EVALUATING BODY SHAPE PERCEPTIONS

USING THE IAT

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ABSTRACT

Research indicates that African American women have a more accepting view of larger body shapes than their Caucasian peers. Previous studies have focused on explicit measures such as questionnaires and figure ratings scales to test this conclusion. Implicit measures of attitudes are much less used, though they are superior in their accuracy of instant judgments or opinions that may be difficult for participants to articulate. The current study attempts to evaluate automatic attitudes about obese figures using an Implicit Association Test (IAT). Participants were grouped by demographic factors such as ethnicity, education and socio-economic status (SES). All women completed an IAT to measure their automatic thoughts about overweight figures in terms of attractiveness, healthiness and general positive and negative feelings. Obese, overweight and underweight figures were presented as a way to measure specific associations about those body types. The scores on these measures were compared using ethnicity as the primary demographic factor of interest. To investigate whether women evaluate figures differently depending on ethnicity, both participant groups evaluated Caucasian as well as African American figures. This project sought to contribute to our understanding of how differences in ethnicity, education level, and SES influence judgments about obesity.

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CHAPTER 1

INTRODUCTION

An Overview of Attitudes towards Obesity in America

It is widely acknowledged that obesity is a growing problem in America. Presently, more than a third of American adults are obese, doubling the rates of obesity in 1980 (Center for Disease Control, 2009). Furthermore, the Center for Disease Control (CDC) notes there is a significant disparity in obesity rates among ethnicities. Specifically, the CDC reports an obesity rate for African Americans of 35.7%, which is 51% higher than the 23.7% rate of obesity among Caucasians (CDC, 2009).

A number of studies support the idea that African Americans hold less disparaging thoughts about being overweight than Caucasians. Negative thoughts about weight include fear of fatness, drive for thinness, body dissatisfaction, and overweight preoccupation, all of which were reported higher for Caucasians than African Americans (Rucker & Cash, 1992). Additional factors that influence perceptions of body size include health-related concerns and worries about being attractive. Most research has been conducted using surveys and other explicit measures, however implicit or automatic thoughts can be even more revealing. The current study focused on how demographic factors, such as ethnicity, socio-economic class, and education level influence negative automatic or implicit thoughts about overweight figures.

Body Satisfaction, Ideal Size, and Fear of Fat

Several studies indicate that African American women have greater body satisfaction regardless of higher Body Mass Index (BMI) scores (Rand & Kuldau, 1990; Rucker & Cash, 1992; Powell & Kahn, 2006; Akan & Grilo, 2006). Based on a national phone survey, African American women more frequently reported satisfaction with their bodies than did their

Caucasian peers (Millstein, Carlson, Fulton, Galuska, Zhang, Blanck, & Ainsworth, Millstein, 2008).

Motivation to change current weight may be another contributing factor in the weight dissimilarity. African Americans hold weight ideals closer to their current weight, as opposed to Caucasians who wish for a thinner figure (Gipson, Reese, Vieweg, Anum, Pandurangi, Olbrisch, Sood & Silverman, 2005). Flynn and Fitzgibbon (1998) compared women of varying BMIs and found that Caucasian women who were just under the overweight benchmark for BMI (<25) exhibited dissatisfaction with their weight. African American women, on the other hand, expressed dissatisfaction only when they were above the benchmark value for overweight categories (>25). Gluck and Geliebter (2002) and Cachelin, Rebeck, Chung and Pelayo (2002) utilized figure rating scales to compare goal weights for individuals who were normal, over, and underweight. Gluck and Geliebter (2002) found a significant difference between college-age Caucasian, Asian, and African American women's ideal body weight. African American women were much more likely to choose a larger ideal body size than either Caucasians or Asian Americans. These findings indicate that African American women may be more satisfied with their bodies even if they are slightly overweight. African American women may also idealize larger figures compared to those sizes held in high esteem by Caucasians.

Studies with college-age samples indicate not only that African American women have body size ideals that are not as thin as Caucasian students, but they also hold fewer weight concerns in general (Rucker & Cash, 1992). Rucker and Cash (1992) report that African Americans fear fatness less and therefore are more tolerant of heavier figures in general. Additionally, African Americans hold more positive feelings about their bodies and are less likely to conceal their weight, or be distressed by their weight. They also report fewer weight

concerns (Rucker & Cash, 1992). Similarly, researchers noted that while both African American and Caucasian women showed implicit anti-fat biases, Caucasians exhibited a stronger bias (Schwartz, Vartanian, Nosek, Brownell, 2006).

In addition to a woman's ethnicity, the strength of her ethnic identity serves to moderate disordered eating attitudes (Abrams, Allen & Gray, 2009). In a college population, Abrams, Allen and Gray (2009) discovered that acculturation into mainstream Caucasian culture predicted a higher degree of restrictive eating behaviors for African American women.

Researchers claim that fear of fat and body dissatisfaction are conceptually linked (Lin & Reid, 2009). This is underlined by the fact that African Americans show both generally higher body satisfaction rates and lower fear of fat. Taken together, the literature suggests that African Americans have a more accepting view of larger body shapes and weight, fear fatness far less, and exhibit a weaker drive for thinness compared to Caucasians. These conclusions allude to the possibility that African Americans do not have the same level of negative automatic associations with overweight figures that Caucasians tend to exhibit.

Attractiveness and Health

The difference in acceptance of figures may be linked to the particular shape women feel is most attractive. Cachelin and colleagues (2002) reported that Caucasian women chose a thinner figure than African American women when asked which woman they believed men would find more attractive. A similar study by Demarest and Allen (2000) asked female participants to indicate on a figure rating scale, which silhouette men prefer. They also found that African Americans consistently chose a larger figure than that picked by most Caucasian women. Further, Caucasian women in another focus group reported that they believed themselves to be less attractive at higher weights and held a more negative view of obesity than

their African American peers (Blixen, Singh & Thacker, 2006). These studies suggest that one of the reasons Caucasian women idealized thinner figures may stem from a belief that men find thinner women more attractive. It follows that negative ideas about obesity may be based on lowered ideas of attractiveness for Caucasian women. In Demarest and Allen's study (2000), African American women did not hold the same opinion about male preference for thin figures, which indicates that this group may not believe thinness is required to be attractive. Therefore the idea of being unattractive may be unrelated to any negative association African Americans hold about being overweight.

Similarly, Befort, Thomas, Daley, Rhode, and Ahluwalia (2008) conducted a focus group on weight-related issues, and concluded that African American women maintain a belief that women can still be attractive and healthy, even if they are overweight. Participants exhibited an acceptance of a variety of body shapes and sizes as and agreed that being attractive was more about self-esteem and feeling beautiful, than about body size. Interestingly, the women in this focus group recognized the impact of obesity on physical well-being, citing health-related reasons as the biggest motivation for wanting to lose weight themselves. Other detriments to health besides additional weight, including the use of cigarettes and alcohol, were acknowledged as an additional hindrance to ideal health. The conclusion drawn from this focus group was that negative associations of obesity may relate to concepts of healthfulness, but they are not strongly related to attractiveness. In other words, African American women may not automatically assume healthiness and attractiveness for thin women and the opposite for obese individuals. Similarly, Malpede, Greene, Fitzpatrick, Jefferson, Shewchuk, Baskin and Ard (2007), concluded that African American women focus more on the health aspects of heavier figures than do Caucasians, who tend to concentrate on aesthetic implications of gaining weight.

These studies indicate that negative attitudes about being overweight for Caucasians may spring specifically from concerns about being attractive, whereas for African Americans, health reasons are the greater factor.

When strength of ethnic identity was included in participant demographic data, researchers found that there was a connection between adherence to ethnic norms and attitudes such as drive for thinness and body dissatisfaction (Petersons, Rojhani, Steinhaus and Larkin, 2000). Specifically, those who identified themselves strongly with African Americans exhibited fewer negative attitudes, while those who align themselves more closely with Caucasians reported higher dissatisfaction and drive for thinness. Considering these arguments, it would follow that cultural acceptance of heavier figures influences negative attitudes some individuals hold about obesity. These attitudes may play a part in the disparity in obesity rates among ethnicities in America.

Several researchers suggest that weight preoccupation may stem in part from a focus on being visually appealing to the opposite sex. Additionally, following the matching hypothesis of mating, women should innately know what types of bodies men find attractive, and be able to judge their own bodies in the same way men would assess their attractiveness. Accordingly, Tovee and Cornelissen (2001) reported that evaluations of the attractiveness of women's bodies by men and women are virtually indistinguishable. Furthermore their results follow a curved correlation pattern, skewed considerably towards lower BMI. This pattern indicates that deviations from a BMI of 18-20, especially those that are higher than 19, are perceived as less attractive. It is interesting to note that both sexes cited an ideal BMI that is on the low end of the normal BMI range for women (Tovee & Cornelissen, 2001).

While this may be the case for Caucasians and Hispanics, the two groups included in Tovee and Cornelissen's study, there are some dissimilarities that emerge when African Americans are included in similar studies. Jackson and McGill (1996) concluded that ethnicity plays a significant role in body shape preference. This study was conducted with African American male and female participants rating African American target figures, and Caucasian males and females rating Caucasian figures representing various body types. African American men rated figures with significantly higher BMI as attractive compared to all Caucasian participants. Moreover, African American women tended to associate fewer negative characteristics to higher BMI figures than their Caucasian peers did. Unfortunately, this assessment only included ratings of same-ethnicity, rather than comparing perceptions of images of same as well as other-ethnicity figures. Freedman, Carter, Sbrocco and Gray (2007) address this complexity in their study. Accounting for the possibility that men may have differing standards of beauty for African American and Caucasian women, they asked African American and Caucasian men to rate figures of women from both ethnic groups. While researchers found that there was dissimilarity in ratings for waist-to-hip ratio, preference for weight in general did not significantly differ for men's ratings of African American and Caucasian women. This study however, was limited to evaluations from men, which may not equate with those held by women.

An additional downside to all of the aforementioned studies is that they include line drawings that are not intended to depict a specific ethnicity, measures that present images of Caucasian women as the only sample, or responses that are restricted to the same-ethnicity of participants. No study to date has investigated how ethnicity of stimulus figure influences women's evaluation of body shapes. One can imagine that there could be differences in standards applied to same-ethnic group figures and those for other-ethnic group figures. This

idea would be supported by the extensive research on in-group favoritism, or ascribing more positive traits to members of one's own group, even if there no actual difference exists between members of the in-group and the out-group. No investigation thus far has applied these theories to body image and preference.

Negative Attitudes towards Obesity, Socio-Economic Status (SES), and Education

While many studies allude to a difference in body size acceptance primarily based on ethnic identity, other research indicates a stronger correlation between SES and body satisfaction. In their review, Sobal and Stunkard (1989) reported a significant correlation between low SES and obesity for women in developed countries such as the US. Using representative data from 1971 to 2002, researchers confirmed that both African American and Caucasian women show and inverse relationship between SES and obesity (Chang & Lauderdale, 2005). This prevalence of obesity among lower SES groups may indicate a greater acceptance.

Caldwell, Brownell, and Wilfley (1997), proposed that the discrepancy between African American and Caucasian body dissatisfaction has more to do with SES than ethnicity. Their study compared two groups of Consumer Reports magazine readers who indicated that they were currently dieting. As the readership of this magazine is composed primarily of middle-to-high income individuals, the African American and Caucasian populations were assumed to be of similar SES. Caldwell and colleagues found no difference in body dissatisfaction among Caucasian and African American women. While this research included far fewer African American women than Caucasians, and did not measure strength of ethnic identify, it did indicate a general trend that pressure to be thin may be more a factor of SES than ethnicity (Caldwell, Brownell & Wilfley, 1997). Researchers found a similar pattern in how individuals

rate other people's bodies. When factors such as education, SES and age were controlled, individuals with higher BMI indicated that larger figures were acceptable. Unfortunately, this research only asked participants to report their ethnicity, which doesn't account for acculturation factors or strength of ethnic identity (Cachelin, Rebeck, Chung & Pelayo, 2002).

An additionally influential variable may be education. Paeratakul, White, Williamson, Ryan and Bray (2002) discovered that both higher income and higher education increase the chances of a participant reporting greater body dissatisfaction. In contrast, Zhang and Wang (2004) concluded that while a significant inverse relationship between SES and obesity exists for Caucasian women, the effect is nonexistent for African American women. Taking into account this study, there appears to be some question as to whether one's ethnic identity or SES has a more significant bearing on negative attitudes towards obesity.

Method of Research:
Implicit Association Test (IAT)

The majority of the research used to assess body size/weight acceptance uses explicit measures (e.g. self-report questionnaires, interviews and focus groups). These can be subject to faking as participants have conscious control over what they report. Researchers have also noted that conscious opinions can be contradictory to automatic feelings. Implicit measures remove self-presentation confounds, and are resistant to faking, therefore are a logical method to study body image (Egloff & Schmukle, 2002). Therefore, this study used an implicit method to investigate automatic processing.

The IAT is a procedure used to determine implicit personality constructs based on a test that measures the strength of relationship between two concepts. It is based on the premise that when two concepts are highly associated, a discrimination task that pairs the two linked concepts is easier for participants than when conflicting concepts are paired.

The usefulness of a measure such as the IAT was elucidated by Egloff and Schmuckl (2002), who noted that explicit measures, rather than implicit tests, are subject to a number of restrictions and confounds. These restrictions include introspective limits and response factors; the assumption being that not all participants have the awareness or the willingness to accurately rate themselves. Faking also is a potential issue with explicit measures, especially when the results of the test may result in social stigma, for example. Even more importantly, implicit attitudes have been shown to predict behavior better than personality characteristics acquired through explicit measures (Asendorpf, Banse, & Mücke, 2002). Additionally, the IAT has been shown to have significant predictive validity of r^2=0.274, (Greenwald, Poehlman, Uhlmann & Banaji, 2009).

The IAT has been used to gauge a number of implicit personality factors including shyness, anxiety, self-esteem and attitude. It is frequently used in conjunction with explicit measures such as self-reports, physiological measures and observer-rated judgments (Egloff & Schmukl, 2002; Teachman & Woody, 2003). An IAT effect can appear regardless of the order of stimulus presentation or number of items presented (Nosek, Greenwald & Banaji, 2005). Based on recent literature, it is apparent that the IAT is a useful tool for determining connections and attitudes that may not appear on explicit measures. In addition, the IAT can predict a range of automatic thoughts, including, body image and attitudes towards overweight figures, presumably.

IAT and Body Image Assessment

There have been few published IAT studies of body image. Ahern and Hetherington, (2006), administered an IAT to 86 female college students. Participants categorized weight

related words (thin, heavy), and positive/ negative words. In general, "fat" was more strongly associated with negative than positive words. Interestingly, this study did not find any evidence of automatic thoughts concerning a drive for thinness or body image dissatisfaction, yet their explicit measures, the Sociocultural Attitudes Towards Appearance Questionnaire (SATAQ-3), did (Ahern & Hetherington, 2006). This may indicate that there is a difference in how participants consciously, as opposed to how they implicitly evaluate figures. Unfortunately, researchers failed to report participant demographic characteristics, such as SES or ethnicity; therefore no main effects of these variables could be captured.

Schwartz, Vartanian, Nosek, and Brownell (2006), required subjects to sort similar body/weight related words (fat, thin), along with diametric word pairs such as lazy-motivated, smart-stupid and good-bad. They found that participants, regardless of their own weight, preferred thin people to fat people. Moreover, the majority of participants implicitly connected fat with laziness and stupidity, and thin with motivation and intelligence. These findings suggest that there may be more negative assumptions about obese persons than positive. Unfortunately, demographic information about participants was not fully reported, making it impossible to know if a variation in responses appears because of a difference in ethnic identity, SES, or education level.

There are several reasons for using images as opposed to words related to body size to detect anti-fat biases. Images have been used in place of words in order to increase the saliency of the concepts of fat/thin (Durso & Johnson, 1980). Govan and Williams (2004) also support the use of images over words for target non-valence concepts, as words may reflect pejorative terms. For example, thin words such as "thin, skinny, slender, svelte" have a much more positive connotation than fat words, such as "fat, chubby, chunky, thick, heavy". Additionally,

the use of images increases participants' focus on fat people, rather than the general concept of fatness (Teachman, Gapinski, Brownell, Rawlins & Subathra, 2003).

CHAPTER 2

RESEARCH RATIONALE AND HYPOTHESES

The differing factors posed by researchers for a woman's negative attitudes towards being overweight make it difficult to conclude if ethnicity or other characteristics such as SES and/or education mediate or moderate perceptions. The current study addressed this question by investigating negative associations of African Americans and Caucasians on a continuum of SES and education levels. Additionally, because negative attitudes may influence a variety of thoughts, this study explored whether perceived unhealthiness or unattractiveness is important in the construction of negative thoughts about being overweight. Moreover, as differences between perceptions of BMI categories may exist, the present research compared deviations from the norm, including categories such as underweight, overweight and obese. Because negative attitudes may be a significant factor in weight change behavior and motivation, understanding this subject could elucidate the reasons behind weight disparity in America.

The study recorded automatic responses to female figures using an IAT Body Shape, adapted from the original IAT by Greenwald, McGhee and Schwartz (1998). This replicated the methods of previous studies (i.e. Ahern & Hetherington, 2006, and Schwartz, et al., 2006) on anti-fat biases. New diametric pairs of words were added and computer-generated figures replaced words for the fat/thin category. Additionally, three pairings were presented to participants, including an IAT comparing underweight-overweight figures, one for overweight-obese figures, and one that shows underweight and obese figures. This allowed variations in responses comparing underweight figures with two different higher deviations from the BMI norms to emerge.

Hypotheses

Hypothesis 1: General anti-fat bias for all participants

Based on evidence from previous studies, we predicted that the IAT Body Shape would produce similar results to those found by Schwartz et. al (2006), showing a general anti-fat bias among all participants. This would appear if response times were shorter for trials that pair positive attributes with thinner figures and negative for heavier figures, as opposed to incongruent pairs (i.e. positive attributes and heavy figures or negative words and thin figure). D scores reflect the degree to which participants categorize compatible (i.e. negative traits and higher weights) sets verses incompatible sets (i.e. negative traits and lower weights). A positive D score indicates stronger associations between compatible sets, whereas a negative D score will be seen for incompatible associations. It is proposed that there will be significantly more positive, as opposed to negative D scores.

Hypothesis 2: Greater anti-fat bias among Caucasian participants.

The strength of the anti-fat bias was proposed to be weaker in African Americans than Caucasian women, as past studies have shown that African Americans ascribe fewer negative characteristics to heavier figures than do Caucasians. As a result, we expected to see a more pronounced difference in response time in each IAT for Caucasian participants. This would indicate strong automatic associations between body types and negative concepts (unattractive, unhealthy, and bad).

Hypothesis 3: In-group bias, as seen by weaker anti-fat associations when participants view same-ethnic group stimuli

We predicted a same-ethnic group bias for all participants. This would manifest in slightly stronger negative associations in the opposite-ethnicity set or stimuli, as opposed to the

same-ethnicity set. This is based on the literature pointing to strong in-group bias affects that favor in-group members over out-group (Brewer, 1979). Further, Phinney, Jacoby and Silva (2007), found that the strength of ethnic identity correlates with in-group attitudes, with individuals reporting a well-developed ethnic identity also showing more positive in-group attitudes. Therefore, it was also hypothesized that subjects who score high on a measure of ethnic identity will show weaker associations between negative concepts and same-group images compared with other-group images.

Hypothesis 4: Anti-fat biases will be affected by ethnic identity, SES and education level

Similar to past studies, we believed that higher SES and education levels, as well as greater ethnic identity would contribute to increased anti-fat biases (Caldwell, Brownell & Wilfley, 1997; Cachelin, Rebeck, Chung & Pelayo, 2002; Petersons, Rojhani, Steinhaus and Larkin, 2000; Paeratakul, White, Williamson, Ryan & Bray, 2002; Abrams, Allen & Gray, 2009). As a result, we expected to see stronger negative associations among all participants of increasing SES. Strength of ethnic identity was assumed to have a similar moderating affect, with higher ethnic identity decreasing negative associations for African Americans, and increasing associations for Caucasian participants.

Hypothesis 5: Greater sensitivity towards variations in BMI for African American participants

Following past research that indicates more weight concern in Caucasians, we anticipated seeing this group strongly associate negative attributes to both overweight and obese figures when they are compared to underweight bodies. We expected to see less significant associations when pairings of overweight and obese figures are presented, as Caucasian participants see both categories as problematic, and therefore may not differentiate between the two higher BMI categories. African American women, on the other hand, were assumed to show more

significant, or stronger associations when completing trials with obese and overweight women, as past research indicates African Americans are more tolerant of overweight figures, and therefore would not categorically dismiss both BMI levels (Rucker & Cash, 1992).

Hypothesis 6: Strongest associations when categorizing terms related to attractiveness for Caucasians, and healthiness for African Americans

As the literature suggests African Americans find a variety of body shapes attractive, we anticipated seeing very little effect when this group is sorting obese verses overweight figures, or overweight verses underweight using the terms "attractive" and "unattractive" (Demarest & Allen, 2000; Malpede, Greene, Fitzpatrick, Jefferson, Shewchuk, Baskin & Ard, 2007; Befort, Thomas, Daley, Rhode, and Ahluwalia, 2008). This would appear as slower response times when concepts of attractiveness are paired with thin figures, suggesting that African Americans may have a lower or even non-existent implicit connection between having a larger body type and being unattractive.

On the other hand, research clearly points to the fact that Caucasian women feel only thinner figures can be beautiful, indicating that response times for trials pairing thin figures and attractiveness would result in faster response times (Cachelin, Rebeck, Chung & Pelayo, 2002; Blixen, Singh & Thacker, 2006). Previous studies have implicated health concerns as the most significant factor in negative perceptions of overweight individuals within African American groups (Befort, Thomas, Daley, Rhode & Ahluwalia, 2008). This would indicate a strong automatic association between overweight or obese figures and concepts related to unhealthiness, particularly high when obese figures are presented.

CHAPTER 3

METHODS

Participants

Participants were 517 (207 African American, 310 Caucasian) female volunteers from around the United States. Participants represented a range in age (ages between 18 and 60), socioeconomic status, and education. Recruitment took place primarily online and through flyers posted around the Washington, DC area.

Measures

Explicit measure of Body Image and Attitudes

Participants reported general demographic information including age, ethnicity, education, and socioeconomic indicators. The zip code in which they have lived the longest was obtained in order to ensure a representative sample of women from the United States is achieved. Additionally, individuals were asked to report their height and weight as accurately as possible to determine BMI.

Multidimensional Body-Self Relations Questionnaire-Appearance Scales

(MBSRQ-AS by Brown, Cash and Mikulka, 1990).

The MBSRQ-AS is a measure of body image attitudes. This measure has been used in previous studies to evaluate specific concern over weight and includes 69 Likert-scale questions that correspond to seven factors (appearance evaluation, appearance orientation, fitness evaluation, fitness orientation, health evaluation, health orientation, and illness orientation), and which combine to produce three multi-item subscales (body areas satisfaction scale, overweight pre-occupation scale and self-classified weight scale) (Brown, Cash, & Mikulka, 1990). This measure addresses appearance and health issues associated with size and weight. The MBSRQ-

AS has an internal consistency ranging from .75 to .91. Likewise, this measure has high correlations between the five aforementioned subscales, between .95 and .99. The scores on subscales from the present study had correlations of .67 (Appearance Evaluation), .87 (Appearance Orientation), .68 (Fitness Evaluation), .89 (Fitness Orientation), .41 (Health Evaluation), .74 (Health Orientation), .71 (Illness Orientation), and .52 (Weight Preoccupation), (Cash,1994).

As an explicit measure, the MBSRQ was compared to the implicit associations as a manipulation check. Additionally, scores on this measure were used in data analysis to see if individuals with outlier scores (two standard deviations above the mean for their ethnic group), have significantly different results on the IAT than participants with MBSRQ scores closer to the mean.

Multigroup Ethnic Identity Measure (Phinney,1992)

The Multigroup Ethnic Identity Measure or MEIM has been shown to concisely quantify racial identity attitudes. This 20-item questionnaire uses several dimensions of identity to evaluate ones sense of belonging to a certain ethnic group, as opposed to "other group" orientation, which assesses openness to different ethnicities. Overall Cronbach's alpha, was .90, indicating high reliability for the full range of ethnic identity scores. In the present study, correlation between items was similarly high at .88. Specifically, African American participants had a Cronbach's alpha of 0.885, and 0.832 for Caucasians.

This scale assisted in detecting how relevant one's ethnic identity is to how they view figures. As a number of past studies support the significance of ethnic identity in body shape perceptions, it is essential to include a measure that test adherence to cultural norms of a particular ethnic group.

Beck Depression Inventory II (Beck, 1996)

This is a self-report questionnaire including twenty-one items used to assess the severity of depression. The measure has a high internal consistency with an alpha of .91 (Dozois, Dobson & Ahnberg, 1998). Additionally it matches the criteria outline in the DSM-IV, providing more construct validity (Dozois, Dobson & Ahnberg, 1998). Correlation for the BDI in the present study was high at .94, (African American participants had a Cronbach's alpha of 0.941, and Caucasians had 0.944). The BDI is included in the present study to check for slower latencies as depression has been linked to increased reaction time (Azorin, Benhaim, Hasbroucq & Possamai, 1994).

Apparatus and Materials

The IAT was conducted online using Inquisit software. Words appeared on the screen in 48 pt size Arial font for two seconds for ease of reading. Data on latency time between presentation of the stimulus and correct keying were recorded and analyzed within as well as between groups.

Stimuli set: My Virtual Model Samples

For this study, computer-generated models created on the site Myvirtualmodel.com, depicting underweight, overweight, and obese African American and Caucasian figures were used as stimuli for classification. Age, facial features, and hairstyles were varied, but matched for each weight category. These conditions included examples of overweight women with a BMI of 28, depicting an overweight woman; an image of a woman with a BMI of 44, for the obese figure; and an example of underweight women with a BMI of 18. All BMI conditions included African American as well as Caucasian figures, creating six distinct stimuli groups.

Word List

The present study used an IAT based on a previous study investigating anti-fat biases using concepts of good/bad (Schwartz et. al, 2006). Other non-IAT studies have paired a range of figure sizes with "Physique and weight," " Health," and "Personal" attributes such as skinny, chubby, light, big-boned, healthy, in-shape, overeater, pretty, nice, and gross (Greenleaf, Starks, Gomez, Chambliss & Martin, 2004). This study used pictographic representations of figures instead of words, in addition to terms related to positive and negative concepts, including those related to attractiveness and health.

The column of words was taken from Schwartz, Vartanian, Nosek, and Brownell (2006), the second two columns were adapted from other measures that used adjectives to describe figures of various sizes, such as Greenleaf, Starks, Gomez, Chambliss and Martin (2004). These words were selected based on relevance to concepts of attractiveness, healthfulness, and general negative connotation.

Good-Bad	**Attractive-unattractive**	**Healthy-unhealthy**
Wonderful	Gorgeous	Fit
Joyful	Appealing	Lively
Excellent	Pleasing	Vigorous
Terrible	Repulsive	Sick
Nasty	Ugly	Ailing
Horrible	Gross	Ill

Implicit Association test (IAT; Greenwald, McGhee, and Schwartz, 1998)

A modified version of the Implicit Association Test was used to for this study. Nine separate IATs were administered (attractive/unattractive // obese/underweight; attractive/unattractive // overweight/underweight; attractive/unattractive // overweight/obese; healthy/unhealthy // obese/underweight; healthy/unhealthy // overweight/underweight; healthy/unhealthy // overweight/obese; good/bad // obese/underweight; good/bad // overweight/underweight; good/bad // overweight/obese).

This sorting task involved a series of four separate trials. During the first trial, one set of concepts was presented and the participant was asked to sort each on different keys (all "Good" words on left key, and all "Bad" words on right key). Each word randomly appeared three to four times participant, providing her with twenty presentations of words to sort. Next the participant completed twenty trials for the images alone. The subject was then instructed to sort images into the categories of underweight (the figures with BMIs of 18), overweight (those with BMIs of 28), or obese (BMI of 44). Two of these weight conditions appeared together for each IAT (i.e. underweight versus overweight, underweight versus obese, and overweight versus obese). The third trial presented both words and images together. The participant sorted one type of image on one side, along with one type of word. For example "underweight or good words" were sorted on the left side and "overweight and bad words" on the right side. Twenty images and twenty words were presented during this trial. The forth trial replicated the third to improve reliability. Next, the participant was instructed that the words have switched positions. As a practice, she completed a brief trial during which she was presented with ten words that they will sort on the opposite side from the previous test. The last two trials again presented

images and words, with the pairing flipped from the previous combination trial (i.e. "underweight and bad words" on the left side and "overweight and good words" on the right side). Again, the duplication of the paired trials provided additional data, which was averaged to assure that there are no practice effects in the test. The greater the implicit connection (or automatic association) among the concepts, the faster the participant responded when those connected concepts were paired on the same response key. Conversely, when the two concepts are dissimilar, pairing them on the same key would hinder response time.

Procedure

Each participant was directed to the study website where they read an informed consent page online explaining the general focus of the measures and IAT. They she entered demographic information (Appendix A). Each subject was told that she would be asked to make a number of category judgments, and that these choices will be presented as a sorting task on her computer. She was instructed to start whenever she was ready. Each participant was randomly assigned to conditions so that one-third of the African American and Caucasian participants (seventy-five in each group) completed the good/bad IAT, one-third took the healthy/unhealthy test, and one third received the attractive/unattractive version. The presentation of either the Caucasian or African American figure set was randomized so that some participants in each group are presented with African American images first, and others would see Caucasian figures first. Additionally, within each stimulus set, images and words were presented in a random order.

The test took approximately thirty minutes, and participants were entered into a drawing for a $50 gift certificate to compensate them for their time. Contact information was only used to enter individuals into a raffle, and destroyed afterwards.

CHAPTER 4

RESULTS

A total of 598 participants responded to the survey. The sample included in analyses consisted of 517, as a number were excluded based on demographics. Specifically, of the 81 excluded, 14 were removed for indicating they were male, 10 for selecting "other" ethnicity, 19 for being older than 60 or under 18, 4 for random responses on the weight and height question (e.g. weight 333 pounds, height 33 inches or other combinations that equated to BMIs under 10 or over 60), 3 for not completing the demographic portion of the study, 11 for a combination of the above. Additionally, based on the recommendations made by Greenwald, Nosek and Banaji (2003) for improved scoring of the IAT, no data was analyzed for the twenty individuals for whom 10% or more of their trials were faster than 300 milliseconds, and those who had trials with latencies greater than 10,000ms. Of these twenty, ten were African American, and ten were Caucasian. Of the 517 included in analysis, 207 were African American, 310 indicated they were Caucasian.

Independent T-tests presented in Table 1 revealed that there were significant differences in age, BMI, and MEIM scores between African Americans and Caucasians. Specifically, African Americans were older, $t(515) = 2.046$, $p < .05$, had a higher BMI, $t(407) = 4.75$, $p < .001$, and had a higher MEIM score, $t(392) = 9.36$, $p < .001$. Additionally, a MANOVA revealed that African Americans scored significantly higher on MBSRQ subscales, F (7, 459) = 6.38, $P < .001$; Wilk's $\lambda = 0.90$, partial $\varepsilon^2 = .10$. This indicates that African Americans have more body satisfaction and positive feelings. Specific subscales on which African Americans and Caucasians differed included Appearance Evaluation (F (1, 466) = 27.72; $P < .001$; partial $\varepsilon^2 = .06$); Appearance Orientation (F (1, 466) = 27.72; $P < .05$; partial $\varepsilon^2 = .01$); Fitness Evaluation (F

(1, 466) = 11.14; $P < .005$; partial $\varepsilon^2 = .02$); Health orientation (F (1, 466) = 5.47; $P < .05$; partial $\varepsilon^2 = .01$); and Illness Orientation (F (1, 466) = 18.47; $P < .001$; partial $\varepsilon^2 = .04$). On only one MBSRQ subscale, Overweight Preoccupation (F (1, 466) = 5.93; $P < .05$; partial $\varepsilon^2 = .01$), did Caucasians score significantly higher than African Americans. For the subscales of Fitness orientation (F (1, 466) = 2.16; $P = .14$; partial $\varepsilon^2 = .01$), and Health evaluation (F (1, 466) = .98; $P = .32$; partial $\varepsilon^2 = .002$), there were no significant differences between ethnicities. A T-Test showed no differences for education $t(471) = -1,13$, $p = .26$, income $t(515) = .05$, $p = .96$, or depression score $t(511) = 1.20$, $p = .23$.

Table 1. Independent Samples Test Comparing Participants on Demographic Factors

		Mean	SD	t/F[§]	df	Sig. (2-tailed)
Age	African American	34.45	10.83	-2.05	515	0.04
	Caucasian	32.42	11.17			
BMI	African American	30.18	8.49	-4.75	407	0.00
	Caucasian	26.71	7.59			
MEIM	African American	18.70	4.03	-9.36	392	0.00
	Caucasian	16.78	3.99			
BDI	African American	10.67	10.81	1.20	511	0.23
	Caucasian	11.81	10.40			
Education*	African American	3.52	1.01	-1.13	471	0.26
	Caucasian	3.41	1.12			
Income*	African American	2.80	1.38	0.05	515	0.96
	Caucasian	2.80	1.41			
MBSRQ subscale: Appearance Evaluation	African American	20.75	3.70	27.71	466	0.00
	Caucasian	18.87	3.88			
MBSRQ subscale: Appearance Orientation	African American	43.64	7.62	4.91	466	0.03
	Caucasian	41.96	8.45			
MBSRQ subscale:	African American	10.43	2.26	11.14	452	0.00

Fitness Evaluation	Caucasian	9.65	2.66			
MBSRQ subscale: Fitness Orientation	African American	40.32	8.83	2.16	450	0.14
	Caucasian	38.99	10.23			
MBSRQ subscale: Health Evaluation	African American	21.43	4.52	.98	466	0.32
	Caucasian	20.99	4.77			
MBSRQ subscale: Health Orientation	African American	27.68	5.44	5.49	466	0.01
	Caucasian	26.48	5.43			
MBSRQ subscale: Illness Orientation	African American	17.36	3.62	18.47	466	0.00
	Caucasian	15.92	3.56			
MBSRQ subscale: Overweight Preoccupation	African American	10.94	3.36	5.93	466	0.01
	Caucasian	11.74	3.61			

Note: § t scores were presented for T-tests (Age, BMI, MEIM, BDI, Education and Income), and F scores were presented for MANOVA tests (MBSRQ subscales)
*Education level: 1=Grade school or left high school before graduation; 2=High school; 3=Junior college or technical/trade school; 4=College graduate (bachelors); 5=Post Graduate work (masters, doctorate)
*Income level: 1=Below $20,000; 2= Between $20,000 and 40,000; 3=Between $40,000 and 60,000; 4=Between $60,000 and 80,000; 5=Greater than $80,000

To analyze overall correlations between demographic variables and the outcome variable of IAT D scores, two-tailed Pearson's correlation was used. The correlation table is attached as Appendix 1. This indicated that only BMI was significantly related to IAT D scores for both groups $r(147) = -2.44$, $p < .005$, $r(135) = -2.51$, $p < .005$, $r(143) = -1.66$, $p > .05$. Therefore all analysis controlled for the effect of BMI. The alpha level was set at the .05 level for all analysis. Specific hypotheses are addressed below.

Hypothesis 1: General anti-fat bias for all participants

Evidence was found to support the hypothesis that all participants have significant anti-fat biases. When the IAT D (difference) score is positive, it indicates associations with schema-congruent ideas. Likewise a negative D score reflects schema-incongruent associations. A D score can vary from +2 to -2. All IATs in this study were set up so that a positive D score would refer to associations between the thinner figure being shown and the positive attribute. The

overall mean D was positive (0.29), indicating that participants in this study generally associated heavier figures with negative concepts and thinner figures with positive ones. As presented in Table 2, a single-sample T-test revealed significance for all attributes and weight category comparisons at the $p<.001$ level. Specifically, D scores for comparisons of underweight and overweight figures (M=0.19, SD=0.03) were significantly different than zero $t(146) = 6.03$, $p<.001$. D scores for comparisons of underweight and obese figures (M=0.27, SD=0.03) were significantly different than zero $t(134) = 8.33$, $p<.001$. D scores for comparisons of overweight and obese figures (M=0.42, SD=0.03) were significantly different than zero $t(137) = 14.80$, $p<.001$.

Table 2. Single Samples T- Test for Model Weight Categories

		Mean	SD	t	df	Sig. (2-tailed)
underweight/overweight figures	Overall	0.19	0.38	6.03	146	0.00
	African American participants	0.12	0.38	2.33	56	0.02
	Caucasian participants	0.23	0.37	5.93	89	0.00
underweight/ obese figures	Overall	0.27	0.37	8.33	134	0.00
	African American participants	0.23	0.38	4.56	56	0.00
	Caucasian participants	0.30	0.37	7.08	77	0.00
overweight/obese figures	Overall	0.42	0.33	14.8	137	0.00
	African American participants	0.40	0.35	8.81	60	0.00
	Caucasian participants	0.43	0.31	12.1	76	0.00

Moreover when testing attribute categories as presented in Table 3, D scores for attractive vs. unattractive words (M=0.36, SD=0.03) were significantly different than zero $t(139) = 11.26$, $p<.001$. D scores for good vs. bad words (M=0.20, SD=0.03) were significantly different than

zero $t(147) = 6.28$, $p<.001$. D scores for healthy vs. unhealthy words (M=0.34, SD=0.03) were significantly different than zero $t(131) = 10.63$, $p<.001$. This indicates that regardless of which attribute or weight category, there is a significant negative automatic association with heavier figures for all participants.

Table 3. Single Samples T-Test for Attributes

		Mean	SD	t	df	Sig. (2-tailed)
Attractive / Unattractive	Overall	0.34	0.36	11.3	139	0.00
	African American participants	0.34	0.36	7.02	57	0.00
	Caucasian participants	0.34	0.35	9.76	81	0.00
Good / Bad	Overall	0.19	0.38	6.28	147	0.00
	African American participants	0.12	0.41	2.34	62	0.02
	Caucasian participants	0.25	0.34	6.71	84	0.00
Healthy / Unhealthy	Overall	0.34	0.37	10.6	131	0.00
	African American participants	0.36	0.39	6.76	53	0.00
	Caucasian participants	0.36	0.39	8.22	77	0.00

Hypothesis 2: Greater General anti-fat bias among Caucasian participants

A one-way analysis of covariance (ANCOVA) was performed to test differences in D scores among African Americans and Caucasians, accounting for BMI. As shown in Table 4, there were no differences between African Americans and Caucasians, F (1, 418) = 1.48; P = .23, with a mean D score for Caucasian participants of 0.32 (SD = 0.39), and 0.25 (SD = 0.36) for African American participants. This had an eta^2 of 0.0022.

Table 4. ANCOVA for Difference in D Scores Based on Participant Ethnicity

		Mean	SD	F	df	Sig. (2-tailed)
D scores	African American participants	0.25	0.36	1.48	418	0.23
	Caucasian participants	0.32	0.39			

Hypothesis 3: In-group bias, as seen by weaker anti-fat associations when participants view same-ethnic group stimuli

It was assumed that participants would show an in-group bias, exhibiting weaker automatic negative associations when viewing same-ethnicity figures, as opposed to viewing figures that did not share their ethnicity. To test this hypothesis, paired samples T-tests were conducted comparing the D scores of subjects viewing models of their ethnicity as opposed to another ethnicity, for all participants. Analysis presented in Table 5 revealed no significant differences when viewing a figure of one's own ethnic group (M=0.30, SD=0.45) verses viewing a model from the other ethnicity (M=0.28, SD =0.43), $t(420) = 0.66$, p=0.51. In other words, there is no evidence of an in-group bias overall.

However, when the data was separated by participant ethnicity, a significant difference in D scores was found for Caucasian participants, as shown in Table 6. A paired-sample T-test revealed that other-group pairs (M= 0.28, SD=0.40) produced significantly weaker automatic associations than same-group pairs (M=0.35, SD=0.43) for compatible concepts (i.e. anti-fat bias), $t(244)=2.45$, p=0.02. This indicates that Caucasians were more critical when viewing Caucasian figures than when they saw African American figures. While African Americans too

showed higher anti-fat biases towards Caucasian figures, there was not a statistically significant difference between same-group (M=0.22, SD=0.47) and other-group pairs (M=0.28, SD =0.46), $t(174) = -1.42$, p=0.16.

Table 5. Paired T test Comparing D Scores for Same and Other Ethnicity Models for African American and Caucasian Participants

		Mean	SD	t	df	Sig. (2-tailed)
D scores for Caucasian participants	Same ethnicity (Caucasian models)	0.35	0.43	2.45	244	0.02
	Other ethnicity (African American models)	0.28	0.40			
D scores for African American participants	Same ethnicity (African American models)	0.22	0.47	-1.4	174	0.16
	Other ethnicity (Caucasian models)	0.28	0.46			

To determine if the aforementioned conclusion was indicative of anti-fat biases specifically linked to heavy African Americans, or African Americans in general, a paired sample T-test was used to compare automatic associations for African American figures to those of Caucasians for all participants. Analysis presented in Table 7 revealed that the overall D scores for African American models (M= 0.32, SD= 0.45) were significantly higher than those for Caucasian models (M= 0.26, SD = 0.43), $t(420) = 2.70$, $p<0.01$. This suggests greater overall anti-fat biases for African American figures as opposed to Caucasian figures. This is consistent with the aforementioned findings of a statistically significant in-group preference for Caucasians but not for African Americans.

Table 6. Paired T test Comparing D Scores for African American and Caucasian Figures

		Mean	SD	t	df	Sig. (2-tailed)
D scores	African American models	0.32	0.45	2.7	420	0.01
	Caucasian models	0.26	0.43			

Hypothesis 4: Anti-fat biases will be affected by ethnic identity, SES and education level

A multiple regression analysis was conducted to test the hypothesis that ethnic identity as measured by the MEIM would have an effect on automatic associations for African American participants. Total MEIM score, ethnicity of participant, and the interaction between the two were input as predictors. No significant effect was found for IAT overall, or for analysis by weight category comparisons. Neither ethnicity of the participant, nor MEIM score had a main effect on D scores. However, as presented in Table 7, in IAT tests for which the attributes of "healthy" and "unhealthy" were presented, there is an effect of interaction between ethnicity and MEIM score on D; ß = -0.17, $t(128) = -1.96$, $p = 0.05$. This suggests that the participant's level of ethnic identity influences D scores for African American participants when sorting figures using words related to health. Specifically, for Caucasians, the greater the ethnic identity, the stronger the anti-fat bias, whereas for African Americans, anti-fat bias was negatively correlated with ethnic identity as shown in Figure 1.

Table 7. Summary of Multiple Regression Analysis for the Effect of Ethnicity and MEIM on D Score for Tests Presenting Healthy/ Unhealthy Attributes

Variable	B	SE(B)	ß	*t*	Sig. (*p*)
Ethnicity of Participant	-0.03	0.04	-0.08	-0.82	0.41

MEIM Score	0.003	0.01	0.04	0.38	0.70
Interaction of MEIM & Ethnicity	-0.02	0.01	-0.17	-1.96	0.05

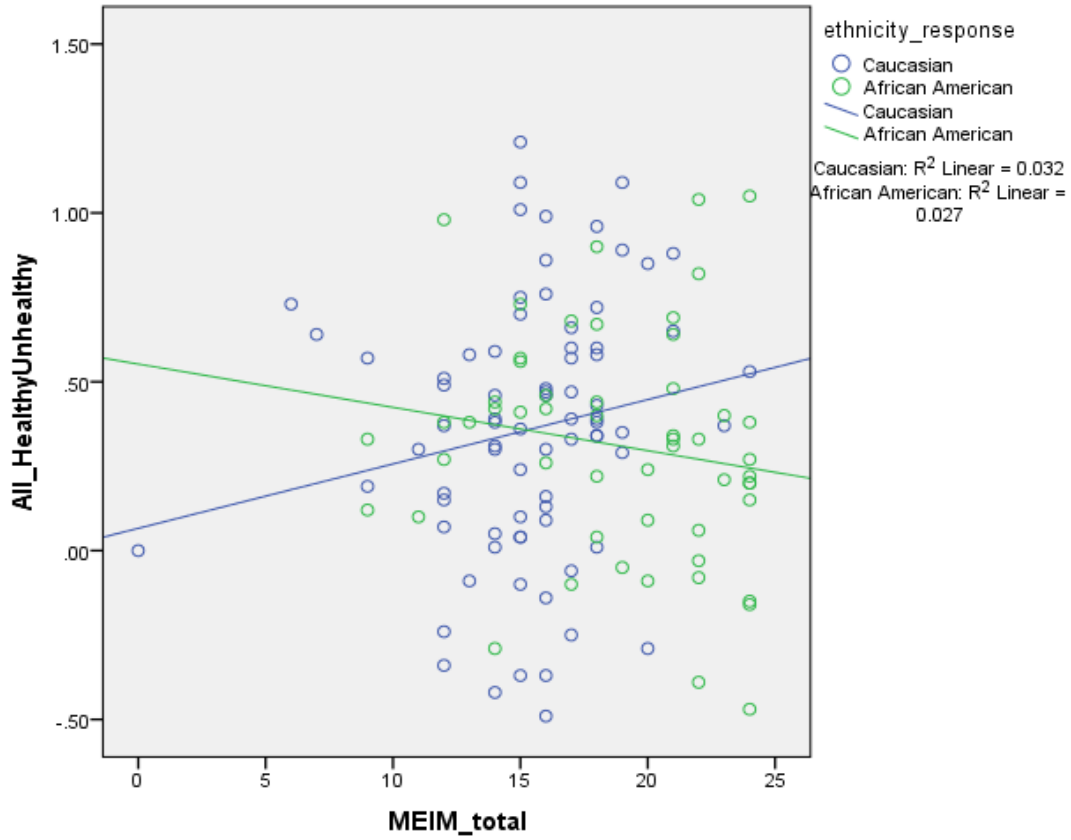

Figure 1. Scatterplot of D Scores on Healthy/Unhealthy IAT by MEIM Scores for African American and Caucasian Participants

With regards to the hypothesis suggesting a difference in D scores based on SES and education levels for African Americans, no support was found. Non-significant results were found through one-way ANCOVAs for all demographic factors. There was no significant difference between levels of education, accounting for BMI, F (4, 415) = .37; P = .83, with a mean D score for participants with a grade school education .42 (SD = 0.52); high school

education mean .31 (*SD*=0.39); Junior college education mean .29 (*SD*=0.42); College graduate mean .27 (*SD*=0.36); Post Graduate work mean .27 (*SD*=0.36).

Likewise, ANCOVA comparisons by income level, accounting for BMI level resulted in no significant differences, F (4, 415) = 1.58; P = .18, with a mean D score for participants with incomes below $20,000 of .31 (*SD* = 0.41); incomes between $20,000 and $40,000 mean .21 (*SD*=0.37); incomes between $40,000 and 60,000 mean .33 (*SD*=0.36); incomes between $60,000 and 80,000 mean .31 (*SD*=0.37); and incomes greater than $80,0000 mean .33 (*SD*=0.35). The effect size was negligible with an Eta^2 of 0.0016 for education, and an Eta^2 of 0.018 for income level.

A one-way ANOVA was performed comparing MEIM scores by education and SES for African Americans and Caucasians. No significant differences in MEIM scores between participants with various education and income levels for Caucasians, but for African Americans there was significance for both factors. MEIM scores increased as both education (p= 0.011) and income increased (p= 0.038).

Hypothesis 5: Greater sensitivity towards variations in BMI for African American participants

It was assumed that Caucasians would indiscriminately exhibit an anti-fat bias, whereas African American participants may show a different degree of association when viewing pairs of figures that included an underweight figure and an overweight figure compared to pairs that included an underweight figure and an obese figure. This hypothesis is based on research showing a greater general anti-fat bias among Caucasians. It was believed that Caucasians would show an anti-fat bias regardless of pairing. African Americans on the other hand, would show an anti-fat bias, but particularly when the figures are more apparently dissimilar (i.e. when shown underweight and obese figures).

To test this, IAT tests were separated into those that presented "similar" BMI figures (i.e. tests that paired underweight and overweight figures, or overweight and obese), and the one that presented a more dissimilar pair (i.e. presenting underweight and obese figures). Table 9 presents a one-way ANCOVA test comparing the D scores for similar-BMI comparisons (i.e. underweight/overweight and overweight/obese figures) as opposed to the IAT that paired figures with a greater BMI difference (i.e. underweight/obese), accounting for the covariate of BMI of participant. For African Americans, it showed that there were no significant differences between similar BMI groups (M=0.26, SD=0.39) as opposed to larger variation comparisons (M= 0.23 SD=0.38), F (1,172) = 0.42, p = 0.52. This resulted in an Eta^2 of 0.0017, indicating a small effect size. For Caucasian participants, there was a similar finding. In this group there was no significant differences between similar BMI groups (M=0.32, SD=0.36) as opposed to larger variation comparisons (M= 0.30 SD=0.37), F (1,242) = 0.42, p = 0.52. This also indicated a small effect size with an Eta^2 of 0.00096. In other words, neither African American nor Caucasian participants showed a significant difference in their anti-fat biases when they were viewing pairs of figures that were either close in BMI, nor more dissimilar in BMI.

Hypothesis 6: Strongest associations when categorizing terms related to attractiveness for Caucasians, and healthiness for African Americans

This hypothesis proposes that Caucasian participants will have significantly higher D scores than African American participants (i.e. stronger associations) when presented with underweight figures and attractive attributes and overweight or obese figures and unattractive attributes. To compare the strength of the relationship between concepts of attractiveness and underweight figures, a one-way ANCOVA that accounted for participant BMI was conducted

using D scores from Attractive/Unattractive IATs. This analysis, presented in Table 10, shows that there was no significant difference in D scores for African Americans (M=0.34, SD=0.36), and Caucasians (M=0.34, SD=0.35), F (1,137) = 0.01, p = 0.92, suggesting that Caucasians have no greater implicit connection between underweight figures and concepts associated with attractiveness than African Americans.

Furthermore, to test whether participants showed greater compatible associations (i.e. thinner figures-attractive, heavier figures-unattractive) when viewing models of one ethnicity as opposed to another, a paired samples T test was conducted and is presented as Table 8. Overall, participants showed no difference in D scores when viewing African American models (M=0.37, SD=0.44), as opposed to when they viewed Caucasian models (M=0.31, SD=0.41), t(140)=1.31, p=0.19.

When separated by ethnicity of participants, neither group showed any significant difference in their D scores when viewing African American or Caucasian figures. Specifically, the D scores of Caucasians viewing Caucasian figures (M=0.33, SD=0.38), were not significantly different than when Caucasian participants viewed African American models (M=0.36, SD=0.44), t(81)=1.31, p=0.19. African American participants also showed no significant differences in their D scores when viewing African American figures (M=0.37, SD=0.45), as opposed to when they viewed Caucasian figures (M=0.30, SD=0.45), t(57)=1.31, p=0.28.

Table 8. Paired Samples T-test Comparing D scores when Viewing Caucasian and African American Models in Tests using the Attributes Attractive/Unattractive for all Participants

		Mean	SD	t	df	sig (2-tailed)
All participants	African American figures	0.37	0.44	1.31	140	0.19
	Caucasian figures	0.31	0.41			
Caucasian participants	African American figures	0.36	0.44	1.31	81	0.19
	Caucasian figures	0.33	0.38			
African American participants	African American figures	0.37	0.45	1.31	57	0.28
	Caucasian figures	0.30	0.45			

As shown in Table 9, a one-way ANCOVA comparing D scores for Healthy/unhealthy attributes by participant ethnicity did not reveal a significant difference. The D scores for African Americans (M=0.31, SD=0.34) were not significantly different than those for Caucasian participants, after accounting for BMI (M=0.36, SD=0.39), F (1,129) = 0.13, p = 0.72. Therefore, it cannot be said that there are stronger associations for one ethnicity as opposed to the other when categorizing terms related to healthiness; both groups believe heavier individuals are unhealthy.

Table 9. ANCOVA Comparing D Scores for the Healthy/Unhealthy IAT by Participant Ethnicity

		Mean	SD	F	df	sig (2-tailed)
D scores for Healthy/Unhealthy IAT	African American participants	0.31	0.34	0.13	129	0.72
	Caucasian participants	0.36	0.39			

However, a paired sample T test comparing D scores for Healthy/unhealthy attributes by ethnicity of model did reveal a significant difference. This is presented in Table 10. The D scores for African American figures (M=0.38, SD=0.41) were significantly higher than those for Caucasian figures (M=0.30, SD=0.43), $t(131)=2.25$, $p<0.05$. This difference suggests that participants held greater associations of healthy-thin and unhealthy-heavy when viewing African American figures, rather than when they saw Caucasian figures.

This finding appears to be driven by Caucasian participants. The difference in their D scores when viewing African American figures (M=0.43, SD=0.43) compared with Caucasian figures (M=0.29, SD=0.43) is very significant $t(77)=3.11$, $p<0.005$; whereas the D scores for African American participants viewing African American figures (M=0.31, SD=0.38) compared with Caucasian figures (M=0.31, SD=0.43) is nonsignificant, $t(53)=0.03$, $p=0.98$ as shown in Table 10. This means that Caucasians have significantly stronger associations with the concept of healthy-thin, and unhealthy-heavy for African Americans than they do for their own ethnicity. African Americans hold similar associations for both ethnicities.

Table 10. Paired T-Tests comparing D scores for the Healthy/Unhealthy IAT by Participant Ethnicity.

		Mean	SD	t	df	sig (2-tailed)
Healthy/unhealthy IAT, All participants	African American figures	0.38	0.41	2.25	131	0.03
	Caucasian figures	0.30	0.43			
Healthy/unhealthy IAT, African American participants	African American figures	0.31	0.38	0.03	53	0.98
	Caucasian figures	0.31	0.43			
Healthy/unhealthy IAT, Caucasian participants	African American figures	0.43	0.43	3.11	77	0.00

Caucasian figures	0.29	0.43

Finally, to detect if there were any differences between African Americans and Caucasians for any other tests, D scores were analyzed using a 2 (ethnicity of participant) by 3 (IAT test) a factorial MANCOVA that accounted for BMI. There was a main effect of attribute variation, $F(2, 413) = 7.28$, $p = .001$, indicating that D scores varied significantly among the different types of IATs. There was no main effect for participant ethnicity, $F(1, 413) = 1.30$, $p = 0.255$, nor an interaction effect $F(2, 413) = 1.01$, $p = 0.37$.

When D scores analyzed separately by ethnicity of participant though an ANCOVA, only African Americans showed a significant difference in D scores across tests, $F(2, 171) = 5.64$, $p = 0.004$. In particular, the Attractive/Unattractive IAT ($M = 0.34$, $SD = 0.36$) produced significantly greater D scores than the Good/Bad IAT ($M = 0.12$, $SD = 0.41$), $p < .01$. Additionally, the Healthy/Unhealthy IAT ($M = 0.31$, $SD = 0.34$) elicited higher D scores than the Good/Bad one ($M = 0.12$, $SD = 0.41$), $p < 0.05$. This means that the least salient connections for African Americans were associations between heavy figures and terms related to "Bad," and thinner figures and terms related to "Good." For Caucasian participants there was a non-significant difference between tests, $F(2, 241) = 1.88$, $p = 0.15$. D scores from tests that included attributes related to attractiveness ($M = 0.34$, $SD = 0.35$), and those related to healthiness ($M = 0.36$, $SD = 0.39$) were not significantly different from tests using terms associated with good or bad ($M = 0.25$, $SD = 0.34$). These results are presented in Table 11.

Table 11. Average D Scores for all Attribute IATs by Ethnicity of Participant

		Mean	SD	F	df	sig (2-tailed)
African American participants	Attractive/Unattractive	0.34	0.36	5.64	171	0.004
	Good/Bad	0.12	0.41			
	Healthy/Unhealthy	0.31	0.34			
Caucasian participants	Attractive/Unattractive	0.34	0.35	1.88	241	0.15
	Good/Bad	0.25	0.34			
	Healthy/Unhealthy	0.36	0.39			

CHAPTER 5

DISCUSSION

The present study revealed some demographic differences of note. The fact that the African American sample was heavier and had higher MEIM scores is consistent with previously published information about norms in this group (Center for Disease Control, 2009; Phinney, 1992). Additionally, the dramatic difference in body image concern between the African American and Caucasian participants is also in line with studies that note Caucasians as having a greater degree of fear of fat and drive for thinness (Rucker & Cash, 1992; Roberts, Cash, Feingold & Johnson, 2006; Kronenfeld, Reba-Harrelson, Von Holle, Reyes & Bulik, 2010).

Two surprising similarities among ethnicities were found with SES and education. According to the most recent US Census report, African Americans had an average household income of $32,229, compared with that of Caucasians, who had an average of $55,412 (DeNavas-Walt, Proctor, Smith, 2012). The sample in the current study showed no significant difference in mean household income; over half the respondents for both ethnicities indicated that they have a household income greater than $40,000. Therefore the Caucasians recruited for this study had on average lower income and African Americans had higher income than expected. If income is related to attitudes about weight and shape as others have surmised, this could mean that this sample would underestimate actual differences in the population (Andersen & Hay, 1985; Caldwell, Brownell & Wilfley, 1997).

Education was also not significantly different in the present sample, even though the latest report by the U.S. Department of Education reports a notable difference (Aud, Fox & Ramani, 2010). By their account, 33% of Caucasian adults and 20% of African Americans had a bachelors' degree or higher (Aud, Fox & Ramani, 2010). The data used for the current study had

a significantly more educated sample, with 55% of African Americans and 52% of Caucasians having at least a four-year degree. Considering these differences, the current findings should be interpreted with the caveat that they may not be representative of the U.S. population.

Discussion of each hypothesis is presented below.

Hypothesis 1: General anti-fat bias for all participants

This large online study of implicit attitudes about weight revealed a number of differences as well as similarities in the way African Americans and Caucasians viewed bodies. Notably, participants held significant anti-fat attitudes regardless of their ethnicity. In the present study the average IAT D was 0.29, showing a significant association between thin figures and positive attributes as well as heavier figures and negative attributes. This is slightly lower than the D scores arrived at by others, although these studies included both men and women. Schwartz, Vartanian, Nosek & Brownell (2012) calculated a D score of 0.48, whereas Nosek and colleagues found an average D score of 0.35 for implicit anti-fat feelings (Nosek, Smyth, Hansen, Devos, Lindner, Ranganath, Smith, Olson, Chugh, Greenwald & Banaji, 2007). Significance was found within all attribute categories; that is, subjects implicitly believed that heavier women were unattractive, unhealthy, and generally bad while also associating smaller women with being attractive, healthy and good. Moreover, this effect was seen at every weight comparison (underweight-overweight, underweight-obese, and overweight-obese) with subjects favoring the lighter figure in each case.

Hypothesis 2: Greater general anti-fat bias among Caucasian participants

Contrary to our hypothesis, the current study found no significant difference between Caucasians and African Americans in overall D scores. While this finding of such pervasive anti-fat associations is unsurprising given the vast body of literature indicating both explicit and

implicit anti-fat biases, the majority of past studies have included predominantly Caucasian samples (Wang, Brownell & Wadden, 2004; Teachman & Brownell, 2001; Teachman, Gapinski, Brownell, Rawlins & Jeyaram, 2003). The fact that there is evidence that African Americans have an implicit anti-fat bias that is not significantly different than Caucasians is novel and unexpected given decades of research employing explicit means to conclude that African Americans hold more accepting views of heavy figures (Rucker & Cash, 1992; Rand & Kuldau, 1990; Powell & Kahn, 2006; Akan & Grilo, 2006).

These groups did exhibit different anti-fat attitudes on one specific IAT test. When categorizing figures based on general positive or negative terms (i.e. the attributes good/bad), Caucasians showed significantly greater anti-fat bias than African Americans. Therefore, the hypothesis of greater anti-fat associations for Caucasians may be partially supported.

While this finding is the opposite of the conclusion noted by Wang, Brownell and Wadden (2004), who detected no difference in the associations on a good/bad anti-fat IAT, African Americans were underrepresented in their study (26 out of 68 participants, which consisted of both men and women). It is possible that the sample was underpowered to show any differences. While the current project includes over ten times the number of African Americans than that of Wang and colleagues' study, the effect size of the good/bad finding is only 0.03, which places it in the range of a small effect according to Cohen's guidelines (Cohen, 1988). It is possible that the findings by Wang, Brownell and Wadden (2004) were simply underpowered to show the same result.

The non-significant finding when the D scores from all IAT tests were taken into account may not be surprising. A meta-analysis by Roberts, Cash, Feingold and Johnson (2006) revealed that over time, the differences between African Americans and Caucasians on explicit measures

of weight-related body satisfaction have actually decreased. It could be that the present study is accurately reflecting the current state of anti-fat bias in America, with Caucasians decreasing their bias, and African Americans increasing the stigma they attach to heavier figures.

Alternately, it is possible that differences do exist, but not for the given attributes, or the figures presented. It is conceivable that the categories related to attractiveness and health are not those that would produce differences between ethnicities, or that a greater range of figures would have evoked stronger associations. Future studies could include other words tapping into schema that may be more salient for one ethnicity compared with the other, as well as a greater variety of figures.

Hypothesis 3: In-group bias, as seen by weaker anti-fat associations when participants view same-ethnic group stimuli

While a general in-group bias was not found, an interesting result was discovered in the present study. Both Caucasian participants, as well as African American participants were more critical of heavier African American as opposed to heavier Caucasian models. On the surface this suggests a generally greater association between negative attributes and heavier African American figures. This seems startling given the vast literature noting in-group bias, which would suggest that African Americans would not have greater anti-fat bias for members of their own ethnicity (Tajfel & Turner, 1979).

However, as several researchers have noted, disenfranchised groups can feel internalized racism, similar to what Williams and Williams-Morris mention in their 2000 article. Several studies report greater in-group verses out-group bias for high status group members as opposed

to low-status individuals (Mullen, Brown & Smith, 1992; Bettencourt, Charlton, Dorr & Hume, 2001).

Rudman, Feinberg, and Fairchild (2002) suggest that group bias can occur on an implicit level and not an explicit level. For their study, members of high status and low status minority groups completed both types of measures. They found that members in low status groups showed a preference for the dominant outgroup, in implicit, but not explicit measures. Additionally, members of high status groups preferred their in-group over low-status groups. While Rudman, Feinberg and Fairchild's (2002) study only included Asians and Jews as the low-status minority group, it could be extrapolated that African Americans could experience similar feelings, given the history of discrimination against minorities in the United States. If Caucasians are seen as higher status than African Americans, it is plausible that they would display greater anti-fat bias towards African American models relative to Caucasian models as seen in the present study.

Hypothesis 4: Anti-fat biases will be affected by ethnic identity, SES and education level

While ethnic identity did not affect overall D scores, it was a significant variable for tests containing the attributes "healthy" and "unhealthy". Moreover, the influence of ethnic identity had opposite effects on D scores for each ethnicity. Caucasians with high ethnic identity showed greater anti-fat bias than their low-identity peers, whereas African Americans with high ethnic identity had weaker anti-fat biases for tests with healthy/unhealthy attributes. SES and education level had no effect on anti-fat biases.

Consistent with previous research, the outcome of the current study may indicate that African American acculturation decreases concern about weight as it relates to health, whereas Caucasians with greater ethnic identity may have stronger social pressure to be fit, producing

greater implicit anti-fat bias (Hsu, 1987). Alternately, as MEIM is positively correlated with mental health and self-esteem in African Americans, it is possible that higher self-esteem and superior coping skills are contributing to the lower anti-fat bias for this group (Greig, 2003).

No significant differences were found for education or SES levels, which suggests that these categories have no bearing on implicit anti-fat bias. While this goes against Andersen and Hay's (1985) findings that higher SES is positively correlated with eating disorder pathology, that study used explicit measures and was focused on diagnoses of anorexia nervosa or bulimia. Applying this to the current study, higher SES should be correlated with implicit anti-fat associations, which was not found. It is possible that this was not seen because the link is only apparent in clinical populations and on explicit measures. It could also be that the sample was too similar in terms of SES to distinguish any meaningful differences between groups. Lastly, it is possible that the null result for SES means that the dissimilarities among SES groups are actually decreasing.

One demographic factor that did seem to influence D scores, was BMI. BMI was negatively correlated with scores, such that the lower a participant's BMI, the greater anti-fat bias she held. This negative correlation was seen in previous research, though not with attributes related to attractiveness and healthiness (Schwartz, Vartanian, Nosek, Brownell, 2006). Wang, Brownell and Wadden (2004), used a sample of individuals with an average BMI of 34.5, and found that all participants held negative implicit associations related to fatness. While they note no significant differences in bias by weight group, their sample was considerably smaller than the one included for the present study (Wang, Brownell & Wadden, 2004). One study did find that individuals with higher BMI showed lower implicit anti-fat attitudes on tests containing the

attributes good/bad. However, they only included health professionals and demographic data. Data on ethnicity was not published. (Schwartz, Chambliss, Brownell, Blair & Billington, 2012).

Lewis, Cash and Bubb-Lewis (2012) conclude that there is no significant correlation between BMI and scores on the Antifat Attitudes Test (AFAT), a survey test they developed. As the previous study used an explicit rather than implicit measure, it does not necessarily provide an accurate comparison of findings. It is possible that the relationship between participants' body weight and their perceptions of heavy figures can only be accessed through an unobtrusive measure, such as the IAT. Perhaps when asked directly, thin women moderate their aversion of heavy figures.

As the finding is correlational, it is unclear the direction of causation; whether being thinner causes greater anti-fat bias, or if holding stronger anti-fat biases causes one to diet more. The former theory would be supported by the literature on in-group preference as well as the idea of a relational self, which states that we are drawn to and favor people similar to ourselves (Andersen & Chen, 2002). The latter possibility relies on one of the crucial ideas of cognitive-behavior therapy, that attitudes can be motivational and impact behaviors. Further research, experimentally modifying weight or implicit attitudes may be able to answer these complicated questions.

Hypothesis 5: Greater sensitivity towards variations in BMI for African American participants

No evidence was found to support the hypothesis that African Americans were more sensitive to BMI than Caucasians. This may be due to the fact that African Americans and Caucasians have similar anti-fat biases for all variations of BMI. It is also possible that the differences that exist are not detectable using the current methodology. The present study only allows for analysis comparing similar to dissimilar weight pairs. If another method of studying

implicit weight bias could present a wider range of figures, it is plausible that a difference would emerge.

The present conclusion is surprising given the dissimilarity in the results of past studies that indicate African Americans are more accepting of larger body sizes than Caucasians (Rucker & Cash, 1992; Hebl & Heatherton, 1998). As the previous findings were acquired through surveys and other overt measures, it could indicate that African Americans hold different explicit and implicit attitudes. Specifically, African Americans may have a more positive view of heavy figures if asked directly about their opinions, but hold similar negative views when their feelings are elicited through a more discreet measure.

Hypothesis 6: Strongest associations when categorizing terms related to attractiveness for Caucasians, and healthiness for African Americans

The results indicate no significant overall difference between African Americans and Caucasians along the attribute pair attractive/unattractive nor healthy/unhealthy pairs. However, when the data was separated by ethnicity of the model, it was apparent that there was significantly greater anti-fat bias towards African American figures as opposed to Caucasian figures for the attributes healthy/unhealthy. This finding was significantly greater for Caucasians. In other words, Caucasian women are more apt to ascribe the attribute "unhealthy" to overweight or obese African American women, than to women of their own ethnicity. African Americans on the other hand, appear to have the same implicit attitudes towards heavy figures and healthiness for both ethnicities.

This finding may be due to a different perception of what it means for African American and Caucasian women to be heavy. It could be that Caucasians have stronger beliefs about unhealthful behaviors for overweight and obese African Americans than heavy Caucasian

women. This could be due to health-related racism, or information presented in the media. For example, based on greater prevalence of cardiovascular disease among African Americans, it may be assumed that overweight and obese African American women are at greater risk for health-related disorders, and therefore more "unhealthy". However, this would only hold true if Caucasians had a significantly greater awareness of the risk of these health problems for African Americans, than African Americans did themselves.

It is also possible that the outcome seen in the current study is similar to that of Nosek, Banaji, & Greenwald (2002), who found that both African Americans and Caucasians exhibit biases favoring Caucasians on implicit measures. These researchers also used the attributes "good/bad", but unlike the present study, compared ethnicities in a single IAT as opposed to employing separate IATs for each ethnicity. Nosek and colleagues suggest that the pro-Caucasian, anti-African American finding may be more reflective of the general environment and culture than the individual's beliefs (Nosek, Banaji, & Greenwald, 2002). While the current study found no significant differences in scores for the attributes good/bad between tests that presented African American or Caucasian figures, there was a difference in attitudes about healthiness of figures. This may be a result of the greater emphasis on size and bodies in this IAT as opposed to others that have pictured just a face or used only words.

Another possible explanation for these results is related to attribution error. According to the group attribution error, Caucasian women may have a sense that the heavier African American women have made a choice to lead an unhealthy lifestyle, and that this kind of decision making reflects a personality trait (Allison & Messick,1985). On the other hand, African Americans may make situational assumptions about heavier Caucasian women (e.g she is under stress and overeating).

Methodological Issues

The findings of the present study should be viewed in light of several methodological weaknesses. As a relatively new means of measurement, the IAT is not without critics. Significant questions still remain about the nature of implicit attitudes. Some believe that the IAT captures extrapersonal, rather than individual associations (Olson & Fazio, 2004; Nosek, Banaji, & Greenwald, 2002; Rudman, 2004). In other words, regardless of one's own ethnicity, the beliefs held by the greater cultural group are internalized and appear through implicit measures. For example, the anti-fat bias observed in the present study could be influenced by media portrayals of obese and overweight individuals, which historically paint a stereotypical and negative picture (Greenberg, Eastin, Hofschire, Lachlan & Brownell, 2003). Regardless of participant's own feelings towards overweight and obese people, they may be displaying associations based on general stereotypes. That being said, the present study, as a cross-cultural design, may be somewhat sheltered from this kind of criticism; if the IAT measures cultural attitudes rather than specific beliefs of the individual, then it may be still valid to draw conclusions about African Americans and Caucasians in general, assuming individuals are more influenced by their subcultural ethnic group, as opposed to the larger American culture.

The saliency of the stimuli presented in this study may also be a limiting factor for the conclusions drawn from this study. The images of figures used in the IAT were computer generated. While they were chosen for their realism, it is possible that a greater significance would have been found with photographs. Furthermore, the generation tool employed for the creation of figures limited the size of the model. The underweight figures, with a BMI of 18 were at the absolute low end of what was allowed for the software. This is just within the limits of the underweight classification for BMI, whereas the BMI for overweight figures (28), and

obese (44) fall in the middle of the categories. It is possible that participants did not respond as strongly to the underweight figures as they were not as extreme or indicative of their weight category as the other images. Similarly, participants may have responded to overweight or obese figures to a greater extent. This being said, computer-generated models similar to those presented in this study have been used in other IAT studies (notably, Teachman, Gapinski, Brownell, Rawlins, & Jeyaram, 2003), therefore, this should not have significantly altered results. Lastly, it is possible that the terms used for the IAT were considered too pejorative or extreme by participants, and therefore did not accurately capture anti-fat attitudes.

A final issue involves the design of the IAT. As opposed to something like the go-no-go task, or the approach/avoidance implicit joystick or manikin task, which have a singular target, the IAT presents bipolar options (Nosek & Banaji, 2001; Chen & Bargh, 1999). In other words, not only does the present IAT elicit responses indicating an anti-fat bias, but also simultaneously a pro-thin bias. This presumes these attitudes are reciprocally related, something that has not found support in other studies (Roddy, Stewart & Barnes-Holmes, 2010). The current IAT model is unable to detect if anti-fat attitudes are greater or less than positive thoughts about thinness. Future research would benefit from different measurement methods to parse apart these differences.

Conclusion

Taken together, the results from this study suggest that anti-fat stigma exists for both African Americans and Caucasians. Demographic differences between the ethnicities had little bearing on implicit attitudes, except for BMI, which was negatively correlated with the anti-fat attitudes. There are only a few ways in which ethnic groups differed; namely on test with the attribute good/bad, for which African Americans held weaker anti-fat attitudes than Caucasians.

Lastly, one test revealed within-subject differences in the anti-fat attitudes towards heavy African Americans. When categorizing attributes related to health, Caucasians showed greater anti-fat stigma when presented with African American figures as opposed to Caucasian figures. This was not the case with African American participants who exhibited no significant difference.

There are various theoretical, practical and clinical implications to this research. While some theoretical models of stigma have suggested in-group preference at the expense of out-group bias, there are various others that do not support the hydraulic relationship (Tajfel & Turner, 1979; Brewer, 2002). Although not a pure measure of group attitudes, the present study does provide a window into inter-group judgments. By way of anti-fat biases, the present research provides evidence that the theory of ethnocentrism tied to out-group discrimination does not hold for explicit measures. The anti-fat biases seen in Caucasians viewing Caucasian models were not reciprocally related to scores when viewing African Americans. The same holds true for African Americans viewing African American models compares to Caucasian models.

The measureable differences in rates of obesity between African American and Caucasian women, coupled with the dire consequences of high BMI (namely Type-II diabetes, heart disease, hypertension and stroke), make this a vital issue for the African American community. Understanding the attitudinal components behind the differences is one way we can begin to solve the challenges for African American women. A further appreciation of the specific associations for one demographic group will facilitate a tailored approach to treatment initiatives. For example, the current research indicates that there is no implicit difference in the way African American and Caucasian women think about heaviness and the concepts of

healthiness or attractiveness. Therefore, weight loss interventions need not make a special effort to modify their programs for each group.

However, where there are significant differences, with concepts related to positive and negative feelings, there may be an opportunity to make changes to the way practitioners refer to heavy figures. This study indicates that referring to obese and overweight individuals using general terms (i.e. good/bad) are less salient indicators of attitude for African Americans than other terms. Therefore, clinicians should acknowledge and be sensitive to the variations in the ways certain ethnic groups conceptualize body size. For example, a cognitive-behavioral weight loss intervention for African American women perhaps should avoid focus on the "bad" or "good" aspects of certain weights.

Clinically, concern exists at both ends of the spectrum of thoughts about obesity; too much concern may lead to restrictive eating or other eating disorder pathology, while too little concern could encourage overeating. If this is the case, one must wonder if anti-fat attitudes inherently protect individuals in groups that are more prone to obesity by encouraging them to make more healthful choices. Relatedly, do pro-fat attitudes shield women in cultures that are at greater risk for eating disorders? Both of these ideas beg the question, is there an adaptive level of negative association with overweight and obese figures? It is the hope of the researchers that anti-fat attitudes could be harnessed as a way to motivate change in dieters, and address the specific concerns of various ethnicities with regards to body image.

Another concern relates to weight-related discrimination, which has been previously noted as prevalent in American culture (Puhl & Heuer, 2012). The implications of cross-cultural implicit anti-fat bias may be far-reaching and disconcerting if they manifest in unfair treatment and discrimination. Additionally, the consequences for African Americans would be even

greater, with the compound effects of racial and weight discrimination for overweight and obese members.

In summary, while the present study indicates that negative attitudes about obesity are pervasive, there are factors within the individual, as well as within that person's cultural group that influence their attitudes. We cannot assume that interviews or questionnaires (explicit means) are representative of implicit attitudes. Future studies investigating similar mechanisms inherent in the anti-fat bias may help to clarify differences and add specificity to the conclusions outlined here.

APPENDIX A

CORRELATIONS TABLE

Correlations

		Demographic Variables				MBSRQ Subscales (so no surprise if they are correlated)								Outcome measures- IAT D Scores						
		age	BMI	MEIM	BDI	Appearance Evaluation	Appearance Orientation	Fitness Evaluation	Fitness Orientation	Health Evaluation	Health Orientation	Illness Orientation	Overweight Preoccupation	Average IAT D	All 1828	All 1838	All 2838	Attractive Unattractive	Good Bad	Healthy Unhealthy
age	Pearson Correlation	1	.113*	.144**	-.116*	-.063	-.073	-.002	-.052	-.017	.128**	.063	-.008	.014	-.035	.109	-.049	.022	-.052	.110
	Sig. (2-tailed)		.010	.001	.009	.176	.117	.973	.263	.706	.005	.175	.857	.769	.675	.210	.568	.792	.533	.207
	N	517	517	517	513	468	468	468	468	468	468	468	468	421	147	135	138	140	148	132
BMI	Pearson Correlation	.113*	1	.082	.104*	-.248**	-.136**	-.060	-.164**	-.344**	-.102*	.035	.167**	-.151**	-.244**	-.251**	.002	-.074	-.166*	-.157
	Sig. (2-tailed)	.010		.063	.018	.000	.003	.191	.000	.000	.027	.454	.000	.002	.003	.003	.980	.385	.043	.073
	N	517	517	517	513	468	468	468	468	468	468	468	468	421	147	135	138	140	148	132
MEIM	Pearson Correlation	.144**	.082	1	-.217**	.221**	.204**	.151**	.148**	.153**	.232**	.209**	.007	-.033	-.076	.009	-.082	.055	-.099	.005
	Sig. (2-tailed)	.001	.063		.000	.000	.000	.001	.001	.001	.000	.000	.888	.505	.363	.921	.338	.519	.232	.950
	N	517	517	517	513	468	468	468	468	468	468	468	468	421	147	135	138	140	148	132
BDI	Pearson Correlation	-.116*	.104*	-.217**	1	-.457**	-.080	-.199**	-.262**	-.470**	-.328**	-.098*	.206**	.006	.120	-.063	-.076	.009	.010	.024
	Sig. (2-tailed)	.009	.018	.000		.000	.085	.000	.000	.000	.000	.035	.000	.905	.148	.475	.380	.916	.903	.785
	N	513	513	513	513	466	466	466	466	466	466	466	466	417	146	133	137	140	145	131
Appearance Evaluation	Pearson Correlation	-.063	-.248**	.221**	-.457**	1	.205**	.271**	.265**	.455**	.295**	.167**	-.323**	.007	-.091	.142	-.035	-.114	.115	.007
	Sig. (2-tailed)	.176	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.881	.284	.102	.688	.188	.171	.936
	N	468	468	468	466	468	468	468	468	468	468	468	468	409	142	133	133	136	144	128
Appearance Orientation	Pearson Correlation	-.073	-.136**	.204**	-.080	.205**	1	.162**	.215**	.158**	.189**	.269**	.258**	.017	.059	.029	-.093	-.034	.101	-.039
	Sig. (2-tailed)	.117	.003	.000	.085	.000		.000	.000	.001	.000	.000	.000	.725	.487	.737	.286	.692	.228	.663
	N	468	468	468	466	468	468	468	468	468	468	468	468	409	142	133	133	136	144	128
Fitness Evaluation	Pearson Correlation	-.002	-.060	.151**	-.199**	.271**	.162**	1	.568**	.293**	.395**	.200**	.008	-.035	-.100	-.047	.042	-.025	-.033	-.017
	Sig. (2-tailed)	.973	.191	.001	.000	.000	.000		.000	.000	.000	.000	.865	.483	.235	.593	.634	.769	.697	.847
	N	468	468	468	466	468	468	468	468	468	468	468	468	409	142	133	133	136	144	128
Fitness Orientation	Pearson Correlation	-.052	-.164**	.148**	-.262**	.265**	.215**	.568**	1	.414**	.652**	.215**	.128**	-.036	-.076	-.040	-.025	-.054	-.014	-.052
	Sig. (2-tailed)	.263	.000	.001	.000	.000	.000	.000		.000	.000	.000	.005	.464	.366	.645	.771	.532	.868	.559
	N	468	468	468	466	468	468	468	468	468	468	468	468	409	142	133	133	136	144	128
Health Evaluation	Pearson Correlation	-.017	-.344**	.153**	-.470**	.455**	.158**	.293**	.414**	1	.413**	.039	-.172**	.057	-.048	.127	.102	-.027	.096	.054
	Sig. (2-tailed)	.706	.000	.001	.000	.000	.001	.000	.000		.000	.404	.000	.251	.567	.146	.244	.756	.250	.547
	N	468	468	468	466	468	468	468	468	468	468	468	468	409	142	133	133	136	144	128
Health Orientation	Pearson Correlation	.128**	-.102*	.232**	-.328**	.295**	.189**	.395**	.652**	.413**	1	.334**	.173**	-.037	-.080	-.018	-.017	-.029	-.049	-.048
	Sig. (2-tailed)	.005	.027	.000	.000	.000	.000	.000	.000	.000		.000	.000	.457	.345	.840	.843	.739	.557	.593
	N	468	468	468	466	468	468	468	468	468	468	468	468	409	142	133	133	136	144	128
Illness Orientation	Pearson Correlation	.063	.035	.209**	-.098*	.167**	.259**	.200**	.215**	.039	.334**	1	.030	-.058	-.111	-.019	-.055	-.149	.030	-.020
	Sig. (2-tailed)	.175	.454	.000	.035	.000	.000	.000	.000	.404	.000		.514	.241	.190	.832	.529	.084	.725	.820
	N	468	468	468	466	468	468	468	468	468	468	468	468	409	142	133	133	136	144	128
Overweight Preoccupation	Pearson Correlation	-.008	.167**	.007	.206**	-.323**	.258**	.008	.128**	-.172**	.173**	.030	1	-.060	.093	-.144	-.170	-.020	-.028	-.116
	Sig. (2-tailed)	.857	.000	.888	.000	.000	.000	.865	.005	.000	.000	.514		.226	.271	.098	.050	.815	.742	.191
	N	468	468	468	466	468	468	468	468	468	468	468	468	409	142	133	133	136	144	128
Average IAT D	Pearson Correlation	.014	-.151**	-.033	.006	.007	.017	-.035	-.036	.057	-.037	-.058	-.060	1	1.000**	1.000**	1.000**	1.000**	1.000**	1.000**
	Sig. (2-tailed)	.769	.002	.505	.905	.881	.725	.483	.464	.251	.457	.241	.226		0.000	0.000	0.000	0.000	0.000	0.000
	N	421	421	421	417	409	409	409	409	409	409	409	409	421	147	135	138	140	148	132
All 1828	Pearson Correlation	-.035	-.244**	-.076	.120	-.091	.059	-.100	-.076	-.048	-.080	-.111	.093	1.000**	1	.	.	1.000**	1.000**	1.000**
	Sig. (2-tailed)	.675	.003	.363	.148	.284	.487	.235	.366	.567	.345	.190	.271	0.000				0.000	0.000	0.000
	N	147	147	147	146	142	142	142	142	142	142	142	142	147	147	0	0	57	46	44
All 1838	Pearson Correlation	.109	-.251**	.009	-.063	.142	.029	-.047	-.040	.127	-.018	-.019	-.144	1.000**	.	1	.	1.000**	1.000**	1.000**
	Sig. (2-tailed)	.210	.003	.921	.475	.102	.737	.593	.645	.146	.840	.832	.098	0.000				0.000	0.000	0.000
	N	135	135	135	133	133	133	133	133	133	133	133	133	135	0	135	0	42	44	45
All 2838	Pearson Correlation	-.049	.002	-.082	-.076	-.035	-.093	.042	-.025	.102	-.017	-.055	-.170	1.000**	.	.	1	1.000**	1.000**	1.000**
	Sig. (2-tailed)	.568	.980	.338	.380	.688	.286	.634	.771	.244	.843	.529	.050	0.000				0.000	0.000	0.000
	N	138	138	138	137	133	133	133	133	133	133	133	133	138	0	0	138	41	58	39
Attractive Unattractive	Pearson Correlation	.022	-.074	.055	.009	-.114	-.034	-.025	-.054	-.027	-.029	-.149	-.020	1.000**	1.000**	1.000**	1.000**	1	.	.
	Sig. (2-tailed)	.792	.385	.519	.916	.188	.692	.769	.532	.756	.739	.084	.815	0.000	0.000	0.000	0.000			
	N	140	140	140	140	136	136	136	136	136	136	136	136	140	57	42	41	140	0	0
Good Bad	Pearson Correlation	-.052	-.166*	-.099	.010	.115	.101	-.033	-.014	.096	-.049	.030	-.028	1.000**	1.000**	1.000**	1.000**	.	1	.
	Sig. (2-tailed)	.533	.043	.232	.903	.171	.228	.697	.868	.250	.557	.725	.742	0.000	0.000	0.000	0.000			
	N	148	148	148	145	144	144	144	144	144	144	144	144	148	46	44	58	0	148	0
Healthy Unhealthy	Pearson Correlation	.110	-.157	.005	.024	.007	-.039	-.017	-.052	.054	-.048	-.020	-.116	1.000**	1.000**	1.000**	1.000**	.	.	1
	Sig. (2-tailed)	.207	.073	.950	.785	.936	.663	.847	.559	.547	.593	.820	.191	0.000	0.000	0.000	0.000			
	N	132	132	132	131	128	128	128	128	128	128	128	128	132	44	49	39	0	0	132

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

REFERENCES

Abrams, K., Allen, L., and Gray, J., (1993). Disordered eating attitudes and behaviors, psychological adjustment, and ethnic identity: A comparison of black and white female *International Journal of Eating Disorders, 14*(1), 49 – 57.

Ahern, A., and Hetherington, M., (2006). The Thin Ideal and Body Image: An Experimental Study of Implicit Attitudes. *Psychology of Addictive Behaviors, 20(*3), 338–342.

Allison, D., Basile, V., Yuker, H (1991). The Measurement of Attitudes Toward and Beliefs About Obese Persons. *International Journal of Eating Disorders*, *10*(5), 599-607.

Allison, S. T., & Messick, D. M. (1985). The group attribution error. *Journal of Experimental Social Psychology*, *21*(6), 563-579.

Akan, G., Grilo, C., (2006). Sociocultural influences on eating attitudes and behaviors, body image, and psychological functioning: A comparison of African-American, Asian-American, and Caucasian college women. *International Journal of Eating Disorders*, *18(*2), 181 – 187.

Andersen, S. M., & Chen, S. (2002). The relational self: an interpersonal social-cognitive theory. *Psychological Review*, *109*(4), 619.

Asendorpf, J. B., Banse, R., and Mücke, D. (2002) Double Dissociation Between Implicit and Explicit Personality Self-Concept: The Case of Shy Behavior. *Journal of Personality and Social Psychology, 83(*2), 380–393.

Aud, S., Fox, M. A., & Ramani, A. K. (July 2010). Status and Trends in the Education of Racial and Ethnic Groups. *http://www.air.org.* Retrieved 1/20/13. From http://www.air.org/files/AIR-NCESracial_stats__trends1.pdf

Azorin, J.M., Benhaim, P., Hasbroucq T., & Possamai, C. A. (1994) Stimulus preprocessing and response selection in depression: A reaction time study. *Acta Psychologica, 89*. 95-100.

Brewer, M. B. (1979). In-Group Bias in the Minimal Intergroup situation: A Cognitive-Motivational Analysis. *Psychological Bulletin*, *86*(2), 307-324.

Befort, C. A, Thomas, J. L, Daley, C. M., Rhode, P. C., & Ahluwalia, J. S. (2008). Perceptions and Beliefs About Body Size, Weight, and Weight Loss Among Obese African American Women: A Qualitative Inquiry. *Health Education & Behavior, 35*(3), 410-426.

Bettencourt, B., Charlton, K., Dorr, N., & Hume, D. L. (2001). Status differences and in-group bias: a meta-analytic examination of the effects of status stability, status legitimacy, and group permeability. *Psychological Bulletin*, *127*(4), 520.

Blixen, C. E., Singh, A. & Thacker, H. (2006). Values and Beliefs About Obesity and Weight Reduction Among African American and Caucasian Women. *Journal of Transcultural Nursing, 17*(3), 290-297.

Brewer, M. B. (2002). The psychology of prejudice: Ingroup love and outgroup hate?. *Journal of social issues, 55*(3), 429-444.

Brochu, P. M., & Morridon, M. A. (2007). Implicit and Explicit Prejudice Toward Overweight and Average-Weight Men and Women: Testing Their Correspondence and Relation to Behavioral Intentions. *The Journal of Social Psychology, 147*(6), 681–706.

Brown, T., Cash, T., & Mikula, P. (1990). Attitudinal Body-Image Assessment: Factor Analysis of the Body-Self Relations Questionnaire. *Journal of Personality Assessment*, *55*, 135 – 144.

Cachelin, F., Rebeck, R., Chung, G., & Pelayo, E. (2002). Does Ethnicity Influence Body-Size Preference? A Comparison of Body Image and Body Size. *Obesity Research*, *10*(3), 158-166.

Caldwell M., Brownell K., & Wilfley D. (1997). Relationship of weight, body dissatisfaction, and self-esteem in African American and white female dieters. *International Journal of Eating Disorders*. *22*,127–30.

Cardinal, T., Kaciroti, N., & Lumeng, J. (2006). The Figure Rating Scale as an Index of Weight Status of Women on Videotape. *Obesity*, *14*(12), 2132- 2135.

Centers for Disease Control Division of Nutrition, Physical Activity and Obesity**,** National Center for Chronic Disease Prevention and Health Promotion (2009). U.S. Obesity Trends: Trends by State 1985–2008. Retrieved July 29, 2009, from http://www.cdc.gov/obesity/data/trends.html

Chang, V. W. & Lauderdale, D. S. (2005). Income Disparities in Body Mass Index and Obesity in the United States, 1971-2002. *Archives of Internal Medicine, 165*, 21222-2128.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Lawrence Erlbaum.

Cooper, P., Taylor, M., Cooper, Z., & Fairbum, C. (1987). The development and validation of the Body Shape Questionnaire. *International Journal of Eating Disorders*, 6, 485-494

Demarest, J. & Allen, R. (2000). Body Image: Gender, Ethnic, and Age Differences. *The Journal of Social Psychology, 140* (4), 465-472.

DeNavas-Walt, C., Proctor, B.D., & Smith, J.C. (2012). Income, Poverty, and Health Insurance Coverage in the United States: 2011: Current Population Reports. *http://www.census.gov*. Retrieved 1/20/13. From http://www.census.gov/prod/2012pubs/p60-243.pdf.

Doll, M., Ball, G., & Willows, N. (2004). Rating of Figures Used for Body Image assessment Varies Depending on the Method of Figure Presentation. *The International journal of eating disorders, 35*,109-14.

Durso, F. T., & Johnson, M. K. (1980). The Effects of Orienting Tasks on Recognition, Recall, and Modality Confusion of Pictures and Words. *Journal of Verbal Learning and Verbal Behavior, 19*, 416-429.

Egloff, B. and Schmukl, S., (2002). Predictive Validity of an Implicit Association Test for Assessing Anxiety, *Journal of Personality and Social Psychology, 83,(*6), 1441–1455.

Faith, M. S., Manibay, E., Kravitz, M., Griffith, J., & Allison, D. B. (2012). Relative Body Weight and Self-Esteem among African Americans in Four Nationally Representative Samples. *Obesity research, 6*(6), 430-437.

Flynn, K., & Fitzgibbon, M. (1996). Body Image Ideals of Low-Income African American Mothers and Their Preadolescent Daughters. *Journal of Youth and Adolescence*, *25*(5), 615-630.

Flynn, K., & Fitzgibbon, M. (1998). Body images and obesity risk among Black females: A review of the Literature. *Annals of Behavioral Medicine*, *20*(1), 13-24.

Freedman, R. E. K., Carter, M. M., Sbrocco, T., & Gray, J. J. (2007), Do men hold African-American and Caucasian women to different standards of beauty, *Eating Behaviors, 8*, 319-333.

Lin, L., & Reid, K., (2009). The relationship between media exposure and antifat attitudes: The role of dysfunctional appearance beliefs. *Body Image, 6,* 52–55.

Gardner, R., Stark, K., Jackson, N., & Friedman, B., (1999), Development and Validation of Two New Scales for Assessment of Body-Image, *Perceptual and Motor Skills, 89*,981-993.

Gipson, G., Reese, S., Vieweg, V., Anum, E., Pandurangi, A., Olbrisch, M., Sood, B., & Silverman, J. (2005). Body Image and Attitude towards Obesity in an Historically Black University. *Journal of the National Medical Association, 97*(2), 225- 236.

Gluck, M., & Geliebter, A. (2002).Racial/ethnic differences in body image and eating behaviors. *Eating Behaviors*, 3, 143-151.

Govan, C. L., & Williams, K. D. (2004). Changing the affective valence of the stimulus items influences the IAT by re-defining the category labels. *Journal of Experimental Social Psychology, 40,* 357–365.

Greenberg, B. S., Eastin, M., Hofschire, L., Lachlan, K., & Brownell, K. D. (2003). Portrayals of overweight and obese individuals on commercial television. *Journal Information, 93*(8).

Greenleaf, C., Starks, M., Gomez, L, Chambliss, H., and Martin, S. (2004). Weight-related words associated with figure silhouettes. *Body Image,* 1, 373–384.

Greenwald, A., McGhee, D., & Schwartz, J. (1998). Measuring Individual Differences in Implicit Cognition: The Implicit Association Test. *Journal of Personality and Social Psychology. 74*, 6, 1464-1480.

Greenwald, A. G., Poehlman, T. A., Uhlmann, E., & Banaji, M. R. (in press). Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity. *Journal of Personality and Social Psychology.*

Greig, R. (2003). Ethnic identity development: Implications for mental health in African American and Hispanic adolescents. *Issues in Mental Health Nursing, 24*, 317-331.

Gschwendner, T., Hofmann, W., & Schmitt, M. (2008). Differential Stability: The Effects of Acute and Chronic Construct Accessibility on the Temporal Stability of the Implicit Association Test. *Journal of Individual Differences, 29*, 70-79.

Hebl, M. R., & Heatherton, T. F. (1998). The stigma of obesity in women: The difference is black and white. *Personality and Social Psychology Bulletin*, *24*, 417-426.

Heinberg, L., Thompson, K., & Stormer, S. (1995). Development and validation of the sociocultural attitudes towards appearance questionnaire *International Journal of Eating Disorders***,** *17*, 81 – 89.

Hsu, L. K. (1987). Are the eating disorders becoming more common in Blacks. *International Journal of Eating Disorders; International Journal of Eating Disorders*.

Johansson, L., Thelle, D. S., Solvoll, K., Bjørneboe, G. A., & Drevon, C. A. (1999). Healthy dietary habits in relation to social determinants and lifestyle Factors. *British Journal of Nutrition, 81*, 211–220.

Lewis, R. J., Cash, T. F., & Bubb-Lewis, C. (2012). Prejudice toward fat people: the development and validation of the antifat attitudes test. *Obesity Research*,*5*(4), 297-307.

Malpede, C. Z., Greene, L. F., Fitzpatrick, S. L., Jefferson, W. K., Shewchuk, R. M., Baskin, M. L., & Ard, J. D. (2007). Original Reports: Obesity.*Ethnicity & Disease, 17*, 1-5.

McLarena, L., & Kuh D. (2004) Women's body dissatisfaction, social class, and social mobility. *Social Science & Medicine, 58*, 1575–1584.

Millstein, R. A., Carlson, S. A., Fulton, J. E., Galuska, D. A, Zhang, J., Blanck, H. M., & Ainsworth, B. E. (2008) Relationships Between Body Size Satisfaction and Weight Control Practices Among US Adults. *Medscape Journal of Medicine, 10*(5), 119.

Mullen, B., Brown, R., & Smith, C. (1992). Ingroup bias as a function of salience, relevance, and status: An integration. *European Journal of Social Psychology*, *22*(2), 103-122.

Noles, N. W., Cash, T. E., & Winstead, B. A. (1985). Body Image, Physical Attractiveness, and Depression. *Journal of Counseling and Clinical Psychology, 53*(1), 88-94.

Nosek, B. A., Banaji, M., & Greenwald, A. G. (2002). Harvesting implicit group attitudes and beliefs from a demonstration web site. *Group Dynamics: Theory, Research, and Practice*, *6*(1), 101.

Nosek, B. A., Greenwald, A. G., & Banaji, M. R., (2005) Understanding and Using the Implicit Association Test: II. Method Variables and Construct Validity, *Personality and Social Psychology Bulletin, 36*(9), 166-180.

Nosek, B. A., Smyth, F. L., Hansen, J. J., Devos, T., Lindner, N. M., Ranganath, K. A., Smith, C.T., Olson, K.R., Chugh, D., Greenwald, A.G. & Banaji, M. R. (2007). Pervasiveness and correlates of implicit attitudes and stereotypes. *European Review of Social Psychology*,*18*(1), 36-88.

Olson, M. A., & Fazio, R. H. (2004). Reducing the influence of extrapersonal associations on the Implicit Association Test: personalizing the IAT. *Journal of personality and social psychology*, *86*(5), 653.

Padgett, J., & Biro, F., (2003). Different Shapes in Different Cultures: Body Dissatisfaction, Overweight, and Obesity in African-American and Caucasian Females. *Journal of Pediatric and Adolescent Gynecology*, 16, 349-354.

Paeratakul, S., White, M. A., Williamson, D. A., Ryan, D. H., & Bray, G. A. (2002). Sex, Race/Ethnicity, Socioeconomic Status, and BMI in Relation to Self-Perception of Overweight. *Obesity Research, 10,* 345–350.

Petersons, M., Rojhani, A., Steinhaus, N, & Larkin, B. (2000) Effect of ethnic identity on attitudes, feelings, and behaviors toward food. Eating Disorders, 8(3), 207 – 219.

Phinney, J. (1992). The Multigroup Ethnic Identity Measure: A new scale for use with diverse groups. *Journal of Adolescent Research*. *7*(2), 156-176.

Phinney, J. S., Jacoby, B., & Silva, C. (2007) Positive intergroup attitudes: The role of ethnic identity. *International Journal of Behavioral Development, 31*, 478-490.

Powell, A., & Kahn, A. (2006). Racial differences in women's desires to be thin International *Journal of Eating Disorders*, *17*(2), 191 – 195.

Puhl, R. M., & Heuer, C. (2009) The Stigma of Obesity: A Review and Update *Obesity*, 17, 941-64. *Health Psychology, 24(5),* 517–525.

Puhl, R. M., Schwartz, M. B., & Brownell, K. D. (2005) Impact of Perceived Consensus on Stereotypes About Obese People: A New Approach for Reducing Bias

Rand, C., & Kuldau, J. (1990). The Epidemiology of Obesity and Self-defined Weight Problem in the General Population: Gender, Race, Age and Social Class. *International Journal of Eating Disorders, 9*(3) 329-343.

Roberts, A., Cash, T. F., Feingold, A., & Johnson, B. T. (2006). Are Black-White differences in females' body dissatisfaction decreasing? A meta-analytic review. *Journal of Consulting and Clinical Psychology, 74*(6), 1121-1131.

Rucker, C., & Cash, T. (1992). Body Images, Body-size Perceptions, and Eating Behaviors Among African-American and White College Women. *International Journal of Eating Disorders, 12*(3), 291-299.

Rudman, L. A. (2004). Sources of implicit attitudes. *Current Directions in Psychological Science, 13*(2), 79-82.

Rudman, L. A., Feinberg, J., & Fairchild, K. (2002). Minority Members' Implicit Attitudes: Automatic Ingroup Bias as a Function of Group Status. *Social Cognition, 20,* 4, 294-320.

Schwartz, M. B., Chambliss, H. O. N., Brownell, K. D., Blair, S. N., & Billington, C. (2012). Weight bias among health professionals specializing in obesity. *Obesity research, 11*(9), 1033-1039.

Schwartz M., Vartanian L., Nosek B., & Brownell K. (2006) The influence of one's own body weight on implicit and explicit anti-fat bias. *Obesity*. *14*, 440-8.

Singh, D. (1994). Body fat distribution and perception of desirable female body shape by young Black men and women. *International Journal of Eating Disorders*, 289-294.

Sobal J, & Stunkard A.J. (1989) Socioeconomic status and obesity: a review of the literature. *Psychological Bulletin,* 105, 260–75.

Stewart, T., Allen, R., Han, H., & Williamson, D. (2009). The Development of the Body Morph Assessment version 2.0 (BMA 2.0) Tests of reliability and validity. *Body Image, 6,* 67-74.

Tajfel, H., & Turner, J. C. (1979). An integrative theory of intergroup conflict. *The social psychology of intergroup relations, 33,* 47.

Teachman, B. A. Gapinski, K. D.; Brownell, K. D., Rawlins, M., & Subathra, J., (2003). Demonstrations of implicit anti-fat bias: The impact of providing causal information and evoking empathy. *Health Psychology. 22,(*1), 68-78.

Teachman, B. A., & Brownell, K. D. (2001). Implicit anti-fat bias among health professionals: is anyone immune?. *International journal of obesity*.

Teachman, B. A. & Woody, S. (2003). Automatic Processing in Spider Phobia: Implicit Fear Associations Over the Course of Treatment. *Journal of Abnormal Psychology. 112*(1), 100–109.

Thompson, K & Altabe, M., (1991). Psychometric qualities of the Figure Rating Scale. *International Journal of Eating Disorders*, 10, 615–619.

Tovee, M. J. & Cornelissen, P.L. (2001). Female and male perceptions of female physical attractiveness in front-view and profile. *British Journal of Psychology, 92*, 391-402.

Wang, S. S., Brownell, K. D., & Wadden, T. A. (2004). The influence of the stigma of obesity on overweight individuals. *International journal of obesity*,*28*(10), 1333-1337.

Wardle, J. & Steptoe, A., (2003). Socioeconomic differences in attitudes and beliefs about healthy lifestyles. Journal of Epidemiological Community Health, 57, 440–443.

Williams, D. R., & Williams-Morris, R. (2000). Racism and mental health: the African American experience. *Ethnicity and Health*, *5*(3-4), 243-268.

Williamson, D., Womble, L, Zucker, N, Reas, D, White, M., Blouin, D., & Greenway, F. (2000). Body image assessment for obesity (BIA-O) development of a new procedure. *International Journal of Obesity* 24, 1326-1332.

Zhang, Q., and Wang, Y. (2004). Socioeconomic inequality of obesity in the United States: do gender, age, and ethnicity matter? *Social Science & Medicine, 58*,1171–1180.