Over 55 years old <input type="checkbox"/>	Native-American <input type="checkbox"/>	

**Please indicate your current body size:**  
**\*\*\*You Can Use the BMI Chart Attached\*\*\***

- Underweight, BMI under 18.5
- Normal weight, BMI 18.5-25
- Overweight, BMI over 25

**Please indicate your adult body size:**  
**(Please refer to the body size you have been for most of your adult life: 30-55 years of age)**

- Were Underweight
- Were Normal weight
- Were Overweight

**Please indicate your childhood body size:**  
**(Please refer to the body size you have been for most of your childhood: 8-18 years of age)**

- Were Underweight
- Were Normal weight
- Were Overweight

**Have you lost a significant amount of weight in the past 2 years?**  
**(Significant weight refers to 50 pounds or more)**

- Yes
- No

**Please indicate primary weight loss method:**

Dieting  Exercise  Surgical Treatment  Medical/Nutritional Treatment