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# Body Surveillance as a Moderator of the Relationship Between Fat Stereotypes and Body Dissatisfaction in Normal Weight Women

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BODY SURVEILLANCE AS A MODERATOR OF THE RELATIONSHIP BETWEEN  
FAT STEREOTYPES AND BODY DISSATISFACTION IN  
NORMAL WEIGHT WOMEN

by

Jean Kim, B.A., B.M.Sc. (Hons)

A Thesis  
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through the Department of Psychology  
In Partial Fulfillment of the Requirements for the  
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Windsor, Ontario, Canada

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Body Surveillance as a Moderator of the Relationship between Fat Stereotypes and Body  
Dissatisfaction in Normal Weight Women

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June 26, 2013

### AUTHOR'S DECLARATION OF ORIGINALITY

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## ABSTRACT

This study examined the moderating effect of body surveillance on the relationship between fat stereotyping and body dissatisfaction in normal weight women.

Undergraduate participants ( $N = 301$ ) completed online measures assessing explicit and implicit fat stereotyping, body surveillance, and body dissatisfaction. Neither explicit nor implicit fat stereotyping significantly predicted body dissatisfaction. Further, body surveillance did not moderate the relationship between either explicit or implicit fat stereotypes and body dissatisfaction. However, post-hoc analyses examining Caucasian participants ( $N = 224$ ) found differing results. Specifically, body surveillance significantly moderated the relationship between explicit fat stereotyping and body dissatisfaction. Higher explicit fat stereotypes predicted greater body dissatisfaction in Caucasian women with lower body surveillance. Conversely, higher explicit fat stereotypes predicted lower body dissatisfaction in Caucasian women with higher body surveillance. These counterintuitive results suggest that endorsing fat stereotypes acts as a buffer against body dissatisfaction in Caucasian normal weight women with stronger body surveillance.

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## Chapter 1: Body Surveillance as a Moderator of the Relationship Between Fat Stereotypes and Body Dissatisfaction in Normal Weight Women

Increasing societal focus on health and beauty has engendered concerns regarding the stigmatization of overweight and obese individuals. Weight prejudice is commonly defined as the negative evaluation of people who are perceived to carry excess weight (Brochu, Gawronski, & Esses, 2011; Puhl & Brownell, 2001). Prejudice against this group of individuals is described as one of the last acceptable forms of bias in modern society (Puhl & Brownell, 2001). Accordingly, research has indicated that negative attitudes toward overweight individuals are more acceptable than are negative attitudes toward individuals with physical disabilities (Latner, Stunkard, & Wilson, 2005), individuals with AIDS, and those of various races (Crandall, Eshleman, & O'Brien, 2002), among other groups. Further, weight prejudice has been demonstrated in many domains of life, including employment (e.g., Roehling, 1999), health care (e.g., Brochu & Esses, 2009; Schwartz, Chambliss, Brownell, Blair, & Billington, 2003), and education (e.g., Crandall, 1991; Puhl & Latner, 2007). Given this pervasiveness, researchers have investigated the various social and clinical consequences that result from weight prejudice (see Puhl & Heuer, 2009 for a review).

### **Prejudice, Stereotypes, and Perceptions of Others**

Prejudice is defined as a negative attitude toward members of a social group (Hilton & von Hippel, 1996). In contrast, stereotypes are defined as generalized beliefs about the traits that are characteristic of members of a given social group (Jackman, 1977). Although stereotypes can refer to positive traits, prejudice is associated most often with stereotypes concerning negative traits (Hilton & von Hippel, 1996). These

negative stereotypes are thought to develop through cultural and social learning, and are considered to be a key component in the development of negative attitudes (i.e., prejudice) toward specific social groups (Esses, Haddock, & Zanna, 1993). Further, prejudice is expressed through discriminatory behaviours toward members of stigmatized groups (Crandall & Eshleman, 2003).

That the endorsement of negative stereotypes can lead to the development and expression of prejudice towards others has been examined in many social groups. In particular, the consequences of Black stereotypes held by Whites have been widely investigated. For example, in a famous study conducted by Kinder and Sears (1981) on voting preferences in mayoral elections, the majority of the White participants endorsed the belief that Black people do not possess classic American Protestant values of hard work and self-discipline. Those who endorsed this stereotype were less likely to vote for the Black candidate. This type of blatant expression of prejudice, however, is less widely observed in modern society because such overt expression has become socially condemned (Crandall & Eshleman, 2003). Instead, more recent studies have examined the subtle expressions of prejudice. For example, Hodson, Dovidio, and Gaertner (2001) examined the subtle influence of a common stereotype that Black individuals are intellectually inferior to White individuals. Participants, who were all White, were asked to evaluate a number of university applicants, and to indicate if they would recommend the applicants for admittance to the university. The researchers found that participants were more likely to deny admission to Black applicants compared to White applicants, but only when the applicants' qualifications were ambiguous. Specifically, participants who were shown a Black applicant with a low grade point average (GPA) and high

scholastic aptitude test (SAT) scores, or high GPA and low SAT scores, were less likely to recommend the applicant's admittance than were participants who were shown a White applicant with the same ambiguous qualifications. However, when GPA and SAT scores were congruently low or high, no differences were found in the rate of acceptance of the Black and White applicants, indicating the absence of overt expressions of prejudice. The authors concluded that when the qualifications were ambiguous, participants assimilated the Black applicant to the stereotype of intellectual inferiority, which led to the subtle expression of prejudice resulting in discriminatory decisions. Evidently, the endorsement of stereotypes contributes to the expression of prejudice toward others, although this expression may occur in subtle ways.

Although race and weight are dissimilar characteristics given their difference in changeability, past studies have shown that theories of racial stereotype and prejudice are applicable to weight bias (e.g., Brochu, Gawronski, & Esses, 2011; Crandall, 1994). Accordingly, these theories have been used to investigate the causes and consequences of weight-based prejudice (Crandall, 1994). For example, common stereotypes regarding the traits of overweight and obese individuals (i.e., fat stereotypes) are that they are lazy, self-indulgent, unfriendly, and lack willpower (Puhl & Brownell, 2001). These fat stereotypes are thought to lead to general negative attitudes (i.e., weight prejudice), such as feelings of dislike or disgust, toward members of this group (Crandall, 1994). In turn, these anti-fat attitudes ultimately could be expressed as discriminatory acts toward an overweight individual due to his or her weight (Crandall, 1994). Based on this theory, combating fat stereotypes should reduce negative attitudes toward overweight and obese individuals. Indeed, O'Brien, Puhl, Latner, Mir, and Hunter (2010) found that

challenging the belief that weight is completely controllable (i.e., the stereotype that overweight people lack self-control) by presenting information about the uncontrollable causes of obesity (e.g., genetics) reduced feelings of dislike toward this group. Other studies also have demonstrated that challenging the stereotype of weight controllability reduces anti-fat attitudes (see Danielsdottir, O'Brien, & Ciao, 2010 for a review). Based on this attitude reduction, it is expected that discriminatory behaviour toward overweight and obese individuals also will be reduced, although this remains to be investigated (Danielsdottir et al., 2010). Given the important role of stereotypes in the development and expression of prejudice, the current investigation focused on the endorsement of fat stereotypes rather than general anti-fat attitudes.

### **Impact of Stereotypes on Perceptions of Oneself**

While the above research has shown the consequences of endorsing negative stereotypes on the perception of others, other studies have examined the impact of stereotypes associated with one's own social group on perceptions of the self. Research has shown that the awareness of negative stereotypes associated with one's social group can be detrimental to an individual. In particular, the concept of stereotype threat purports that individuals feel apprehensive that their behaviour will confirm a negative stereotype about their group, which paradoxically leads to performance that is consistent with such stereotypes (Steele & Aronson, 1995). For example, activating the stereotype that Black people have lower intelligence than do White people negatively influences performance on tests of verbal ability in Black participants, while having no influence on the performance of White participants (Steele & Aronson, 1995). In addition to demonstrating the negative impact of stereotypes on behaviour, research also has shown



that activating stereotypes can influence psychological well-being. For example, Steele and Aronson (1995) found that activating the Black stereotype of intellectual inferiority caused Black participants to have greater concerns with self-doubt regarding ability and competence, even after accounting for actual verbal SAT scores. Activating the same Black stereotype in White participants, however, did not result in these negative outcomes. In a similar study of stereotype threat, Major, Spencer, Schmader, Wolfe, and Crocker (1998) found that Black participants reported lower self-esteem than did White participants after taking a test described as a measure of intellectual ability. This pattern was observed even after accounting for actual performance on the test. Thus, the awareness of negative stereotypes of one's social group appears to impact not only behaviour, but also one's psychological well-being. This idea has been applied to the area of fat stereotypes, and will be discussed below.

**Psychological impact of fat stereotypes.** The psychological impact of fat stereotypes on overweight and obese individuals has been investigated. Seacat and Mickelson (2009) activated the fat stereotypes of poor health and laziness in an overweight and obese female sample by stating that some women are more likely than others to engage in poor diet and exercise. The researchers found that participants reported lower self-efficacy and lower intent to maintain a healthy diet and to exercise when the fat stereotypes were activated compared to when they were not activated. Interestingly, this was observed even though participants were not required to perform a behaviour associated with the stereotype. Thus, the activation of fat stereotypes in overweight and obese individuals can be detrimental to their perceptions of the self, even without the threat of performing in a manner that confirms the stereotypes. Although

theories of racial stereotypes have been applied to the investigation of fat stereotypes, one key difference between these two areas is the clarity of group classifications. For the most part, knowledge of one's racial group membership is accurate and clear, even at a young age (Quintana, 1998). In contrast, identification of one's weight category can be subjective and inaccurate, particularly for females. For example, Sciacca, Melby, Hyner, Brown, and Femea (1991) found that approximately 40% of females in their sample classified themselves as being at least moderately overweight. After calculating actual weight category, however, only 17% were objectively overweight or obese. Similarly, Paeratakul, White, Williamson, Ryan, and Bray (2002) reported that 25% of the normal weight women in their sample considered themselves to be overweight. Further, Raudenbush and Zellner (1997) found that 35 out of 40 women who accurately reported that they were normal weight still desired to be thinner. This indicates that even those who correctly self-classify into a healthy weight category perceive extra weight or fat on their body. Because perceptions of weight are subjective, it is possible that fat stereotypes can influence the psychological well-being of individuals who are not objectively overweight. Accordingly, the current study investigated the psychological consequences of fat stereotypes in normal weight women. Before elaborating on the potential clinical outcomes of fat stereotypes, however, it is important to document the extent to which these stereotypes are endorsed.

### **How Common is the Endorsement of Fat Stereotypes?**

Based on the theory that stereotypes are a key component of the development of prejudicial attitudes, the observed pervasiveness of weight prejudice described above suggests that fat stereotypes may be endorsed frequently and commonly in modern

society. Many investigations have supported this hypothesis. For example, a recent population-based investigation by Hilbert, Rief, and Braehler (2008) found that 23.5% of their 1000 participants held “definite stigmatizing attitudes” toward obesity, with no differences in levels of stigma between genders. Notably, stigmatizing attitudes actually referred to stereotyped beliefs in this study. Stigma was operationally defined as agreeing with statements of fat stereotypes, such as “fat people have no willpower”, and “most fat people are lazy”. “Definite” stigmatization was defined by the authors as an average agreement response to these statements of at least 4.0 on 5-point Likert scales. Thus, nearly a quarter of their sample strongly endorsed negative fat stereotypes, with no differences observed between genders. Additionally, Swami, Pietschnig, Stieger, Tovée, and Voracek (2010) investigated a sample of 1024 individuals, and found moderate endorsement of fat stereotypes across the total sample. Specifically, the mean endorsement in this sample was 3.51 on 5-point scales of various fat stereotypes (e.g., laziness, insecurity), with higher values indicating greater endorsement. These large scale studies indicate that fat stereotypes are commonly endorsed in modern society.

Past research also has demonstrated the pervasiveness of fat stereotypes in children and adolescents. Cramer and Steinwert (1998) observed endorsement of fat stereotypes in children as young as 3 years old. Specifically, the stereotype that overweight and obese individuals are less friendly than normal weight or underweight individuals was studied. Children ages 3 to 5 were read a story about two fictional characters, one who was described as “nice” and the other who was described as “mean”. Then, the children were shown images of a chubby and a thin girl, and were asked to identify which image was the mean character and which was the nice character. Seventy-

seven percent of the girls and 82% of the boys identified the chubby image as the mean character, demonstrating that fat stereotypes are observed even in young children.

Furthermore, research has demonstrated that endorsement of fat stereotypes increases in adolescence (Klaczynski, Daniel, & Keller, 2009). The endorsement of fat stereotypes in children and adolescents further illustrates the pervasiveness of these beliefs.

Although the above studies have demonstrated weight bias in general samples, other researchers have studied endorsement of fat stereotypes across persons of different body mass index (BMI) categories. For example, Schwartz, Vartanian, Nosek, and Brownell (2006) examined the extent to which fat stereotypes were endorsed in underweight, normal weight, overweight, obese, and extremely obese individuals. The researchers found an inverse relationship between BMI category and endorsement of fat stereotypes, such that thinner individuals demonstrated greater mean endorsement than did heavier individuals. Despite this relationship, heavier individuals still significantly endorsed fat stereotypes, albeit to a lesser extent than did thinner individuals. This indicates that overweight and obese individuals internalize fat stereotypes themselves. Further, Harris, Walters, and Waschull (1991) reported that endorsement of fat stereotypes was unrelated to BMI. These authors concluded that personal experience with weight is not an important factor in endorsing fat stereotypes. Evidently, individuals across all BMI categories, at all ages, and across genders appear to hold these stereotypes, albeit to differing degrees.

### **Explicit Versus Implicit Endorsement of Fat Stereotypes**

One notable characteristic of the Schwartz et al. (2006) study mentioned above is the use of both explicit and implicit measures of endorsed fat stereotypes. Explicit

measures refer to self-report questionnaires that ask participants to express their opinions regarding various fat stereotypes, typically on a Likert-type scale. Implicit measures, on the other hand, refer to methods of indirectly assessing automatic beliefs, and are intended to access processes that are outside conscious control (Greenwald, McGhee, & Schwartz, 1998). Because the expression of stereotypical beliefs is condemned in modern society (Dovidio & Gaertner, 2004), people are believed to restrain their agreement with stereotypes on explicit self-report measures by responding in a more socially acceptable manner. Thus, explicit measures are believed to underestimate the endorsement of stereotypes. Although fat stereotypes are considered to be one of the last forms of acceptable bias (Puhl & Brownell, 2001), concerns regarding the influence of social desirability on explicit endorsement of fat stereotypes in self-report measures have emerged (Teachman & Brownell, 2001). Because of this, researchers have used both explicit and implicit measures of fat stereotypes to examine whether or not results would differ.

Several studies have reported that the type of measure used in an investigation can lead to different results. For example, Schwartz et al. (2006) found strong explicit endorsement of fat stereotypes in underweight, normal weight, and overweight individuals, while low levels of explicit endorsement were observed in obese and extremely obese individuals. In contrast, implicit endorsement of fat stereotypes was moderate to strong across all five weight categories. Similarly, Teachman and Brownell (2001) found strong implicit endorsement and weak explicit endorsement of fat stereotypes in health professionals, while Roddy, Stewart, and Barnes-Holmes (2009) found strong implicit and weak explicit endorsement in an undergraduate sample.

Furthermore, Teachman, Gapinski, Brownell, Rawlins, and Jeyaram (2003) found strong implicit endorsement in the absence of explicit endorsement in a general adult sample. These studies appear to support the idea that individuals consciously control the endorsement and expression of fat stereotypes that implicit measures can identify.

In contrast to these findings of weak or absent explicit endorsement, other studies have observed moderate to strong levels of both explicit and implicit endorsement. For example, Brochu and Morrison (2007) and Greenleaf, Starks, Gomez, Chambliss, and Martin (2004) found evidence for similar levels of explicit and implicit endorsement of fat stereotypes in undergraduate samples. Additionally, Vartanian, Herman, and Polivy (2005) found evidence for moderate explicit and strong implicit weight stigma among both unrestrained and restrained eaters. These studies indicate that explicit endorsement of fat stereotypes is evident in some samples. This discrepancy suggests that the impact of social desirability on responses to explicit measures of fat stereotypes is inconsistent. It is notable, however, that despite the inconsistent findings of explicit endorsement, implicit measures consistently demonstrate moderate to strong endorsement of fat stereotypes across all studies.

Although this body of research shows conflicting levels of explicit and implicit endorsement, together it indicates that the investigation of fat stereotypes likely would benefit from the use of both explicit and implicit measures to obtain more specific and accurate conclusions. Thus, the current study employed both measurement strategies.

### **Clinical Relevance of Endorsing Fat Stereotypes**

Given the evidence for fat stereotypes, researchers have begun to investigate potential negative mental health outcomes of fat stereotypes in individuals who endorse

these beliefs. Notably, this research has focused on negative outcomes in overweight and obese individuals who endorse fat stereotypes. For example, Davison, Schmalz, Young, and Birch (2008) found that overweight girls who endorsed fat stereotypes reported lower global self-worth than did overweight girls who did not endorse fat stereotypes. Further, Durso and Latner (2009) found that greater endorsement of fat stereotypes was associated with lower self-esteem and greater symptoms of depression and anxiety in overweight and obese men and women. Similarly, Friedman et al. (2005) found that greater endorsement of fat stereotypes was related to lower self-esteem and greater depressive symptomatology in overweight and obese adults. Interestingly, one study that did examine a normal weight adult sample also found that self-esteem was negatively related to endorsement of fat stereotypes (Klaczynski, Goold, & Mudry, 2004). This body of research indicates that endorsing fat stereotypes is related to negative mental health outcomes, regardless of one's weight. One aspect of mental health that is of interest in the current investigation is body dissatisfaction.

**Body dissatisfaction and endorsement of fat stereotypes.** Body dissatisfaction refers to the negative subjective evaluation of one's body, including aspects such as body shape, weight, and specific body parts (e.g., stomach, thighs; Stice & Shaw, 2002). Body dissatisfaction is observed commonly in modern society and has been reported across all weight categories (e.g., Frederick, Forbes, Grigorian, & Jarcho, 2007). Body dissatisfaction is a key predictor of the future development of eating disorder symptomatology (Stice, 2001), and has been described as an essential precursor to eating disorders (Polivy & Herman, 2002). This evidenced relationship between body dissatisfaction and eating disorders is one reason why researchers have investigated

various factors that contribute or lead to body dissatisfaction. Accordingly, the current study focused on the potential impact of the endorsement of fat stereotypes on body dissatisfaction.

Although various causes and correlates of body dissatisfaction have been investigated, the literature on the relationship between body dissatisfaction and endorsed fat stereotypes is fairly recent and limited. Further, the studies that have focused on this relationship have tended to utilize overweight and obese samples. This research has indicated that overweight and obese individuals who endorse fat stereotypes display greater body dissatisfaction than do overweight and obese individuals who do not endorse fat stereotypes. For example, Friedman et al. (2005) found that overweight and obese individuals who explicitly endorsed fat stereotypes associated with weight controllability displayed greater levels of body image distress than did those who did not endorse these stereotypes. Similarly, Durso and Latner (2009) found that greater explicit endorsement of fat stereotypes was related to greater body shape concerns in an overweight and obese sample. Further, Carels et al. (2010) found that implicit endorsement of fat stereotypes was positively related to body image disturbance in an overweight and obese sample. These findings suggest that endorsing fat stereotypes, whether explicitly or implicitly, is detrimental to overweight and obese individuals' body satisfaction. In contrast, not endorsing these stereotypes seems to protect against body dissatisfaction.

Studies examining the relationship between body dissatisfaction and endorsed fat stereotypes in normal weight samples are even scarcer than are studies conducted in overweight and obese samples. Despite the consistent observations that normal weight individuals endorse fat stereotypes and display body dissatisfaction, there is a paucity of



research examining the relationship between the two constructs in this population.

Further, the few studies that have examined this relationship have focused on the specific fat stereotypes of willpower and controllability (i.e., fat is a matter of willpower and self-control), rather than fat stereotypes in general (e.g., willpower, laziness, unfriendliness, etc.). One study by Laliberte, Newton, McCabe, and Mills (2007) found that endorsing the stereotype that weight is completely controllable was related to higher body dissatisfaction in a predominantly normal weight sample. Participants with lower endorsement of the stereotype tended to display lower body dissatisfaction. Laliberte et al. (2007) explained these findings by suggesting that individuals who strongly believed that weight is completely controllable likely feel dissatisfied with their body because they feel responsible for maintaining, and potentially failing to maintain, their ideal weight. This provides preliminary evidence that endorsing fat stereotypes could be related to body dissatisfaction in normal weight individuals.

O'Brien, Hunter, Halberstadt, and Anderson (2007) reported similar results in a predominantly normal weight sample. In this study, explicit endorsement of the fat stereotype of willpower was positively related to body image disturbance, particularly for participants who frequently compared themselves to others physically. Further, BMI was not significantly correlated with any of the variables, indicating that the relationship between fat stereotypes and body image disturbance occurred independently of weight category in the predominantly normal weight sample. Interestingly, O'Brien et al. (2007) failed to observe a significant relationship between the implicit endorsement of general fat stereotypes (i.e., bad, terrible, etc.) and body image disturbance, although the relationship was in the expected direction. This was in contrast to the findings of

O'Brien, Hunter, and Banks (2006), who found that predominantly normal weight physical education students with higher levels of implicit endorsement of general fat stereotypes, as well as higher implicit endorsement of the laziness stereotype, reported significantly more negative feelings toward their own body. These same students also reported greater explicit endorsement of the willpower stereotype. One limitation of these studies is that the researchers tended to compare an explicit measure of the willpower stereotype with an implicit measure of multiple fat stereotypes. This discrepancy in the breadth of the examined stereotypes suggests differences in the meaning of the results obtained from the two methods and makes them difficult to compare. Thus, there is a need to examine the relationship between explicit endorsement of multiple fat stereotypes and body dissatisfaction in the normal weight population. Further, there is a need to clarify the relationship between implicit endorsement of multiple fat stereotypes and body dissatisfaction in the same population.

Taken together, these few studies suggest that further investigation of the relationship between general endorsement of fat stereotypes and body dissatisfaction is warranted, particularly in normal weight individuals. Thus, the current study attempted to build on this past research to fill the gap in the literature regarding the influence of endorsed fat stereotypes on body dissatisfaction in the normal weight population.

### **Avoiding Fat versus Approaching Thin**

One construct that is related conceptually to endorsement of fat stereotypes is fear of fat. In the context of body image, fear of fat refers to the motivated avoidance of the fat stigma (Levitt, 2003). In contrast, drive for thinness is the motivated approach toward the thin ideal (Levitt, 2003). These motivations are thought to derive from culturally

promoted views that fat is bad and thin is good (Levitt, 2003). Because these constructs are theorized to be distinct, Levitt (2003) suggested that individuals likely differ in the extent to which their body concerns are motivated by the fat stigma versus the thin ideal. Accordingly, researchers have examined the differences in the influence of fear of fat and drive for thinness on body image disturbance.

Under the assumption that fear of fat and drive for thinness are related but distinct constructs, researchers have investigated which of the two is related more strongly to body image disturbance. The results seem to indicate that avoidance of fat might be more important in contributing to body image disturbance than is approaching thinness. For example, Dalley and Buunk (2009) found that greater desire to avoid the fat identity was associated with more frequent weight-loss dieting. However, greater desire to obtain (i.e. approach) the thin identity was unrelated to weight-loss dieting. These results were observed even after accounting for BMI. The authors concluded that a fear of fat, rather than a drive for thinness, motivated weight-loss dieting.

In contrast to this study, Woud, Anxchutz, Van Strein, and Becker (2011) used an implicit reaction-time measure rather than an explicit measure of approach and avoidance. The researchers employed a modified version of the Stimulus Response Compatibility (SRC) task, which implicitly assesses the affective valence of stimuli. Participants were shown an image of either a chubby model or a thin model, as well as an image of a mannequin figure, on a computer screen. Participants then were instructed simply to move the mannequin image either toward or away from the picture of the model using different computer keys. The participants' reaction time after being instructed to move the mannequin image toward or away from the model was interpreted

as approach versus avoidance, respectively. These researchers found that approach toward the thin model was faster than avoidance of the thin model, whereas reaction times for approach and avoidance of the chubby model did not differ. However, faster avoidance of the chubby model was related to greater body dissatisfaction, while reaction times for approaching the thin model were unrelated to body dissatisfaction. Although this study was the first to use the SRC task in a body image context, the results suggests that when using an implicit measure, the desire to avoid fat might be related to body dissatisfaction more importantly than is the desire to approach thinness.

Although the terms “drive for thinness” and “fear of fat” often are used interchangeably (Levitt, 2003), the aforementioned findings indicate that the two are distinct constructs that have independent influences on body image.

### **Fat Stereotypes versus “Fear of Fat”**

Although much of the body dissatisfaction literature has focused on the role of drive toward thinness and internalizing the thin ideal (e.g., Thompson & Stice, 2001), the emerging research presented above has identified fear of fat as a distinct and important construct in this field. Generally, it appears that greater fear of fat is associated with higher body image disturbance. Because this construct involves avoiding the fat stigma, it is expected that individuals with high fear of fat would endorse fat stereotypes that engender the stigma. Interestingly, the aforementioned Dalley and Buunk (2009) study used a prototype measure of fear of fat, which was based primarily on fat stereotypes. Participants rated the extent to which they believed that various characteristics were prototypical of fat females on 7-point semantic differential scales. These characteristics were stereotypes that are commonly used in explicit fat stereotype measures. For

example, differential scales with anchors of lazy/hardworking, irresponsible/responsible, and insecure/self-confident were presented. Using this measure, individuals who tended to endorse higher levels of the negative characteristics as prototypical of fat females were labeled as being higher in fear of fat. In essence, these authors measured fear of fat with an explicit measure of endorsed fat stereotypes. Thus, although the reported conclusion was that greater fear of fat is associated with greater body image disturbance, the finding actually refers to the relationship between endorsement of fat stereotypes and body image disturbance in a predominantly normal weight sample. This provides further indication that endorsement of fat stereotypes potentially contributes to body dissatisfaction in normal weight individuals.

### **Objectification Theory**

Another construct of interest in the current study is derived from the feminist theory of female objectification. Feminist theorists have argued that the female body is objectified by outside observers (Berger, 1972; Spitzack, 1990). In other words, the female body is construed as an object to be looked at and observed by others. Originally, this theory pertained to the tendency of males, as outside observers, to objectify the female body (Spitzack, 1990). However, from this feminist perspective, Fredrickson and Roberts (1997) proposed a theory of female self-objectification, termed the Objectification Theory (OBJ). This theory posits that due to the culturally-promoted objectified construal of the female body, girls and women are socialized to view themselves as objects. Females internalize the objectifying observer's perspective, thus causing them to self-objectify (Fredrickson & Roberts, 1997). Although the OBJ was originally rooted in the body experience of heterosexual, Caucasian women, the theory

has extended into many subgroups including sexual minority men, lesbian women, and African American women (see Moradi, 2010 for a review).

Three constructs are believed to be importantly related to the extent to which females self-objectify (McKinley & Hyde, 1996). The first component is the internalization of cultural body standards. The second component is the belief that ensuring that one's body matches these internalized standards is a matter of personal control and responsibility. The final component involves constantly monitoring and looking at one's own body to ensure compliance with the internalized cultural standards. While all three components have been investigated in the context of body dissatisfaction, the current study focused on the latter construct, termed body surveillance.

### **Body Surveillance**

Body surveillance is commonly defined as the tendency to view one's body from the perspective of an outside observer (McKinley & Hyde, 1996). From this definition, individuals with high body surveillance have a tendency to look at and monitor their body frequently, and to be greatly concerned about how their body looks rather than how it feels (McKinley, 1998).

Differences in body surveillance across various groups have been investigated. In particular, gender differences in body surveillance have been observed in the direction predicted by the feminist origins of the construct, that is, body surveillance is higher in women. For example, McKinley (1998) reported that although both male and female undergraduate students displayed high levels of body surveillance, females showed even greater levels of surveillance. In a longitudinal extension of this study, McKinley (2006) found that although levels of surveillance decreased over time in both genders, females

still had a stronger tendency to monitor their body compared to males approximately 10 years later. This gender difference in body surveillance similarly was observed by Frederick et al. (2007) and Lowery et al. (2005). Notably, Frederick et al. (2007) found that 43% of women in their sample reported high body surveillance compared to 25% of men. In contrast, 13% of women reported low body surveillance compared to 27% of men. These findings support the notion that women monitor and look at their own body to a greater extent than do men.

In accordance with the decrease in body surveillance with age observed by McKinley (2006), Tiggemann and Lynch (2001) found a negative relationship between age and body surveillance in a cross-sectional sample of women ranging in age from 20 to 84 years. Despite this relationship, however, moderate to high levels of body surveillance were identified in women up to age 59. Thus, although increasing age appears to be associated with decreases in body surveillance, the absolute levels of surveillance remain at least moderate until about age 60.

Interestingly, the above studies of body surveillance involved samples with an average BMI falling within the normal weight category. Many additional studies that demonstrate moderate to high levels of body surveillance in women similarly have used samples with an average BMI classified as normal weight (e.g., Brannan & Petrie, 2008; Fitzsimmons & Bardone-Cone, 2011; Greenleaf & McGreer, 2006; Sinclair & Myers, 2004). Furthermore, Mercurio and Rima (2011) reported no relationship between BMI and body surveillance in an undergraduate female sample. Taken together, these studies indicate that body surveillance is not limited to females whose body is greatly discrepant from the cultural standards of thinness; rather, surveillance is commonly observed in

normal weight females whose bodies are likely closer to those ideals. This emphasizes the extent to which habitually monitoring one's body has pervaded females of all sizes in modern society.

**Body dissatisfaction and body surveillance.** Given the extent of body surveillance in various female populations, the clinical impact of this construct on body image has been investigated. The tendency toward body surveillance is theorized to lead to body image disturbances because it promotes an awareness of the discrepancy between one's own body and the cultural standard of an attractive body (McKinley & Hyde, 1996). Several investigations have supported this hypothesis. McKinley (1998) demonstrated that women with higher levels of body surveillance reported greater body shame and lower body esteem. Similarly, Brannan and Petrie (2008) and Mercurio and Rima (2011) observed strong positive relationships between body surveillance and body dissatisfaction in female samples. In addition, Fitzsimmons and Bardone-Cone (2011) demonstrated this relationship across races, finding strong correlations between body surveillance and body dissatisfaction in both Caucasian and African-American females. Further, Greenleaf and McGreer (2006) found a significant positive relationship between body surveillance and body shame in both physically active and sedentary women, indicating that the extent to which women exercise does not influence the relationship. Thus, body surveillance is supported as an important factor related to body dissatisfaction. It should be noted, however, that these studies are correlational, cross-sectional designs. Because experimental or prospective longitudinal studies examining the influence of body surveillance on body dissatisfaction have yet to be reported, a causal relationship between these two constructs has not been established.



The aforementioned study conducted by Frederick et al. (2007) also examined the relationship between body surveillance and body dissatisfaction across all weight categories. The authors found a significant relationship across normal weight, overweight, and obese women, such that higher surveillance was associated with higher body dissatisfaction. Although the relationships were stronger in the overweight and obese categories, this finding indicates that normal weight women who habitually monitor their body also experience body dissatisfaction.

Cumulatively, these studies suggest that high body surveillance could be an important predictor of body dissatisfaction in many women, regardless of race, physical activity, and weight. Again, it is important to note that this implied causal direction between body surveillance and body dissatisfaction is tentative, given the correlational nature of these studies. It also is possible that body dissatisfaction promotes body surveillance.

Given that self-objectification is rooted in the internalization of cultural body standards (McKinley & Hyde, 1996), researchers have investigated how these standards are related to body surveillance and body dissatisfaction. In particular, this literature has focused on cultural ideals of thinness. A recent study by Fitzsimmons-Craft et al. (2012) investigated the relationships between body surveillance, internalized thin ideals, and body dissatisfaction in undergraduate females. Positive relationships between body surveillance and thin ideals and between body surveillance and body dissatisfaction were observed. Furthermore, body surveillance was found to mediate the relationship between internalization of thin ideals and body dissatisfaction. Based on these results, the authors

concluded that body surveillance is an important factor that contributes to how the desire to obtain the thin ideal leads to body dissatisfaction.

Although the link between thin ideals and body surveillance has been demonstrated, Forbes, Jobe, and Revak (2006) observed that body surveillance uniquely contributed to body dissatisfaction after accounting for the effects of internalized thin ideals. This finding indicates that a tendency to monitor one's body is an important factor related to body dissatisfaction in women, above and beyond the extent to which they internalize cultural ideals of thinness. Because body surveillance is theorized to develop through a desire to comply with cultural body standards (Fredrickson & Roberts, 1997; McKinley & Hyde, 1996), this finding also suggests that cultural standards of the female body other than thinness might also be importantly related to body surveillance and body dissatisfaction. As mentioned earlier, the culturally-derived motivations of approaching the thin ideal and avoiding the fat stigma are distinct constructs. Given the prevalence of fat stigma, it is possible that body surveillance is related to body dissatisfaction because of a desire to avoid culturally endorsed fat stereotypes, and not only because of a desire to achieve cultural ideals of thinness. Thus, potential relationships between endorsed fat stereotypes, body surveillance, and body dissatisfaction were examined in the present study.

### **The Present Study**

The general purpose of the present study was to extend the limited research on the relationship between endorsement of fat stereotypes and body dissatisfaction. In particular, the study aimed to be one of the first to examine this relationship in a normal weight sample. Because of the paucity of research in this area, this study was largely

exploratory. However, by extending the findings of the relationship between endorsed fat stereotypes and body dissatisfaction in overweight and obese people, and given the subjective nature of appraising one's own weight, it was expected that normal weight individuals who endorsed fat stereotypes would show greater body dissatisfaction than would those who do not hold these stereotypes.

Based on the findings in the literature presented above, both endorsement of fat stereotypes and body surveillance appear to be positively related to body dissatisfaction. Accordingly, a second purpose of this study was to investigate the potential interactive influence of endorsement of fat stereotypes and body surveillance on body dissatisfaction in a normal weight sample. It was expected that normal weight women who demonstrated higher body surveillance as well as higher endorsement of fat stereotypes would show greater body dissatisfaction than would women who showed higher levels on only one of the two constructs, or lower levels on both. This investigation of fat stereotypes contributes uniquely to the literature that has focused solely on the influence of thin ideals on body surveillance and body dissatisfaction.

The present study sought to examine the constructs of interest in a normal weight sample. As such, BMI was used as an indicator of normal weight. Body mass index is calculated by dividing weight in kilograms by height in metres squared (World Health Organization, 2012). Based on the classification specified by the World Health Organization (2012), normal weight was defined as a BMI between 18.50 to 24.99 kg/m<sup>2</sup>.

Only female participants were included in the study. Although gender differences in endorsement of fat stereotypes have not been observed (e.g., Hilbert et al., 2008), the presented research has shown that females often demonstrate higher levels of body

surveillance than do males (e.g., Frederick et al., 2007; McKinley, 1998). Also, higher levels of body dissatisfaction have been documented in females compared to males (e.g., Aruguete, Yates, & Edman, 2006; Demarest & Allen, 2000; Pingitore, Spring, & Garfield, 1997). Furthermore, the observed relationship between body surveillance and various measures of body dissatisfaction tend to be stronger and more consistent for females than they are for males (e.g., Frederick, et al., 2007; McKinley, 1998; McKinley, 2006), indicating that the nature of this relationship is different between genders. Thus, to maintain interpretability of the findings, the present study examined the relationships between the constructs of interest in a normal weight, female sample.

Given the presented differences in endorsement of fat stereotypes based on the types of measures outlined above, both an explicit and an implicit measurement strategy were used in the current study. Because of the inconsistent findings of explicit endorsement of fat stereotypes in the literature, the following hypotheses regarding explicit endorsement were exploratory and tentative. In contrast, the following hypotheses regarding implicit endorsement of fat stereotypes were made clear by the consistent findings of implicit endorsement in the literature. Based on past research comparing implicit and explicit measures of fat stereotypes (e.g., O'Brien et al., 2007), analyses for the two measures were conducted separately.

Several potential covariates were assessed in the current study. Specifically, BMI (Frederick et al., 2007), global self-esteem (Lowery et al., 2005), and depressive symptoms (Wideman & Pryor, 2000) were assessed as potential covariates because they consistently have been associated with body dissatisfaction in women. Further, social desirability was assessed as a potential covariate, given its documented negative

relationship both with body dissatisfaction (Brannan & Petrie, 2008) and explicitly expressed weight bias (Perez-Lopez, Lewis, & Cash, 2001). Additionally, age was assessed as a potential covariate. Although some cross-sectional studies have demonstrated that that body dissatisfaction remains stable with age (e.g., Tiggemann & Lynch, 2001), other cross-sectional (e.g., Green & Pritchard, 2003) and retrospective (McLaren & Kuh, 2004) studies have shown age-related changes in body dissatisfaction. All of these variables have been assessed in the body image and weight bias literatures as potential covariates. Finally, the effect of internalized thin ideals was assessed to examine the hypothesized effects above and beyond the influence of thin ideals.

### **Hypotheses:**

1. Normal weight women will display a positive relationship between the explicit endorsement of fat stereotypes and body dissatisfaction.
2. Normal weight women also will display a positive relationship between the implicit endorsement of fat stereotypes and body dissatisfaction.
3. Normal weight women will display a positive relationship between body surveillance and body dissatisfaction.
4. Body surveillance will moderate the relationship between explicit endorsement of fat stereotypes and body dissatisfaction. The relationship between explicit endorsement of fat stereotypes and body dissatisfaction will be significantly stronger at higher levels of body surveillance than at lower levels of body surveillance.
5. Similarly, body surveillance will moderate the relationship between implicit endorsement of fat stereotypes and body dissatisfaction. The relationship between

implicit endorsement of fat stereotypes and body dissatisfaction will be significantly stronger at higher levels of body surveillance than at lower levels of body surveillance.

## Chapter 2: Method

### Participants

Participants were recruited from the Psychology Participant Pool at the University of Windsor and received 1.0% course credit for their involvement in the study. Because screening based on BMI was not possible through the Participant Pool, the study was made available to all women registered in the pool. Self-reports of weight and height were requested in the demographics questionnaire, and BMI was calculated using this information. The analyses were conducted only on those participants with a self-reported BMI between 18.5 to 25 kg/m<sup>2</sup>. No additional inclusion or exclusion criteria were applied.

Data were collected from 301 normal weight female participants. The mean age of participants was 20.54 years ( $SD = 3.87$ ) and their mean self-reported BMI was 21.31 kg/m<sup>2</sup> ( $SD = 1.67$ ). Self-reported race and ethnicity were as follows: 74.8% Caucasian, 6.6% European, 5.0 % African Canadian, 5.0% East Asian, 5.0% Middle Eastern, 3.6% South Asian, 0.3% Hispanic, 0.3% Native Canadian, and 1% reported two or more ethnic backgrounds. The distribution of participants' sexual orientation was as follows: 95.0% heterosexual, 4.0% bisexual, 0.7% lesbian, and 0.3% pansexual. Further, 96.0% reported no lifetime diagnosis of an eating disorder, 3.7% reported having been diagnosed previously, and 0.3% did not report if they had ever been diagnosed with an eating disorder.

In terms of relationship status, 49.5% were single, 47.2 were in a relationship and/or cohabiting, 2.3% were married or in a common-law relationship, and 1.0% were divorced or separated. Additionally, 96.6% had no children, 1.3% had one child, 1.3% had 2 children, 0.7% had three children, and 1% did not report number of children.

In terms of years of university education, 22.6% were in their first year, 24.3% were in their second year, 26.6% were in their third year, 18.6% were in their fourth year, and 8% had attended university for more than four years. Additionally, 60.1% of participants were psychology majors. In terms of current employment status, 64.1% were employed part-time, 32.2% were unemployed, and 3.7% were employed full-time.

## **Measures**

### **Main predictor variables.**

*Obese persons trait survey (OPTS; Puhl, Schwartz, & Brownell, 2005).* The OPTS (see Appendix A) consists of 20 items and assesses explicit endorsement of traits associated with obese persons. The OPTS consists of two subscales. The first subscale lists 10 negative traits (e.g., lazy, gluttonous; OPTSneg) and the second lists 10 positive traits (e.g., honest, generous; OPTSpos). Participants are asked to estimate the percentage (0-100%) of obese persons who possess each of these traits. Percentage estimates are averaged across the negative traits to obtain a score of explicit fat stereotyping. Percentage estimates also are averaged across positive traits to obtain a score of positive stereotyping. To maintain psychometric properties of the scale, both the OPTSneg and OPTSpos were administered in this study. However, only the OPTSneg was used in the main analyses. Higher average estimates of negative traits indicate greater endorsement of fat stereotypes (Puhl et al., 2005). Based on the method described

by Carels et al. (2010), participants also were asked to estimate the percentage of average weight persons who possess the same 20 traits (APTSneg and APTSpos). Using the analysis described by Carels et al. (2010), mean percentage estimates of negative traits for average weight persons were subtracted from mean estimates for obese persons. This difference was used as an indicator of the extent to which participants explicitly endorsed fat stereotypes. The OPTS has shown appropriate validity. Puhl et al. (2005) reported that the OPTS did not correlate significantly with the Marlowe Crowne Social Desirability Scale, demonstrating discriminant validity. Domoff et al. (2012) reported that the OPTS correlated significantly with the Anti-Fat Attitudes Scale – Dislike Subscale ( $r = .31$ ), a measure of general dislike of obese persons, demonstrating convergent validity. Additionally, the OPTS has demonstrated acceptable to good internal consistency, with Cronbach's alpha ranging from .73 to .88 for the OPTSneg, and from .78 to .86 for the OPTSpos (Carels et al., 2009; Carels et al., 2010; Gumble & Carels, 2012; Puhl et al., 2005). The APTSneg and APTSpos also have demonstrated good to excellent internal consistency,  $\alpha = .90$  and  $\alpha = .86$ , respectively (Carels et al., 2010). In the current study, the OPTSneg and OPTSpos both had good internal consistency,  $\alpha = .88$  and  $\alpha = .88$ , respectively. Additionally, the APTSneg and APTSpos had good to excellent internal consistency,  $\alpha = .85$  and  $\alpha = .92$ , respectively.

***Weight-implicit associations test (W-IAT;*** Greenwald, McGhee, & Schwartz, 1998; Gumble & Carels, 2010; Nosek et al., 2007). The IAT is a performance-based measure that widely is used to assess stereotypical beliefs toward various groups (Greenwald, McGhee, & Schwartz, 1998), including overweight and obese individuals (e.g., Gumble & Carels, 2010). The IAT requires participants to categorize various



stimuli, depending on the stereotyped group being studied. The stimuli used in the W-IAT (see Appendix B) involve 20 negatively or positively valenced words, and 20 images of obese and thin silhouettes. The negatively valenced words include five general words (i.e., terrible, horrible, awful, hurt, evil) and five common fat stereotypes (i.e., lazy, stupid, undisciplined, insecure, and hostile). The positively valenced words include five general words (i.e., joy, love, peace, wonderful, laughter) and five words opposite to the fat stereotypes (i.e., motivated, intelligent, disciplined, confident, and friendly).

Participants are required to categorize the words into “bad” versus “good”, and the images into “fat” versus “thin”. Two categories are presented on the top left side of the screen, while the other two categories are presented on the top right side of the screen. The category pairings are counterbalanced across two versions of the W-IAT such that “fat” and “bad” are paired together first in one version, while “fat” and “good” are paired together first in the second version (Greenwald, Nosek, & Banaji, 2003; Nosek, Greenwald, & Banaji, 2005). During the first testing block for version one, “good” and “thin” are paired together on the left side while “bad” and “fat” are paired on the right side. The stimuli, either words or images, are presented in the middle of the screen and participants are asked to press the ‘E’ key to indicate that the stimulus belongs in the “good” or “thin” categories, and to press the ‘I’ key to indicate that the stimulus belongs in the “bad” or “fat” categories. During the second testing block of version one, the pairings are changed such that “good” and “fat” are grouped together on the left side, while “bad” and “thin” are grouped together on the right side. Participants again are required to categorize each presented stimulus by pressing either the ‘E’ or ‘I’ key. In version two, “good” and “fat” are paired together on the left side while “bad” and “thin”

are paired together on the right side for the first testing block. During the second block of version two, “good” and “thin” are paired on the left side, while “bad” and “fat” are paired on the right side. The stimuli are presented in random order, but an equal number of words and images are presented per block. The mean response time to categorize each stimulus correctly is calculated for each block. Then, using the improved standard scoring algorithm of the IAT (Greenwald et al., 2003), mean response times for the thin/good-fat/bad block are subtracted from the mean response times of the thin/bad-fat/good block to obtain a difference score ( $D$ ). Based on the theory of the IAT, it is expected that participants will categorize the stimuli more quickly and accurately when the categories are paired in a way that matches their implicit stereotyped beliefs (Greenwald et al., 1998). Faster response times for the fat/bad-thin/good block compared to the fat/good-thin/bad block indicate greater implicit endorsement of negative fat stereotypes. Thus, larger positive  $D$  scores on the W-IAT indicate that fat people are implicitly associated more strongly with negative attributes than with positive attributes, and more strongly with negative attributes than are thin people. In contrast, negative  $D$  scores indicate that fat people are implicitly associated more strongly with positive attributes than with negative attributes, and more strongly with positive attributes than are thin people.

The IAT has also demonstrated convergent and discriminant validity using both explicit (Gawronski, 2002) and implicit measures (Cunningham, Preacher, & Banaji, 2001). Notably, self-reported handedness has been shown not to influence IAT scores (Greenwald & Nosek, 2001). Additionally, a meta-analysis conducted by Hofmann, Gawronski, Gschwendner, Le, and Schmitt (2005), which included several articles using

W- IATs, indicated that the mean reliability of the IAT was adequate ( $r = .79$ ). In the current study, the W-IAT had adequate reliability across practice and testing blocks ( $r = .79$  for thin/good-fat/bad trials, and  $r = .76$  for thin/bad-fat/good trials).

**Moderator variable. *Objectified body consciousness scale – surveillance subscale (OBCSS;* McKinley & Hyde, 1996).**

The Objectified Body Consciousness (OBC) scale is a 24-item self-report measure that assesses the extent to which women objectify their own body. The OBC consists of three subscales, one of which is the OBCSS (see Appendix C). Because the psychometric properties of the surveillance subscale have been assessed independently from the other subscales, only the OBCSS was administered to participants in the current study. The OBCSS consists of 8 items that assess body surveillance tendencies, such as “During the day, I think about how I look many times”. Respondents are asked to rate the items on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores indicate greater body surveillance. This subscale has demonstrated sound validity and reliability. The OBCSS has demonstrated convergent validity with the Appearance Orientation scale of the Multidimensional Body-Self Relations Questionnaire ( $r = .64$ ; Cash, Winstead, & Janda, 1986) and the Public Body Consciousness Scale of the Body Consciousness Questionnaire ( $r = .46$ ; Miller, Murphy, & Buss, 1981). Further, the OBCSS does not correlate with the Social Anxiety Scale (McKinley & Hyde, 1996), demonstrating discriminant validity. Internal consistencies have ranged from .81 to .89 in past research (Brannan & Petrie, 2008; McKinley & Hyde, 1996). In the current study, the OBCSS had good internal consistency,  $\alpha = .88$ .

### **Criterion variable.**

***Eating disorder inventory-2 - Body dissatisfaction subscale (EDI-BD;*** Garner, 1991). The Eating Disorder Inventory -2 (EDI-2; see Appendix D) is a 91-item self-report scale that assesses behaviours, symptoms, and psychological traits associated with eating disorders. The EDI-2 consists of 11 subscales, one of which assesses body dissatisfaction (EDI-BD). To maintain psychometric properties of the EDI-BD subscale, the entire EDI-2 was administered to participants in the current study. However, only the EDI-BD was used in the analyses. The EDI-BD consists of 9 items assessing women's dissatisfaction with their body, such as "I think my stomach is too big". Respondents are asked to rate the items on a 6-point scale ranging from 1 (*never true*) to 6 (*always true*). Higher scores indicate greater body dissatisfaction. The EDI-BD has demonstrated convergent validity with another measure of body dissatisfaction, the Body Shape Questionnaire ( $r = .82$ ; Garner, 1991). It also has demonstrated excellent internal consistency ( $\alpha = .91$ ; Brookings & Wilson, 1994; Tylka, 2004) and 3-week test-retest reliability ( $r = .97$ ; Wear & Pratz, 1987) in non-clinical samples. In the current study, the EDI-BD had good internal consistency,  $\alpha = .89$ .

### **Covariates**

***Sociocultural attitudes toward appearance scale-3 – internalization general subscale (SATAQ-IG;*** Thompson, van den Berg, Roehrig, Guarda, & Heinberg, 2003). The Sociocultural Attitudes Toward Appearance Scale-3 (SATAQ-3; see Appendix E) is a 30-item self-report measure of societal influences on body image. The SATAQ-3 consists of four subscales, one of which is the SATAQ-IG. To maintain psychometric properties of the SATAQ-IG, the entire SATAQ-3 was administered to participants.

However, only the SATAQ-IG was used in the analyses. The SATAQ-IG consists of 9 items that assess internalization of thin ideals, such as “I compare my body to the bodies of people who are on TV”. Respondents rate each item on a 5-point scale ranging from 1 (*definitely disagree*) to 5 (*definitely agree*). Higher scores indicate greater internalization of thin ideals. The SATAQ-IG has demonstrated good convergent validity with the Drive for Thinness subscale of the Eating Disorder Inventory ( $r = .57$ ), and excellent internal consistency ( $\alpha = .92$ ; Thompson et al., 2003). In the current study, the SATAQ-IG had excellent internal consistency,  $\alpha = .94$ . The internalization of thin ideals is found to relate consistently to body image disturbance, and often is studied in relation to body dissatisfaction (Thompson & Stice, 2001). Thus, the SATAQ-IG was examined in the analysis to ensure that any observed relationships between endorsed fat stereotypes, body surveillance, and body dissatisfaction occurred after accounting for internalized thin ideals.

**Rosenberg self-esteem scale (RSES;** Rosenberg, 1965; 1979). The RSES (see Appendix F) is a 10-item self-report measure of global trait self-esteem. Respondents rate items such as “I feel that I have a number of good qualities” on a 4-point scale ranging from 0 (*strongly disagree*) to 3 (*strongly agree*). Higher scores indicate greater self-esteem. The RSES has demonstrated good convergent validity with other measures of self-esteem, including the Coopersmith Self-Esteem Inventory ( $r = .55$ ; Demo, 1985). The RSES also has demonstrated excellent internal consistency ( $\alpha = .92$ ; Rosenberg, 1979) and good test-retest reliabilities ranging from  $r = .85$  at a two week interval (Silber & Tippett, 1965) to  $r = .69$  at a six year interval (Robins, Hendin, & Trzesniewski, 2001). In the current study, the RSES had excellent internal consistency,  $\alpha = .90$ . Self-esteem

was tested as a covariate in all analyses because it has been found to correlate with body dissatisfaction in women (e.g., Lowery et al., 2005).

***Marlowe Crowne social desirability scale – Form C (MCSDS-C;*** Reynolds, 1982). The MCSDS-C (see Appendix G) is a 13-item self-report measure of the tendency to respond to test items in a socially desirable manner. Respondents are asked to indicate whether items such as “It is sometimes hard for me to go on with my work if I am not encouraged” are true or false for them personally. Higher scores indicate greater socially desirable responding. The MCSDS-C has demonstrated good convergent validity with other measures of social desirability, including the Edwards Social Desirability Scale ( $r = .41$ ; Reynolds, 1982). The MCSDS-C also has demonstrated adequate internal consistency ( $r_{KR-20} = .76$ ; Reynolds, 1982). In the current study, the MCSDS-C had adequate internal consistency,  $r_{KR-20} = .70$ . Because of the documented relationship between socially desirable responding and body dissatisfaction (Brannan & Petrie, 2008), and because this study asked participants to indicate their opinions regarding stereotypes of a socially discriminated group, tendencies toward socially desirable responding were accounted for in the analysis.

***Beck depression inventory-II (BDI-II;*** Beck, Steer, Ball, & Ranieri, 1996). The BDI-II (see Appendix H) is a 21-item self-report measure of depressive symptomatology. Respondents are asked to rate items such as “Sadness” on a 4-point scale ranging from 0 (absence of symptom; e.g., “I do not feel sad”) to 3 (severe presence of symptom; e.g., “I am so sad or unhappy that I can’t stand it”). Higher scores indicate greater severity of depressive symptoms. Osman et al. (1997) demonstrated adequate construct validity between the BDI-II with other measures of depression ( $r = .77$ ), anxiety ( $r = .71$ ), and

self-esteem ( $r = -.64$ ). The BDI-II also has demonstrated excellent internal consistency in past research ( $\alpha = .92$ ; Beck et al., 1996). In the current study, the BDI-II had excellent internal consistency,  $\alpha = .93$ . Depressive symptomatology was tested as a covariate in all analyses because it has been found to correlate with body dissatisfaction in women (e.g., Wideman & Pryor, 2000).

**Demographic questionnaire.** This questionnaire (see Appendix I) was used to obtain demographic information from the participants, such as age and years of university education. Body Mass Index was calculated based on self-reported weight and height provided on this questionnaire.

### **Procedure**

After signing up for the study on the Psychology Participant Pool (see Appendix J for Participant Pool advertisement), participants were provided with an Internet link to the FluidSurvey study webpage via e-mail. Informed consent for participation was requested online prior to the administration of the measures (see Appendix K). The study was conducted entirely online, and lasted thirty minutes to one hour. Participants were encouraged to complete the study in a quiet area and free from distractions. Consenting participants were directed to electronic versions of the questionnaires presented on FluidSurvey. To counterbalance the order of the explicit and implicit measures of fat stereotypes, as recommended by Nosek, Greenwald, and Banaji (2005), two versions of the complete study were developed. Participants were randomly assigned to one of the versions when they signed up for the study. The order of the measures for version one of the study was as follows: MCSDS-C, OPTS, RSES, OBCSS, SATAQ-3, APTS, BDI-II, EDI-2, W-IAT, Demographics. The order of the measures for version two of the study

was as follows: MCSDS-C, W-IAT, RSES, OBCSS, SATAQ-3, OPTS, BDI-II, EDI-2, APTS, and Demographics. Within each version, a link to a webpage presenting the W-IAT was provided. When participants clicked the link, they were randomly assigned to one of the two versions of the W-IAT. Upon clicking the link, a new web-browser would open with the W-IAT, which was hosted on a University of Windsor web server outside of FluidSurvey. After participants completed the W-IAT, they were directed back to the FluidSurvey to complete the remainder of the study. Upon completion of the measures, participants were directed to a debriefing page (Appendix L), which explained the objectives of the study and thanked them for their time and contribution. Finally, participants were given 1.0 bonus mark, which they put toward an eligible psychology course of their choice.

### **Chapter 3: Results**

#### **Approach to Data Analysis**

This study used hierarchical multiple regression to test for a potential moderating effect of body surveillance on the relationship between endorsement of fat stereotypes and body dissatisfaction. Two regressions were conducted, one using explicit scores of endorsement of fat stereotypes and the other using implicit scores. The covariates of self-esteem, depressive symptomatology, social desirability, BMI and age were tested as predictor variables in the first block of the regressions to account for their potential influence on body dissatisfaction. Additionally, internalization of thin ideals was included in the second block of the regressions to ensure that any observed effects of endorsed fat stereotypes and body surveillance on body dissatisfaction occurred above and beyond the effect of thin ideals. The main predictor variable (either explicit or



implicit fat stereotypes) and the moderator variable (body surveillance) were entered in the third block of the regressions, followed by the interaction term in the fourth block. The hypotheses were tested using the analytic procedures described by Cohen, Cohen, West, and Aiken (2003). Hypotheses 1, 2, and 3 were tested by examining the significance of the first-order terms in the regression equations. Hypotheses 4 and 5 were tested by examining the significance of the interaction term in the regression equations, followed with simple slopes analyses.

All analyses were performed using SPSS for Windows (Version 19.0) and SPSS for Mac (Version 21.0). Potential differences in scores across study versions were examined before merging the data. Next, missing values and reliability analyses were conducted. Assumptions of multiple regression were assessed, followed by descriptive analyses. Finally, all of the hypotheses were tested using a series of moderated hierarchical multiple regressions.

### **Combining Study Versions**

A series of independent sample *t*-tests found no significant differences across the two study versions for any of the measures (all *ps* > .067; see Table 1). Because the mean difference between versions for body dissatisfaction was approaching significance, the analyses were conducted separately for each version to check if any differences emerged. The results were not different across the two versions. Further, bivariate correlations between all possible variable pairings were in the same direction for both versions. Finally, a two-way analysis of variance was conducted to assess whether the study version interacted with W-IAT version to influence W-IAT scores. No significant

interaction was found ( $p = .770$ ). Thus, data from both study versions were merged and all subsequent analyses were conducted on the complete data set.

Table 1

*Mean Differences across Study Versions for All Variables (N = 301)*

Variable	<i>M</i> difference	<i>t</i>	<i>p</i> -value
Age	0.160	-1.407	0.160
MCSDS-C	0.134	0.407	0.684
RSES	-0.345	-0.550	0.582
BDI-II	0.277	0.225	0.822
BMI	-0.515	-1.686	0.092
SATAQ-IG	-0.120	-1.063	0.288
OPTSneg	1.730	0.951	0.342
OPTSpos	1.587	1.053	0.293
APTSneg	0.318	0.251	0.802
APTSpos	0.658	0.478	0.633
OBCSS	-0.098	-0.760	0.447
W-IAT	0.003	0.064	0.949
EDI-BD	-2.071	-1.841	0.067

*Note:* MCSDS-C = Marlowe Crowne Social Desirability Scale Form C; RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OPTSneg = Obese Persons Trait Survey negative traits; OPTSpos = Obese Persons Trait Survey positive traits; APTSneg = Average-Weight Persons Trait Survey negative traits; APTSpos = Average-Weight Persons Trait Survey positive traits; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; W-IAT = Weight Implicit Associations Test; EDI-BD = Eating Disorders Inventory 2 Body Dissatisfaction subscale

### **Missing Data**

A missing values analysis was conducted to assess for patterns of missingness. Seventy-seven percent ( $n = 231$ ) of participants provided complete data. The percentage of missing values for all measure items ranged from 0 to 2.3%. Finally, less than 2% ( $n = 77$ ) of all possible values were missing. Little's MCAR test was not significant,  $\chi^2(5868) = 5905.00, p = .364$ , indicating that the data were missing completely at random. This supported the use of imputation as an appropriate method of managing the missing data (Schafer & Graham, 2002). Multiple imputation was used to replace missing values because it preserves variability in the data set, reducing bias in estimates and the likelihood of Type I and Type II errors (Schafer & Graham, 2002). Parameter estimates were pooled across five imputed data sets.

### **Assumptions of Multiple Regression**

The assumption of the absence of multicollinearity was assessed by examining correlations between variables, and checking variance inflation factors (VIF). This assumption was satisfied as none of the variables had correlations above  $|.60|$  (see Table 2 for all zero-order correlations), and none of the VIF values approached the cut-off of 10 (Cohen et al., 2003). To assess the assumption of independence of errors, the Durbin-Watson statistic was examined. The Durbin-Watson value for the first regression was 2.00, and for the second regression was 2.01, which were close to the acceptable value of 2 (Cohen et al., 2003). Accordingly, independence of errors was assumed.

Table 2

*Zero-Order Correlations Between All Variables (N = 300).*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	-												
2. MCSDS-C	.01	-											
3. RSES	-.01	.21**	-										
4. BDI-II	-.04	-.28**	-.60**	-									
5. BMI	.06	-.02	-.05	-.01	-								
6. SATAQ-IG	-.02	-.39**	-.28**	.29**	.13*	-							
7. OPTSneg	-.07	-.10	.05	-.01	.01	.08	-						
8. OPTSpos	.06	.05	.01	-.03	-.03	-.03	-.02	-					
9. APTSneg	-.03	-.07	-.08	.12*	.06	-.04	.29**	.12*	-				
10. APTSpos	.03	.11	.13*	-.11	.02	-.07	.24**	.61**	-.01	-			
11. OBCSS	-.04	-.36**	-.27**	.32**	.13*	.60**	.08	-.01	-.02	-.04	-		
12. W-IAT	.07	-.07	.05	-.05	-.08	-.01	.14*	.04	.06	.09	.02	-	
13. EDI-BD	-.08	-.28**	-.41**	.41**	.34**	.52**	.04	-.01	-.00	-.05	.53**	-.05	-

*Note:* \*  $p < .05$ , \*\*  $p < .01$ ; MCSDS-C = Marlowe Crowne Social Desirability Scale Form C; RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OPTSneg = Obese Persons Trait Survey negative traits; OPTSpos = Obese Persons Trait Survey positive traits; APTSneg = Average-Weight Persons Trait Survey negative traits; APTSpos = Average-Weight Persons Trait Survey positive traits; OBCSS = Objectified Body Consciousness Scale Surveillance subscale; W-IAT = Weight Implicit Associations Test; EDI-BD = Eating Disorders Inventory 2 Body Dissatisfaction subscale

Next, the assumptions of normally distributed errors, homoscedasticity, and linearity were assessed. For each regression, the scatterplots of standardized residual versus standardized predicted values appeared as a cloud, with an even concentration of scores around the centre. Furthermore, the scatterplot did not appear to have a wave or funnel pattern. Thus, linearity and homoscedasticity were assumed. Additionally, the histograms of standardized residuals approximated the normal curve, and the Shapiro-Wilk's statistic for the standardized residuals was not significant,  $SW(297) = .995, p = .392$ . Thus, normal distribution of errors was assumed.

Tabachnick and Fidell (2007) recommend assessing univariate normality for each predictor, although it is not an assumption of multiple regression. Based on the  $SW$  statistic, none of the predictors were normally distributed. Thus, a logarithmic transformation was applied to each predictor. However, these transformations did not reduce the  $SW$  statistics to non-significance, nor did they significantly change the results of the final regression model (i.e., variables included in the final model,  $R^2$ , regression coefficients, significance values, etc.). Additionally, bootstrapping was attempted, but did not alter the results of the final regression models. Because the assumptions of homoscedasticity, linearity, and normally distributed errors had been satisfied, the non-transformed predictor variables were used in the main analyses (Howell, 2007).

Finally, the data were examined for residual outliers, multivariate outliers, and influential cases. Residual outliers were identified using studentized deleted residual values, and multivariate outliers were identified using both Mahalanobis distance and leverage values. Because identification of residual and multivariate outliers both are dependent on the predictors included in the model, they were identified separately for

each regression analysis. Only outliers impacting the final model were removed from the analyses (Tabachnick & Fidell, 2007). One multivariate outlier was removed from all analyses. Additional multivariate outliers were removed from the regression analysis involving implicit endorsement of fat stereotypes, as will be described in the corresponding section below. Influential cases were examined using both Cook's distance and DFFITS values. After removing outliers in all regression analyses, no influential cases were identified.

### **Descriptives**

Means and standard deviations for all variables are presented in Table 3. Four participants reported their subjective weight classification (i.e., normal weight), but did not provide their weight or height. Body mass index could not be calculated for these participants. Because BMI was a significant covariate in all regression analyses, these four participants were excluded in the final analyses.

The mean of the estimated percentages of obese persons who possess negative traits (OPTSneg) was compared to the mean of the estimated percentages of average-weight persons who possess the same negative traits (APTSneg). This was to ensure that the explicit measure of fat stereotypes did in fact capture endorsement of stereotypes associated with obese individuals, rather than endorsement of negative traits across all weight groups. A paired samples *t*-test found that participants reported significantly greater estimated percentages of obese persons possessing the negative traits than they did for average-weight persons possessing the same negative traits,  $t(300) = 14.39, p < .001$ . Cohen's *d* for this difference was .84, indicating that participants strongly endorsed negative fat stereotypes using the explicit measure.

The extent to which participants implicitly endorsed fat stereotypes also was examined. The difference ( $D$ ) score for the IAT is considered to be a measure of effect size that is closely related to, but distinct from, Cohen's  $d$  (Nosek & Sriram, 2007). In order to use Cohen's  $d$  small, medium, and large effect size values, the  $D$  score can be recomputed as a  $d$  value using the formula  $D = 2d/\sqrt{4+d^2}$  (Nosek & Sriram, 2007). Accordingly, Cohen's  $d$  for this study was .66, which can be interpreted as a medium to large effect size (Cohen, 1977). Thus, participants moderately endorsed fat stereotypes using the implicit measure.



Table 3

*Descriptive Statistics for All Variables (N = 300)*

Variable	N	Range	M	SD
Age	300	17 - 39	20.48	3.07
MCSDS-C	300	0.00 – 13.00	5.29	2.84
RSES	300	0.00 – 30.00	20.56	5.46
BDI-II	300	0.00 – 55.00	13.12	10.68
BMI	296	18.00 – 24.90	21.32	1.67
SATAQ-IG	300	1.00 – 5.00	3.20	0.98
OPTSneg	300	0.00 – 97.30	60.04	14.78
OPTSpos	300	13.90 – 100.00	60.09	12.31
APTSneg	300	0.00 – 76.50	47.04	11.01
APTSpos	300	10.90 – 100.00	61.77	11.86
OBCSS	300	1.13 – 7.00	4.77	1.11
W-IAT	293	-0.73 – 1.41	0.62	0.38
EDI-BD	300	9.00 – 54.00	30.56	9.79

*Note:* MCSDS-C = Marlowe Crowne Social Desirability Scale Form C; RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OPTSneg = Obese Persons Trait Survey negative traits; OPTSpos = Obese Persons Trait Survey positive traits; APTSneg = Average-Weight Persons Trait Survey negative traits; APTSpos = Average-Weight Persons Trait Survey positive traits; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; W-IAT = Weight Implicit Associations Test; EDI-BD = Eating Disorders Inventory 2 Body Dissatisfaction subscale

## Main Analyses

As mentioned above, hierarchical multiple regressions were conducted to assess for potential moderation effects based on methods described by Cohen et al. (2003). All planned covariates were entered into the regression analyses. Covariates that were significant were retained in the final model, and were entered in the first step. Internalization of thin ideals was entered in the second step to ensure that any effects of fat stereotypes occurred above and beyond the effect of thin ideals. Then, the main predictor variable (explicit fat stereotypes or implicit fat stereotypes, depending on the model) and the moderator variable (body surveillance) were entered in the third step. Finally, the interaction term was entered in the fourth step. To avoid problems of multicollinearity between the interaction term and the predictor and moderator variables, all continuous variables were centred prior to calculating the interaction term (Cohen et al., 2003). The criterion variable was body dissatisfaction.

**Explicit fat stereotypes.** The first regression analysis examined the interaction between explicit fat stereotype endorsement and body surveillance on body dissatisfaction. Although four outliers were identified, their removal did not impact the results of the final model. Because the model was robust to these outliers, they were retained in the final analysis (Tabachnick & Fidell, 2007). After removing the initial multivariate outlier described above and the four participants who did not report weight and height, the total  $N$  for this regression analysis was 296.

Age and the MCSDS-C did not significantly contribute to the model and were removed from the regression. Thus, Step 1 of this hierarchical regression included three covariates, the BDI-II, RSES, and BMI.

Table 4 provides a summary of the final model. Step 1 of the model was significant,  $F(3, 292) = 44.34, p < .001$ , accounting for 31.28% of the variance in body dissatisfaction. All covariates included in this step significantly contributed to the model (all  $ps < .001$ ). Adding internalization of thin ideals in Step 2 significantly improved the prediction of body dissatisfaction,  $F_{change}(4, 291) = 65.63, p < .001$ , accounting for an additional 12.64% of the variance in body dissatisfaction. Again, all predictors in this step significantly contributed to the model (all  $ps < .01$ ). In Step 3, adding explicit endorsement of fat stereotypes and body surveillance significantly improved the prediction of body dissatisfaction,  $F_{change}(6, 289) = 10.97, p < .001$ , accounting for an additional 3.96% of the variance. An examination of the model showed that the increase in prediction in Step 3 was completely accounted for by body surveillance,  $\beta = .25, t(295) = 4.68, p < .001$ . The squared partial correlation for body surveillance was .065, which is defined by Cohen (1988) as a small effect size. Contrary to the hypothesis, explicit endorsement of fat stereotypes did not significantly contribute to the model,  $\beta = -.01, t(295) = -0.34, p = .736$ . The squared partial correlation for explicit fat stereotypes was less than .001. The remaining predictors in this step significantly contributed to the model (all  $ps < .01$ ). Finally, adding the interaction term in Step 4 did not significantly improve the prediction of body dissatisfaction,  $F_{change} (7, 288) = 1.63, p = .205$ , accounting for only an additional 0.30% of the variance. The squared partial correlation for the interaction was .006. The complete model accounted for 46.94% of the variance in body dissatisfaction.

Table 4

*Final Hierarchical Regression Model for Explicit Fat Stereotypes (N = 296)*

Step	R	R <sup>2</sup>	R <sup>2</sup> change	Variables Entered	b	SE b	β	t	p-value
1	.56	.31	.31	Constant	30.62	0.47	-	64.63	.000
				RSES	-0.36	0.11	-0.20	-3.29	.001
				BDI-II	0.27	0.06	0.29	4.79	.000
				BMI	1.92	0.29	0.33	6.71	.000
2	.66	.44	.13	Constant	30.59	0.43	-	71.34	.000
				RSES	-0.27	0.10	-0.15	-2.64	.008
				BDI-II	0.20	0.05	0.22	3.89	.000
				BMI	1.65	0.26	0.28	6.33	.000
				SATAQ-IG	3.78	0.47	0.38	8.10	.000
3	.69	.48	.04	Constant	30.59	0.42	-	73.74	.000
				RSES	-0.26	0.10	-0.14	-2.61	.009
				BDI-II	0.16	0.05	0.18	3.27	.001
				BMI	1.57	0.25	0.27	6.18	.000
				SATAQ-IG	2.43	0.54	0.24	4.52	.000
				OPTSneg	-0.01	0.03	-0.01	-0.34	.736
4	.69	.48	.003	Constant	30.63	0.42	-	73.76	.000
				RSES	-0.27	0.10	-0.15	-2.71	.007
				BDI-II	0.16	0.05	0.18	3.21	.001
				BMI	1.60	0.25	0.27	6.29	.000
				SATAQ-IG	2.45	0.54	0.24	4.56	.000
				OPTSneg	-0.002	0.03	-0.004	-0.08	.937
				OPTSnegxOBCSS	-0.03	0.03	-0.06	-1.27	.204

*Note:* RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; OPTSneg = Obese Persons Trait Survey negative traits; OPTSnegxOBCSS = interaction between Obese Persons Trait Survey negative traits and Objectified Body Consciousness Scale Surveillance Subscale

Courville and Thompson (2001) recommend examining structure coefficients of predictors in addition to their regression coefficients ( $\beta$ -weights). Structure coefficients are bivariate correlations between the predictor variable and the predicted outcome variable. Regression coefficients are highly dependent on the entire set of predictors included in the regression model, and can have a directional sign opposite to the that of the zero-order correlation between the predictor and criterion variables (Courville & Thompson, 2001). Structure coefficients may provide additional information in such cases, presenting more accurate relationships between predictor variables and predicted outcome scores. They also can be used to assess for potential suppressor variables. These are variables that significantly contribute to the predictive model, not because they are related to the criterion variable but because they remove extraneous variance from other predictors that are related to the criterion variable (Courville & Thompson, 2001). Suppressor variables will have a significant regression coefficient but a non-significant structure coefficient (Courville & Thompson, 2001). Accordingly, examination of structure coefficients can provide a more accurate interpretation of results. As presented in Table 5, structure coefficients were examined for all variables included in the final model. The directional signs for all significant regression coefficients were the same as those for the corresponding structure coefficients. Additionally, all predictor variables that significantly contributed to the final model also were significantly correlated with the predicted outcome. Thus, no suppressor variables were present in the final model.

Table 5

*Regression Coefficients and Structure Coefficients for Explicit Fat Stereotypes Model (N = 296)*

Variables	Regression Coefficient	p-value	Structure Coefficient	p-value
RSES	-0.15	.007	-0.58	.000
BDI-II	0.18	.001	0.60	.000
BMI	0.27	.000	0.48	.000
SATAQ-IG	0.24	.000	0.75	.000
OPTSneg	0.00	.937	0.04	.498
OBCSS	0.24	.000	0.76	.000
OPTSnegxOBCSS	-0.06	.204	-0.100	.090

*Note:* RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; OPTSneg = Obese Persons Trait Survey negative traits; OPTSnegxOBCSS = interaction between Obese Persons Trait Survey negative traits and Objectified Body Consciousness Scale Surveillance Subscale

**Implicit fat stereotypes.** The second regression examined the interaction between implicit fat stereotype endorsement and body surveillance. One residual outlier and an additional three multivariate outliers were excluded from the final analyses because their removal altered the results of the final model (Tabachnick & Fidell, 2007). Eight participants were removed from the analyses because they did not follow the link to the W-IAT and therefore, their implicit data were missing. After removing five outliers, eight participants with missing implicit data, and four participants who did not report weight and height (one of whom also was missing implicit data), the total  $N$  for this regression analysis was 285.

Age and the MCSDS-C did not significantly contribute to the model and were removed from the regression. Thus, Step 1 of this hierarchical regression included three covariates, the BDI-II, RSES, and BMI.

Table 6 provides a summary of the final model. Step 1 of the model was significant,  $F(3, 281) = 41.46, p < .001$ , accounting for 30.68% of the variance in body dissatisfaction. All predictors in this step significantly contributed to the model (all  $ps < .001$ ). Adding internalization of thin ideals in Step 2 significantly improved the prediction of body dissatisfaction,  $F_{\text{change}}(2, 280) = 70.65, p < .001$ , accounting for an additional 13.96% of the variance in body dissatisfaction. Again, all predictors in this step significantly contributed to the model (all  $ps < .01$ ). In Step 3, adding implicit endorsement of fat stereotypes and body surveillance significantly improved the prediction of body dissatisfaction,  $F_{\text{change}}(6, 278) = 12.13, p < .001$ , accounting for an additional 4.44% of the variance. An examination of the model showed that this increase in prediction in Step 3 was completely accounted for by body surveillance,  $\beta = .26, t(284)$

= 4.90,  $p < .001$ . The squared partial correlation for body surveillance was .075, which is defined by Cohen (1988) as a small effect size. Contrary to the hypothesis, implicit endorsement of fat stereotypes did not significantly contribute to the model,  $\beta = -.03$ ,  $t(284) = -0.78$ ,  $p = .436$ . The squared partial correlation for implicit fat stereotypes was less than .001. The remaining predictors in this step significantly contributed to the model (all  $ps < .05$ ). Finally, adding the interaction term in Step 4 did not significantly improve the prediction of body dissatisfaction,  $F_{change}(7, 277) = .90$ ,  $p = .343$ , accounting for only an additional 0.02% of the variance. The squared partial correlation for the interaction was less than .001. The complete model accounted for 49.26% of the variance in body dissatisfaction.

Structure coefficients were examined for all variables included in the final model. As presented in Table 7, the directional signs for all significant regression coefficients were the same as those for the corresponding structure coefficients. Additionally, all predictor variables that significantly contributed to the final model also were significantly correlated with the predicted outcome. Thus, no suppressor variables were present in the final model.



Table 6

*Final Hierarchical Regression Model for Implicit Fat Stereotypes (N = 285)*

Step	R	R <sup>2</sup>	R <sup>2</sup> change	Variables Entered	b	SE b	β	t	p-value
1	.55	.31	.31	Constant	30.48	0.49	-	62.79	.000
				RSES	-0.42	0.12	-0.23	-3.50	.000
				BDI-II	0.24	0.06	0.26	3.96	.000
				BMI	1.90	0.29	0.32	6.51	.000
2	.67	.45	.14	Constant	30.50	0.44	-	70.15	.000
				RSES	-0.28	0.11	-0.16	-2.62	.009
				BDI-II	0.18	0.05	0.20	3.34	.001
				BMI	1.60	0.26	0.27	6.08	.000
				SATAQ-IG	4.03	0.48	0.40	8.40	.000
3	.70	.49	.04	Constant	30.48	0.42	-	72.85	.000
				RSES	-0.26	0.10	-0.14	-2.48	.013
				BDI-II	0.15	0.05	0.16	2.80	.005
				BMI	1.49	0.26	0.25	5.83	.000
				SATAQ-IG	2.65	0.54	0.26	4.88	.000
				W-IAT	-0.90	1.15	-0.03	-0.78	.436
				OBCSS	2.34	0.48	0.26	4.90	.000
4	.70	.49	.002	Constant	30.50	0.42	-	72.80	.000
				RSES	-0.26	0.10	-0.14	-2.50	.012
				BDI-II	0.15	0.05	0.16	2.76	.006
				BMI	1.49	0.26	0.25	5.84	.000
				SATAQ-IG	2.64	0.54	0.26	4.88	.000
				W-IAT	-0.97	1.15	-0.04	-0.84	.401
				OBCSS	2.33	0.48	0.26	4.87	.000
W-IATxOBCSS	-1.01	1.06	-0.04	-0.95	.342				

*Note:* RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; W-IAT = Weight Implicit Associations Test; W-IATxOBCSS = interaction between Weight Implicit Associations Test and Objectified Body Consciousness Scale Surveillance Subscale

Table 7

*Regression Coefficients and Structure Coefficients for Implicit Fat Stereotypes Model (N = 285)*

Variables	Regression Coefficient	p-value	Structure Coefficient	p-value
RSES	-0.14	.012	-0.58	.000
BDI-II	0.16	.006	0.58	.000
BMI	0.25	.000	0.48	.000
SATAQ-IG	0.26	.000	0.76	.000
W-IAT	-0.04	.401	-0.06	.298
OBCSS	0.26	.000	0.77	.000
W-IATxOBCSS	-0.04	.342	-0.10	.110

*Note:* RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; W-IAT = Weight Implicit Associations Test; W-IATxOBCSS = interaction between Weight Implicit Associations Test and Objectified Body Consciousness Scale Surveillance Subscale

### Post-Hoc Analyses: Caucasian Only

Racial and ethnic differences in body image have been documented thoroughly in the literature. Caucasians consistently have reported more negative body image evaluations than have African Americans (Roberts, Cash, Feingold, & Johnson, 2006) and Asian Americans (Akan & Grilo, 1995). Given these differences in body image, the main analyses were repeated on Caucasian participants only ( $N = 225$ ). These post-hoc analyses could not be conducted on other groups because of limited sample sizes.

All data preparation steps presented for the main analyses were repeated for the Caucasian-only sample. Independent sample  $t$ -tests showed no significant differences across the study versions for any of the measures (all  $ps > .179$ ; see Table 8), and correlations between all possible variable pairings were in the same direction for both versions. Further, study version and W-IAT version did not interact to influence W-IAT scores ( $p = .485$ ). Thus, data from both study versions were merged and all subsequent analyses were conducted on the complete Caucasian-only data set. Cronbach's alpha coefficients for all measures ranged from .68 to .94 (see Table 10). For the MCSDS-C, the KR-20 coefficient was calculated. Although the MCSDS-C was below the threshold for acceptable reliability ( $r_{KR-20} = .68$ ), it was not included as a covariate in the regression analyses because it was not significant ( $p = .638$ ) and thus was not a cause for concern. Cronbach's alpha coefficients for all other measures indicated good to excellent reliability.

Table 8

*Mean Differences across Study Versions for All Variables for Caucasian-Only Sample (N = 224)*

Variable	<i>M</i> difference	<i>t</i>	<i>p</i> -value
Age	-0.44	-1.07	0.287
MCSDS-C	0.21	0.58	0.565
RSES	-0.72	-1.03	0.304
BDI-II	1.62	1.18	0.238
BMI	-0.46	-1.13	0.261
SATAQ-IG	-0.11	-0.86	0.388
OPTSneg	2.20	1.09	0.278
OPTSpos	2.13	1.34	0.180
APTSneg	0.18	0.13	0.899
APTSpos	1.25	0.83	0.406
OBCSS	-0.08	-0.56	0.577
W-IAT	0.03	0.643	0.520
EDI-BD	-1.23	-0.973	0.330

*Note:* MCSDS-C = Marlowe Crowne Social Desirability Scale Form C; RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OPTSneg = Obese Persons Trait Survey negative traits; OPTSpos = Obese Persons Trait Survey positive traits; APTSneg = Average-Weight Persons Trait Survey negative traits; APTSpos = Average-Weight Persons Trait Survey positive traits; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; W-IAT = Weight Implicit Associations Test; EDI-BD = Eating Disorders Inventory 2 Body Dissatisfaction subscale

**Assumptions of multiple regression.** The assumption of the absence of multicollinearity was satisfied. None of the variables had correlations above  $|.64|$  (see Table 9 for all zero-order correlations), and none of the VIF values approached the cut-off of 10 (Cohen et al., 2003). The assumption of independence of errors also was satisfied. The Durbin-Watson value for the third regression assessing the interaction between explicit endorsement of fat stereotypes and body surveillance was 1.86, and for the fourth regression assessing the interaction between implicit endorsement of fat stereotypes and body surveillance was 1.94, which were close to the acceptable value of 2 (Cohen et al., 2003).

Table 9

*Zero-Order Correlations Between All Variables for Caucasian-Only Sample (N = 224)*

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Age	-												
2. MCSDS	-.07	-											
3. RSES	-.10	.23**	-										
4. BDI-II	.05	-.25**	-.64**	-									
5. BMI	.07	.01	-.01	-.03	-								
6. SATAQ-IG	.02	-.36**	-.29**	.28**	.05	-							
7. OPTSneg	-.08	-.14*	.04	-.04	.10	.13 <sup>a</sup>	-						
8. OPTSpos	.01	.08	-.04	.02	-.05	-.07	-.08	-					
9. APTSneg	.00	-.10	-.02	.09	.03	-.04	.24**	.06	-				
10. APTSpos	-.02	.12 <sup>a</sup>	.08	-.05	.02	-.05	.18**	.64**	-.16*	-			
11. OBCSS	.01	-.30**	-.31**	.28**	.07	.56**	.06	-.05	-.04	.00	-		
12. W-IAT	.06	-.09	.02	-.05	-.06	.04	.12 <sup>a</sup>	-.02	.01	.01	.04	-	
13. EDI-BD	-.05	-.25**	-.38**	.37**	.31**	.52**	.06	.03	-.02	.03	.48**	-.07	-

*Note:* \*  $p < .05$ , \*\*  $p < .01$ , <sup>a</sup> denotes  $p < .10$ ; MCSDS-C = Marlowe Crowne Social Desirability Scale Form C; RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OPTSneg = Obese Persons Trait Survey negative traits; OPTSpos = Obese Persons Trait Survey positive traits; APTSneg = Average-Weight Persons Trait Survey negative traits; APTSpos = Average-Weight Persons Trait Survey positive traits; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; W-IAT = Weight Implicit Associations Test; EDI-BD = Eating Disorders Inventory 2 Body Dissatisfaction subscale

Next, the assumptions of normally distributed errors, homoscedasticity, and linearity were assessed. For each regression, the scatterplots of standardized residual versus standardized predicted values appeared as a cloud, with an even concentration of scores around the centre. Furthermore, the scatterplot did not appear to have a wave or funnel pattern. Thus, linearity and homoscedasticity were assumed. Additionally, the histograms of standardized residuals approximated the normal curve, and the *SW* statistic for the standardized residuals was not significant,  $SW(224) = .99, p = .671$ . Thus, normal distribution of errors was assumed.

Univariate normality was assessed for each predictor. Based on the *SW* statistic, none of the predictors were normally distributed. Thus, a logarithmic transformation was applied to each predictor. Similarly to the main analyses, these transformations did not reduce the *SW* statistics to non-significance, nor did they significantly change the results of the final regression model. Additionally, bootstrapping was attempted, but did not change the results of the final regression models. Because the use of transformed predictor variables did not impact the final model, and because the assumptions of homoscedasticity, linearity, and normally distributed errors had been satisfied, the non-transformed predictor variables were used in the analyses (Howell, 2007).

Finally, the data were examined for residual outliers, multivariate outliers, and influential cases. Only those outliers impacting the final model were removed from the analyses (Tabachnick & Fidell, 2007). One multivariate outlier was removed from all analyses. Additional outliers were removed from the regression analysis involving implicit endorsement of fat stereotypes, as will be described in the corresponding section

below. After removing outliers in all regression analyses, no influential cases were identified.

**Descriptives.** Means and standard deviations for all variables are presented in Table 10. Two participants reported their subjective weight classification (i.e., normal weight), but did not provide their weight or height. Body mass index could not be calculated for these participants. Because BMI was a significant covariate in all regression analyses, these two participants were excluded in the final analyses.



Table 10

*Descriptive Statistics for All Variables in Caucasian-Only Sample (N = 224)*

Variable	N	Range	M	SD	Cronbach's $\alpha$
Age	224	17 – 39	20.48	3.09	-
MCSDS-C	224	0.00 – 12.00	5.14	2.75	.678 <sup>1</sup>
RSES	224	2.00 – 30.00	20.97	5.29	.902
BDI-II	224	0.00 – 55.00	12.37	10.32	.932
BMI	222	18.00 – 24.90	21.38	1.63	-
SATAQ-IG	224	1.00 – 5.00	3.26	0.94	.935
OPTSneg	224	0.00 – 97.30	59.82	14.68	.884
OPTSpos	224	30.00 – 100.00	61.33	11.73	.884
APTSneg	224	0.00 – 74.50	46.52	10.87	.859
APTSpos	224	27.70 – 100.00	62.63	11.30	.925
OBCSS	224	1.13 – 7.00	4.84	1.08	.859
W-IAT	220	-0.59 – 1.41	0.63	0.36	-
EDI-BD	224	9.00 – 54.00	30.55	9.43	.888

*Note:* <sup>1</sup> denotes a KR-20 value of internal consistency. MCSDS-C = Marlowe Crowne Social Desirability Scale Form C; RSES = Rosenberg Self-Esteem Scale; BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OPTSneg = Obese Persons Trait Survey negative traits; OPTSpos = Obese Persons Trait Survey positive traits; APTSneg = Average-Weight Persons Trait Survey negative traits; APTSpos = Average-Weight Persons Trait Survey positive traits; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; W-IAT = Weight Implicit Associations Test; EDI-BD = Eating Disorders Inventory 2 Body Dissatisfaction subscale

**Exploratory analyses.** All planned covariates were entered into the regression analyses. Covariates that were significant were retained in the final model, and were entered in the first step. Next, internalization of thin ideals was entered in the second step. Then, the main predictor variable (explicit fat stereotypes or implicit fat stereotypes) and the moderator variable (body surveillance) were entered in the third step. Finally, the interaction term was entered in the fourth step. To avoid problems of multicollinearity between the interaction term and the predictor and moderator variables, all continuous variables were centred prior to calculating the interaction term (Cohen et al., 2003).

**Explicit fat stereotypes.** This third regression examined the interaction between explicit fat stereotype endorsement and body surveillance in the Caucasian-only sample. Although one residual outlier was identified, its removal did not change the results of the final model. Because the model was robust to this outlier, the case was retained in the final analysis (Tabachnick & Fidell, 2007). After selecting only Caucasian participants, and removing one multivariate outlier and two participants who did not report BMI, the total  $N$  for this regression analysis was 222.

The MCSDS-C, RSES, and Age did not significantly contribute to the final model and were removed from the regression. Step 1 of this hierarchical regression included two covariates, the BDI-II and BMI.

Table 11 provides a summary of the final model. Step 1 of the model was significant,  $F(2, 219) = 34.76, p < .001$ , accounting for 24.10% of the variance in body dissatisfaction. All covariates significantly contributed to the model (all  $ps < .001$ ). Adding internalization of thin ideals in Step 2 significantly improved the prediction of

body dissatisfaction,  $F_{change}(3, 218) = 61.59, p < .001$ , accounting for an additional 16.70% of the variance. All predictors in this step significantly contributed to the model (all  $ps < .001$ ). In Step 3, adding explicit endorsement of fat stereotypes and body surveillance significantly improved the prediction of body dissatisfaction,  $F_{change}(5, 216) = 6.51, p = .002$ , accounting for an additional 3.38% of the variance. Again, examination of the model showed that this increase in prediction in Step 3 was completely accounted for by body surveillance,  $\beta = .20, t(221) = 3.15, p = .002$ . The squared partial correlation for body surveillance was .045, which is defined by Cohen (1988) as a small effect size. Explicit endorsement of fat stereotypes did not significantly contribute to the model,  $\beta = -.01, t(221) = 0.15, p = .885$ . The squared partial correlation for explicit fat stereotypes was less than .001. The remaining predictors in this step significantly contributed to the model (all  $ps < .001$ ). In contrast to the main analyses conducted on the complete sample, adding the interaction term in the final step significantly improved the prediction of body dissatisfaction,  $F_{change}(6, 215) = 4.61, p = .033$ , accounting for an additional 1.18% of the variance. The interaction between explicit endorsement of fat stereotypes and body surveillance significantly contributed to the model,  $\beta = -.12, t(221) = -2.15, p = .032$ . The squared partial correlation for the interaction was .020, which is defined by Cohen (1988) as a small effect size. The complete model accounted for 45.38% of the variance in body dissatisfaction.

Structure coefficients were examined for all variables included in the final model. As presented in Table 12, the directional signs for all significant regression coefficients were the same as those for the corresponding structure coefficients. Additionally, all predictor variables that significantly contributed to the final model also were significantly

correlated with the predicted outcome. Thus, no suppressor variables were present in the final model.

A simple slopes analysis was conducted to examine the significant interaction (see Figure 1). Contrary to hypotheses, greater explicit endorsement of fat stereotypes was significantly related to greater body dissatisfaction in women who reported lower levels of body surveillance (1 standard deviation below the mean),  $t(221) = 2.32, p = .021$ . In contrast, greater explicit endorsement of fat stereotypes was significantly related to lower body dissatisfaction in participants who reported higher levels of body surveillance (1 standard deviation above the mean),  $t(221) = -2.00, p = .046$ . No significant relationship between explicit endorsement of fat stereotypes and body dissatisfaction was identified in participants with average levels of body surveillance,  $t(221) = 0.16, p = .875$ .

Table 11

*Final Hierarchical Regression Model for Explicit Fat Stereotypes in Caucasian-Only**Sample (N =222)*

Step	R	R <sup>2</sup>	R <sup>2</sup> change	Variables Entered	b	SE b	β	t	p-value
1	.49	.24	.24	Constant	30.64	0.55	-	55.61	.000
				BDI-II	0.35	0.05	.39	6.53	.000
				BMI	1.82	0.34	.32	5.37	.000
2	.64	.41	.17	Constant	30.62	0.49	-	62.78	.000
				BDI-II	0.24	0.05	.26	4.86	.000
				BMI	1.68	0.30	.29	5.58	.000
3	.67	.44	.03	Constant	30.63	0.48	-	64.37	.000
				BDI-II	0.21	0.05	.23	4.29	.000
				BMI	1.63	0.30	.28	5.51	.000
				SATAQ-IG	3.18	0.62	.32	5.12	.000
				OPTSneg	-0.02	0.03	-.03	-0.50	.617
				OBCSS	1.94	0.54	.22	3.56	.000
4	.67	.45	.01	Constant	30.67	0.47	-	64.94	.000
				BDI-II	0.22	0.05	.25	4.55	.000
				BMI	1.68	0.29	.29	5.72	.000
				SATAQ-IG	3.15	0.62	.32	5.11	.000
				OPTSneg	0.01	0.03	.01	0.15	.885
				OBCSS	1.73	0.55	.20	3.15	.002
				OPTSnegxOBCSS	-0.06	0.03	-.12	-2.15	.032

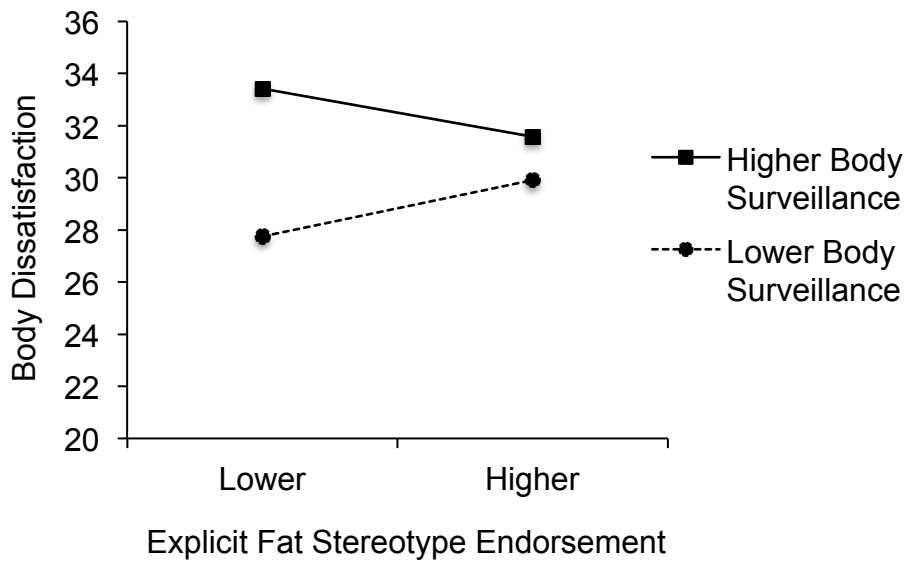
*Note:* BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OPTSneg = Obese Persons Trait Survey negative traits; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; OPTSnegxOBCSS = interaction between Obese Persons Trait Survey negative traits and Objectified Body Consciousness Scale Surveillance Subscale

Table 12

*Regression Coefficients and Structure Coefficients for Explicit Fat Stereotypes Model in Caucasian-Only Sample (N = 222)*

Variables	Regression Coefficient	p-value	Structure Coefficient	p-value
BDI-II	.25	.000	0.55	.000
BMI	.29	.000	0.45	.000
SATAQ-IG	.32	.000	0.75	.000
OPTSneg	.01	.885	0.06	.405
OBCSS	.20	.002	0.70	.000
OPTSnegxOBCSS	-.12	.032	-0.19	.004

*Note:* BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OPTSneg = Obese Persons Trait Survey negative traits; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; OPTSnegxOBCSS = interaction between Obese Persons Trait Survey negative traits and Objectified Body Consciousness Scale Surveillance Subscale



*Figure 1.* The relationship between explicit fat stereotype endorsement and body dissatisfaction at lower and higher levels of body surveillance in the Caucasian-only sample ( $N = 222$ ).

***Implicit fat stereotypes.*** This fourth regression examined the interaction between implicit fat stereotype endorsement and body surveillance in the Caucasian-only sample. An additional three multivariate outliers were identified. These outliers were excluded from the final analyses because their removal impacted the results of the final model (Tabachnick & Fidell, 2007). Although two residual outliers were identified, their removal did not impact the final model. Because the model was robust to these outliers, they were retained in the final analysis (Tabachnick & Fidell, 2007). After selecting for only Caucasian participants, removing four multivariate outliers, removing four participants with missing implicit data, and removing two participants who did not report BMI (one of whom also was missing implicit data), the total  $N$  for this regression analysis was 216.

The MCSDS-C, RSES, and Age did not significantly contribute to the final model and were removed from the regression. Step 1 of this hierarchical regression included two covariates, the BDI-II and BMI.

Table 13 provides a summary of the final model. Step 1 of the model was significant,  $F(2,213) = 32.97, p < .001$ , accounting for 23.64% of the variance in body dissatisfaction. All covariates significantly contributed to the model (all  $ps < .001$ ). Adding internalization of thin ideals in Step 2 significantly improved the prediction of body dissatisfaction,  $F_{\text{change}}(3, 212) = 56.44, p < .001$ , accounting for an additional 16.04% of the variance. All predictors in this step significantly contributed to the model (all  $ps < .001$ ). In Step 3, adding implicit endorsement of fat stereotypes and body surveillance significantly improved the prediction of body dissatisfaction,  $F_{\text{change}}(5, 210) = 7.08, p = .001$ , accounting for an additional 3.80% of the variance. An



examination of the model showed that this increase in prediction in Step 3 was completely accounted for by body surveillance,  $\beta = .23$ ,  $t(215) = 3.59$ ,  $p < .001$ . The squared partial correlation for body surveillance was .057, which is defined by Cohen (1988) as a small effect size. Implicit endorsement of fat stereotypes did not significantly contribute to the model,  $\beta = -.07$ ,  $t(215) = -1.24$ ,  $p = .216$ . The squared partial correlation for implicit fat stereotypes was .008. The remaining predictors in this step significantly contributed to the model (all  $ps < .001$ ). Finally, adding the interaction term in Step 4 did not significantly improve the prediction of body dissatisfaction,  $F_{change}(6, 209) = 2.14$ ,  $p = .145$ , accounting for only an additional 0.68% of the variance. The squared partial correlation for the interaction was .006. Although it was not significant, the interaction reflected a pattern similar to the one found for explicit fat stereotypes (see Figure 2). The complete model accounted for 44.08% of the variance in body dissatisfaction.

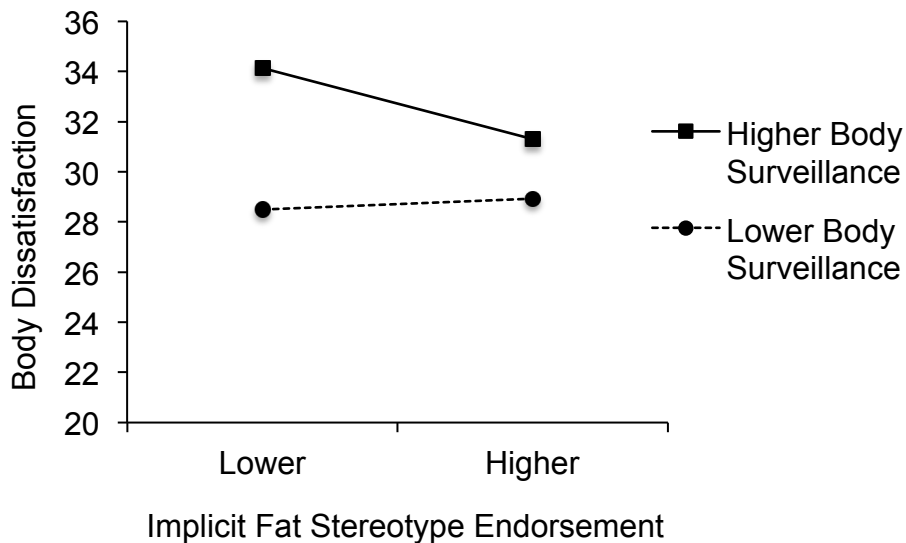
Structure coefficients were examined for all variables included in the final model. As presented in Table 14, the directional signs for all significant regression coefficients were the same as those for the corresponding structure coefficients. Additionally, all predictor variables that significantly contributed to the final model also were significantly correlated with the predicted outcome. Thus, no suppressor variables were present in the final model.

Table 13

*Final Hierarchical Regression Model for Implicit Fat Stereotypes in Caucasian-Only**Sample (N = 216)*

Step	R	R <sup>2</sup>	R <sup>2</sup> change	Variables	b	SE b	β	t	p-value
1	.49	.24	.24	Constant	30.67	0.56	-	55.04	.000
				BDI-II	0.33	0.05	0.37	6.22	.000
				BMI	1.83	0.34	0.32	5.35	.000
2	.63	.40	.16	Constant	30.67	0.50	-	61.78	.000
				BDI-II	0.23	0.05	0.26	4.60	.000
				BMI	1.71	0.30	0.30	5.61	.000
				SATAQ-IG	4.17	0.56	0.42	7.51	.000
3	.66	.44	.04	Constant	30.67	0.48	-	63.53	.000
				BDI-II	0.19	0.05	0.22	3.92	.000
				BMI	1.62	0.30	0.28	5.44	.000
				SATAQ-IG	3.11	0.62	0.31	5.00	.000
				W-IAT	-1.78	1.37	-0.07	-1.31	.192
				OBCSS	1.99	0.55	0.23	3.59	.000
4	.66	.44	.006	Constant	30.73	0.48	-	63.63	.000
				BDI-II	0.20	0.05	0.22	4.03	.000
				BMI	1.59	0.30	0.28	5.34	.000
				SATAQ-IG	3.02	0.62	0.30	4.84	.000
				W-IAT	-1.68	1.36	-0.06	-1.24	.216
				OBCSS	1.87	0.56	0.21	3.35	.001
				W-IATxOBCSS	-2.13	1.46	-0.08	-1.46	.144

*Note:* BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; W-IAT = Weight Implicit Associations Test; W-IATxOBCSS = interaction between Weight Implicit Associations Test and Objectified Body Consciousness Scale Surveillance Subscale



*Figure 2.* The relationship between implicit fat stereotype endorsement and body dissatisfaction at lower and higher levels of body surveillance in the Caucasian-only sample ( $N = 216$ ). This interaction was not significant in the final regression model.

Table 14

*Regression Coefficients and Structure Coefficients for Implicit Fat Stereotypes Model in Caucasian-Only Sample (N = 216)*

Variables	Regression Coefficient	p-value	Structure Coefficient	p-value
BDI-II	0.22	.000	0.55	.000
BMI	0.28	.000	0.47	.000
SATAQ-IG	0.30	.000	0.76	.000
W-IAT	-0.06	.216	-0.09	.173
OBCSS	0.21	.001	0.71	.000
W-IATxOBCSS	-0.08	.144	-0.32	.000

*Note:* BDI-II = Beck Depression Inventory-II; BMI = Body Mass Index; SATAQ-IG = Sociocultural Attitudes Towards Appearance Scale-3 Internalization General subscale; OBCSS = Objectified Body Consciousness Scale Surveillance Subscale; W-IAT = Weight Implicit Associations Test; W-IATxOBCSS = interaction between Weight Implicit Associations Test and Objectified Body Consciousness Scale Surveillance Subscale

## Chapter 4: Discussion

### Hypothesis 1

The first hypothesis of this study was that normal weight women would display a positive relationship between explicit endorsement of fat stereotypes and body dissatisfaction. This hypothesis was not supported. Explicit endorsement of fat stereotypes was unrelated to body dissatisfaction in this sample. Further, post-hoc analyses examining Caucasian participants only also failed to show a relationship between explicit fat stereotypes and body dissatisfaction.

One goal of this study was to extend the scarce literature examining the relationship between explicit endorsement of fat stereotypes and body dissatisfaction in normal weight women. Past research investigating this relationship has focused on overweight and obese individuals. As outlined above, this research has shown that in overweight and obese samples, greater explicit endorsement of fat stereotypes is related to greater body dissatisfaction, body image distress, and body shape concerns (Carels et al., 2010; Durso & Latner, 2009; Friedman et al., 2005). Thus, higher endorsement of negative stereotypes about their in-group appears to contribute to negative body image in overweight or obese individuals. However the results of the current study suggest that in normal weight women, explicit endorsement of fat stereotypes is not related to body dissatisfaction. One possible explanation is that because fat stereotyping in this normal weight sample was directed toward members of an out-group (i.e., obese individuals), these women personally were unaffected by their stereotyping. Another possible explanation, however, could be related to the stereotypes assessed by the explicit measure used in the study. This will be expanded upon below.

Another goal of this study was to extend the limited research focused on the relationship between specific fat stereotypes and body image in predominantly normal weight samples. These past studies have found positive relationships between believing that weight is completely controllable and body dissatisfaction (Laliberte et al., 2007), and between believing that fat is due to a lack of willpower and body image disturbance (O'Brien et al., 2007). To build upon this research, the current study examined the relationship between endorsing fat stereotypes in general (i.e., lazy, lacking willpower, unclean, undisciplined, etc.) and body dissatisfaction. However, it is possible that certain fat stereotypes are associated with body dissatisfaction more strongly than are other fat stereotypes. For example, the specific stereotypes of lacking willpower and weight controllability may have been related to body dissatisfaction in normal weight individuals because they qualitatively are associated with weight and body image, and could be perceived as causing weight gain. Other stereotypes assessed in the current study, such as uncleanliness, qualitatively appear to be less associated with weight and body image and could have diluted the effects of the specific stereotypes described above. Because this body of research is very limited, additional studies are needed to replicate and examine the relationships between specific versus general fat stereotypes and body dissatisfaction in normal weight women.

## **Hypothesis 2**

The second hypothesis of this study was that normal weight women would display a positive relationship between implicit endorsement of fat stereotypes and body dissatisfaction. This hypothesis was not supported. Implicit endorsement of fat stereotypes was unrelated to body dissatisfaction. Further, post-hoc analyses examining

only Caucasian participants also failed to observe a relationship between implicit fat stereotypes and body dissatisfaction.

As for explicit endorsement of fat stereotypes, another goal of the study was to extend the limited research examining the relationship between implicit endorsement of fat stereotypes and body dissatisfaction in normal weight women. Previous studies have shown an association between greater implicit endorsement of fat stereotypes and body image disturbances in overweight and obese samples (e.g., Carels et al., 2010). However, past research investigating this relationship in predominantly normal weight samples is limited. O'Brien et al. (2007) reported a positive but not significant relationship between implicit fat stereotypes and body image disturbance in female undergraduates. In contrast, O'Brien et al. (2006) found that greater implicit endorsement of the fat stereotype of laziness, as well as greater implicit endorsement of fat stereotypes in general, was significantly related to more negative feelings toward one's own body in a predominantly normal weight sample of upper year physical education students. However, no relationship between implicit fat stereotyping and body image was observed in psychology students, or in first year physical education students (O'Brien et al., 2006). In the current study, a negative but non-significant relationship between implicit fat stereotypes and body dissatisfaction in normal weight female undergraduate students was observed such that participants with greater implicit fat stereotypes reported lower body dissatisfaction, the reverse of what was hypothesized. Again, it is possible that specific fat stereotypes (e.g., laziness) are more closely associated with body image in normal weight individuals than are some of the other fat stereotypes assessed in this study (e.g., stupid) using the implicit measure. Thus, as may have been the case for explicit fat

stereotypes, assessing general implicit fat stereotypes in the current study may have diluted possible relationships between specific fat stereotypes and body dissatisfaction. Further, past findings seem to indicate that sample characteristics influence the extent to which implicit fat stereotypes are related to body dissatisfaction. About 60% of participants in the current study were psychology majors. Based on sample considerations of the O'Brien et al. (2006) study, assessing undergraduate students of academic backgrounds such as physical education or kinesiology could result in a significant relationship between implicit fat stereotyping and body dissatisfaction that is absent in other, potentially less body-focussed, samples. Given the scarce literature reporting on implicit fat stereotyping and body image in normal weight people, further research is needed to clarify this relationship in specific sub-groups.

### **Hypothesis 3**

The third hypothesis of this study was that normal weight women would display a positive relationship between body surveillance and body dissatisfaction. This hypothesis was supported. Participants with a greater tendency to examine and monitor their body also reported more body dissatisfaction. Further, post-hoc analyses examining only Caucasian participants revealed the same positive relationship between body surveillance and body dissatisfaction.

These results are consistent with previous findings demonstrating similar relationships between body surveillance and various indices of negative body image (see introduction section; McKinley & Hyde, 1996; Mercurio & Rima, 2011). Further, past research has found evidence for this relationship across normal weight, overweight, and obese weight groups (Frederick et al., 2007), and in both Caucasian and African



American women (Fitzsimmons & Bardone-Cone, 2011). Thus, the results of the current study strengthen the conclusion that in general, body surveillance is significantly associated with body dissatisfaction in normal weight women. As explained above, body surveillance is believed to increase body dissatisfaction because it promotes an awareness of the discrepancy between one's own body and internalized cultural standards of attractiveness (McKinley & Hyde, 1996).

#### **Hypothesis 4**

The fourth hypothesis of this study was that body surveillance would moderate the relationship between explicit endorsement of fat stereotypes and body dissatisfaction in normal weight women. It was predicted that the positive relationship between explicit fat stereotypes and body dissatisfaction would be more pronounced in women with higher body surveillance than in women with lower body surveillance. Specifically, women higher both in fat stereotype endorsement and in body surveillance were expected to have the highest body dissatisfaction. This hypothesis was not supported in the complete normal weight sample. However, sub-analyses examining only Caucasian participants found that body surveillance moderated the relationship between explicit fat stereotype endorsement and body dissatisfaction, even after accounting for internalized thin ideals. Interestingly, the moderated effect was not in the predicted direction. Higher explicit endorsement of fat stereotypes predicted higher body dissatisfaction in Caucasian women with *lower* levels of body surveillance. In contrast, higher explicit endorsement of fat stereotypes predicted lower body dissatisfaction in Caucasian women with *higher* levels of body surveillance. These results suggest that, paradoxically, greater endorsement of

fat stereotypes might serve as a buffer protecting against body dissatisfaction for women with higher body surveillance.

These findings may be explained using extensions of the social comparison theory (Festinger, 1954). Briefly, this theory states that people compare themselves to others in order to evaluate themselves (Festinger, 1954). Wills (1981) extended this theory by positing that comparing oneself to a less fortunate other, termed downward comparison, can increase one's subjective well-being. Of particular relevance to the current study is Wills' (1981) proposition that "downward comparison can be achieved through active derogation of another person, thereby increasing the psychological distance between the self and the other" (p. 246). Conversely, comparing oneself to more fortunate others, termed upward comparisons, can decrease subjective well-being when the comparison promotes the contrast between oneself and the superior others (Collins, 1996). These principles of social comparison have been applied in the area of body image, referred to as physical appearance comparison (Thompson, Heinberg, & Tantleff, 1991). Downward appearance comparisons involve comparing oneself to larger, less attractive people, while upward appearance comparisons involve comparing oneself to thinner, more attractive people (O'Brien et al., 2009). Accordingly, it is possible that normal weight women who have a high tendency to monitor and examine their body, and who also hold negative fat stereotypes, may be more aware of the discrepancy between themselves and obese individuals. Although they may notice parts of their body with which they are dissatisfied (Mercurio & Rima, 2011), their body image could be protected by the fact that their body does not match the negatively stereotyped body of larger individuals. In other words, their higher appearance monitoring may be promoting a contrast between

themselves and the larger people whom they judge negatively through engagement in downward appearance comparisons, thus enhancing their own body satisfaction. In contrast, normal weight women who have a high tendency to monitor their body but who do not hold negative fat stereotypes may be less aware of, and therefore less protected by, the discrepancy between themselves and obese individuals. These women may be less likely to engage in downward appearance comparison, and may instead be acutely focused on aspects of their own body with which they are dissatisfied. Moreover, they also may be more likely to engage in upward appearance comparison with superior (i.e., thin, beautiful) others. This seems particularly likely, given that in the current study those participants who reported higher body surveillance also strongly internalized the thin ideal.

Normal weight women with lower levels of body surveillance, however, seem to be affected negatively by holding fat stereotypes. Because they monitor and examine their body to a lesser extent, these women may be less aware of the discrepancy between themselves and the obese individuals whom they judge negatively. They may be less likely to engage in downward comparisons, thus offering less protection from the effects of their fat stereotypes, generating dissatisfaction with their own body.

Past research seems to support this possible explanation for the moderated effect found in the current study. Fitzsimmons-Craft et al. (2012) examined the relationships between internalization of the thin ideal, body dissatisfaction, social comparison, and body surveillance in undergraduate women. These researchers found a significant positive relationship between body surveillance and the tendency to engage in physical appearance comparisons ( $r = .60, p < .001$ ). However, the measure of physical

appearance comparisons did not distinguish between upward or downward comparisons and instead assessed physical appearance comparisons in general. Thus, it is difficult to determine whether one or both directions of comparisons were related to body surveillance. However, O'Brien et al. (2009) examined both upward and downward appearance comparisons, body image, and anti-fat attitudes in undergraduate men and women across all BMI categories. The tendency to engage in upward appearance comparisons was related to more negative body image, while the tendency to engage in downward appearance comparisons was related both to greater anti-fat attitudes as well as to more positive body image in their sample. Taken together, the results of these two studies suggest that individuals who report high levels of body surveillance are more likely to engage in physical appearance comparisons, and when those comparisons occur in the downward direction, they hold more negative evaluations toward obese individuals and are more satisfied with their own body. Alternatively, when the comparisons occur in an upward direction, they may be less satisfied with their body. These past findings support that in the current study, different appearance comparison processes may have influenced body dissatisfaction depending on levels of fat stereotype endorsement and body surveillance. These potential processes are briefly summarized below.

**Higher body surveillance and higher fat stereotypes.** The results of past research described above suggest that in the current study, normal weight women with higher body surveillance who strongly endorsed fat stereotypes were more likely to engage in downward appearance comparisons to larger, less attractive people. This likely promoted the discrepancy between themselves and obese individuals whom they judge negatively, thus protecting their own body image.

**Higher body surveillance and lower fat stereotypes.** Normal weight women with higher body surveillance who endorsed less fat stereotypes, however, may have been less likely to engage in downward appearance comparisons. Rather, they may have been primed to engage in upward appearance comparisons to thinner, more attractive people because of the assessment of their internalized thin ideals, thus reporting that they were less satisfied with their body.

**Lower body surveillance and higher fat stereotypes.** Normal weight women with lower levels of body surveillance may have been unprotected against body dissatisfaction when they endorsed fat stereotypes because they were less likely to engage in downward appearance comparison. Thus, they may have been less aware of the discrepancy between themselves and the obese individuals whom they judge negatively, increasing their body dissatisfaction.

**Lower body surveillance and lower fat stereotypes.** Finally, normal weight women with lower levels of body surveillance and lower endorsement of fat stereotypes appear least concerned about body image. Although they may have been less likely to engage in downward appearance comparison, and perhaps were less aware of the discrepancy between themselves and obese individuals, this did not seem to harm their body satisfaction because they held less negative judgments about obese individuals. Further research directly investigating appearance comparisons, body surveillance, fat stereotypes, and body dissatisfaction is needed to examine these potential explanations.

Interestingly, a new theory presented by Lindner, Tantleff-Dunn, and Jentsch (2012) appears to capture the interpretation described above. The theory integrates self-objectification (i.e., the extent to which women look at their own bodies from the

perspective of an outside observer, often assessed using body surveillance), objectification of others (i.e., the extent to which women notice the appearance of other women), social comparison, and body image disturbances. The theory posits that objectification of others is related to self-objectification, which in turn is related to body image disturbance. Additionally, the theory suggests that self-objectification and objectification of others both contribute to greater social comparison, which in turn contributes to body image disturbances. The researchers compared this new theory to a previous model that they presented based on investigated relationships in the existing literature. The previous model similarly theorized that objectification of others is related to self-objectification, which in turn is related to body image disturbance. Additionally, social comparison separately is related to body image disturbance in this original model. Thus, the new model theorizes two additional paths in comparison to the previous model: objectification of others and social comparison, and self-objectification and social comparison, both of which are related to body image disturbance. The researchers assessed the fit of the new theoretical model over the previous model using structural equation modeling with nested model comparisons, and found support for the new model in a sample of female undergraduate students. Again, the researchers did not distinguish between upward and downward appearance comparisons, but it is likely that engaging in downward comparisons would protect against body image disturbances (O'Brien et al., 2009). Although endorsement of fat stereotypes is not associated directly with the authors' operationalization of objectification of others, logic suggests that holding negative evaluations of obese women implies noticing and possibly focusing on their appearance. If this is true, downward social comparisons could enhance body image in

women who tend to self-objectify and objectify others. This extension of the novel theory could help to explain the results of the current study. However, further research examining the distinction between upward and downward social comparisons, and examining the relationship between fat stereotypes and objectification of others, would be required to test these proposed connections.

### **Hypothesis 5**

The fifth hypothesis of this study was that body surveillance would moderate the relationship between implicit endorsement of fat stereotypes and body dissatisfaction in normal weight women. Specifically, it was predicted that the relationship between implicit fat stereotypes and body dissatisfaction would be more pronounced in women with higher body surveillance than in women with lower body surveillance. This hypothesis was not supported, as no significant interaction was found. Further, post-hoc analyses examining Caucasian participants only did not find a significant interaction. However, visual inspection of the graphed interaction showed that its pattern was similar to the pattern observed for explicit endorsement of fat stereotypes. A post-hoc power analysis indicated that the sample did not have enough power to detect the effect (Observed power = .33). However, a total of 734 Caucasian participants would have been needed to detect the effect at a power of .80.

It is surprising that the moderated effect was not significant using implicit scores, but was significant using explicit scores in Caucasian women. Because the implicit measure assesses associations between fat and negative traits that are outside of conscious awareness, it is possible that implicit fat stereotyping is less directly related to self-reported aspects of body image in normal weight women. Rather, conscious

recognition and endorsement of these fat stereotypes may be required before they become relevant and applicable to self-reported body image in these women. Evidently, further research is required to elucidate the unique relationships between body surveillance, body dissatisfaction, and implicit versus explicit fat stereotyping in normal weight women. A more detailed analysis of implicit compared to explicit fat stereotyping is presented below.

### **Implicit versus Explicit Endorsement of Fat Stereotypes**

In the current study, fat stereotypes were endorsed on both the explicit and implicit measures. While moderate to strong levels of implicit endorsement were expected based on past research (e.g., Roddy et al., 2009; Teachman & Brownell, 2001), the extent to which fat stereotypes would be endorsed explicitly was unclear due to inconsistent findings in the literature (e.g., Greenleaf et al., 2004; Teachman et al., 2003). Some researchers have proposed that weight-bias is one of the last acceptable forms of bias in modern society (Puhl & Brownell, 2001), while others have suggested that social desirability now is influencing explicit fat stereotyping (Teachman & Brownell, 2001). The results of the current study appear to confirm the former proposition, given that strong explicit endorsement of fat stereotypes was observed. However, because participants completed the survey online without a researcher present, they may have been more inclined to express their fat stereotypes because they felt their responses were anonymous. Nevertheless, the results of this study suggest that normal weight women hold negative stereotypical beliefs about obese people, and that they are willing to express these beliefs in an online questionnaire format.



Scores on the explicit and implicit measures of fat stereotypes were weakly related for the full sample, and unrelated but approaching significance in the Caucasian-only subsample. In general, this is consistent with past studies examining the relationship between implicit and explicit weight bias. These studies have found either no relationship (e.g., Carels et al., 2010; Teachman & Brownell, 2001), or weak to moderate relationships (e.g., Brochu & Morrison, 2007; Teachman, Gapinski, Brownell, Rawlins, & Jeyaram, 2003) between implicit and explicit weight bias. A meta-analysis conducted by Hofmann, Gawronski, Gschwendner, Le, and Schmitt (2005) found that across various domains, implicit and explicit measures of stereotypes and prejudice tend to be weak but positively related. Hofmann et al. (2005) suggested various reasons to explain why the two types of measures may be only weakly correlated, including motivational biases in explicit measures, lack of cognitive access to implicit representations, and differential factors influencing the retrieval of information on the two types of measures. Because participants in the current study expressed fat stereotypes on the explicit measure, the weak relationship between the implicit and explicit measure cannot be explained by a lack of awareness of implicit stereotypes, or by motivational biases against expressing one's stereotypes. Rather, the absence of a relationship between the implicit and explicit measures could be reflective of dual process models of memory, which suggest that different processes are used to retrieve information for the two types of measures (Hofmann et al., 2005; Wilson, Lindsey, & Schooler, 2000). Implicit attitudes are theorized to be representative of the automatic memory system, given that they occur automatically and without great cognitive effort in response to relevant stimuli (Hofman et al., 2005; Wilson et al; 2000). Explicit attitudes are theorized to be representative of

the effortful reflective memory system, resulting from a process of retrieving information from memory followed by reflecting upon that information (Hofman et al., 2005; Wilson et al., 2000). These two memory processes are considered to be distinct (Hofman et al., 2005; Wilson et al., 2000). Thus, although the two measures address an underlying construct (i.e., fat stereotypes), the cognitive processes used to respond to the measures are distinct, potentially explaining the weak relationship (Hoffman et al., 2005).

In the current study, stereotype endorsement on the explicit measure was somewhat stronger than on the implicit measure. One possible source of this discrepancy could be the different memory processes underlying explicit and implicit stereotyping, described above. Because people are required to retrieve and reflect upon stimulus-relevant information when completing explicit measures (Wilson et al., 2000), it is possible that the resulting heightened awareness of their automatic negative stereotypes strengthened these beliefs upon reflection. Given the extent of weight-based prejudice and derogation in modern society (Puhl & Heuer, 2009), it is possible that participants considered and agreed with prevalent anti-fat messages upon reflection, thus promoting explicit fat stereotyping.

Another possible source of the discrepancy could be the method through which the difference scores were obtained as an indicator of stereotype endorsement. For the explicit measure, endorsement of negative traits associated with obese persons is compared to endorsement of negative traits associated with normal weight persons as an indicator of the strength of fat stereotype endorsement. For the implicit measure, however, the speed of categorizing obese images and negative traits together is compared to the speed of categorizing both obese images with positive traits and thin images with

negative traits, according to standard scoring protocols of the IAT. Because it is possible for people to hold beliefs that obese persons possess both negative and positive traits, as was observed on the explicit measure in the current study (see Table 3 above), the effect size for implicit fat stereotypes could be diluted by the comparison of reaction times between obese images combined with negative traits and obese images combined with positive traits.

### **Influence of Race and Ethnicity**

Although racial differences in the predicted effects were not hypothesized, post-hoc analyses on self-identified Caucasian participants were conducted given the existing literature on the influence of race and ethnicity on body image and weight bias. As described above, analyses on self-identified Caucasian participants showed a significant moderation effect, while the main analyses using the complete sample did not. This supports the notion that race does play an important role in body image and weight bias in normal weight women, which will be described briefly below.

Past research has shown evidence for racial and ethnic differences in weight bias. For example, Latner, Stunkard, and Wilson (2005) assessed obesity stigma in African American, Asian, Hispanic, and White college students. They found that compared to visible disabilities, such as being in a wheelchair or missing a hand, obesity was stigmatized strongly across all groups. However, both African American and Asian women reported greater liking for obese individuals than did White women. In contrast, no difference in liking for obese individuals was observed between Hispanic and White women. Further, Hebl, King, and Perkins (2009) reported similar findings between Black and White women. These researchers found that Black women self-reported lower anti-

fat attitudes and greater positive attitudes toward pictures of obese individuals than did White women. Additionally, Greenleaf, Chambliss, Rhea, Martin, and Morrow (2006) examined the endorsement of fat stereotypes in White and Hispanic adolescents ranging in age from 11 to 16 years. On an explicit measure of fat stereotypes, no differences in endorsement were reported across the two groups. Further, both Hispanic and White participants reported lower willingness to engage in social, academic, and recreational activities with an obese individual than with a thin individual. These findings suggest that in the current study, the racial and ethnic mix of the complete sample could have increased the variance in fat stereotyping, thus preventing the results from achieving significance. Because of the limited number of non-Caucasian participants in this sample, comparisons between specific racial groups could not be established. However, future research should continue to examine the extent to which weight bias differs across racial and/or ethnic groups. The impact of these potential racial and ethnic differences on various indices of body image also should be examined.

As mentioned earlier, racial differences in body image have been observed. Black women tend to report larger ideal body sizes than do Caucasian women (Powell & Kahn, 1995). Additionally, Black and Asian women also tend to report less body image related concerns than do Caucasian women. For example, Akan and Grilo (1995) assessed eating attitudes and body image, among other psychological constructs, in African American, Asian American, and Caucasian university students. Caucasians reported greater levels of disordered eating and body dissatisfaction than did Asian Americans and African Americans. In contrast, Asian Americans and African Americans reported similar levels of disordered eating and body dissatisfaction. Interestingly, a history of

weight-related teasing was related to disordered eating and body dissatisfaction both in African Americans and Caucasian Americans, but not in Asian Americans. This suggests that body image-related constructs have unique relationships across races. Indeed, the results of the current study showed that body surveillance moderates the relationship between fat stereotype endorsement and body dissatisfaction in Caucasian normal weight women. However, the analyses did not yield these results when they included all other groups. Future research is required to replicate these findings, and to investigate further the potential influence of race on the relationships between fat stereotypes, body surveillance, and body dissatisfaction.

Recently, some researchers have questioned whether differences in body dissatisfaction between racial and ethnic groups continue to exist. In an attempt to assess this question, Roberts, Cash, Feingold, and Johnson (2006) conducted a meta-analysis of studies from 1966 to 2002 examining body image and race. One observed trend was that differences between Black and White women on measures of weight-satisfaction have diminished over time, with reports of weight satisfaction becoming nearly identical across the two races (e.g., Cash, Morrow, Hrabosky, & Perry, 2004). In contrast, differences between Black and White women on measures of global body image (i.e., measures encompassing aspects of appearance in addition to weight and shape, such as facial features and hair) have increased over time, with Black women reporting more positive body image than are White women. Roberts et al. (2006) concluded that the relationship between race and body image is complex and requires ongoing investigation. Again, because the sample sizes of minority groups in the current study were limited,

differences in body dissatisfaction could not be assessed. However, the current findings support the notion that race continues to play an important role in body image research.

### **Limitations**

One limitation of the current study is the composition of the sample. Over half of the participants were in their third year or above of undergraduate studies, and were majoring in psychology. This represents a very specific sample that is highly educated and familiar with psychological concepts, thus limiting the generalizability of the findings to the normal weight female population. Additionally, the vast majority of the sample was heterosexual, limiting the generalizability of the findings to heterosexual normal weight women.

Additional limitations of the study pertain to the method used. First, the order of questionnaires was not randomized across participants because of the limited capabilities of the online web service. Although the implicit and explicit measures of fat stereotypes were counterbalanced, the order of all other questionnaires was consistent across the two versions of the complete study. Thus, potential order effects of these questionnaires could not be assessed. Another methodological limitation was the use of self-report measures for most constructs of interest. Importantly, an implicit measure of fat stereotypes was used in an effort to circumvent potential problems of method variance with the self-report measure of body dissatisfaction. However, all other measures relied on self-report. The use of other methods, such as peer-reports or behavioural indices, could provide additional information. For example, peer-reports could be used to corroborate participants' self-reporting of their tendency to monitor and examine their body. Alternatively, behavioural indices such as number of smiles, amount of eye

contact, and/or length of conversation directed toward an obese confederate compared to a thin confederate (King, Shapiro, Hebl, Singletary, & Turner, 2006) could be used to provide more information about weight bias in addition to self-reported fat stereotypes.

Another methodological limitation consists of the lack of control over the conditions under which participants completed the study, given that it was conducted online. Participants were encouraged to complete the study alone and in a quiet room to try to mitigate potential difficulties with control; however, the extent to which these suggestions were followed cannot be assessed.

A final limitation of this study is the use of a correlational design. Although a correlational analysis was appropriate, given the limited research on fat stereotyping and body dissatisfaction in normal weight women, directionality cannot be concluded. The analytical design of the study suggests that endorsing fat stereotypes and body surveillance potentially causes body dissatisfaction; however, it also is possible that body dissatisfaction causes both a greater tendency to monitor one's body and stronger fat stereotypes.

### **Implications for Future Research**

The results of this study have several implications for future research examining fat stereotypes, body surveillance, and body dissatisfaction. Possible avenues for future research have been described throughout the discussion: assessing the relationship between specific fat stereotypes and body dissatisfaction in normal weight women, clarifying the relationship between implicit fat stereotypes and body dissatisfaction, assessing the role of appearance comparisons in the effects of fat stereotypes and body surveillance on body dissatisfaction, examining the difference in the relationships

between body dissatisfaction and explicit versus implicit fat stereotyping in women, and continuing to examine racial and ethnic differences in the relationships between weight bias and body image. Some of these suggestions will be expanded upon below.

Although the expression of stereotypical beliefs is condemned in modern society (Dovidio & Gaertner, 2004), the findings suggest that normal weight women still are willing to endorse negative stereotypes associated with overweight and obese individuals consciously and explicitly. However, the inconsistent nature of explicit endorsement in the literature suggests that the social acceptability of fat stereotyping may vary depending on the sample. For example, given past findings, it appears that the racial and ethnic distribution of a sample could affect the extent to which fat stereotypes are endorsed (Hebl et al., 2009; Latner et al., 2005). Thus, it is important to account for the effects of race and ethnicity when assessing weight bias. Additionally, the results of the current study suggest that future research should consider examining fat stereotypes using various methods. Indeed, the current findings indicate that assessing fat stereotype endorsement using implicit and explicit measures can provide unique results, suggesting that both types of measures should continue to be used in future weight bias and body image research.

Another implication of the current findings involves the effect of internalized thin ideals. This construct has received considerable attention in the body image literature assessing women across all weight groups, given its importance in the development of body dissatisfaction (Thompson & Stice, 2001). An important component of the current study was to assess the effects of fat stereotypes and body surveillance on body dissatisfaction, above and beyond the effects of thin ideals. Interestingly, fat stereotype



endorsement was unrelated to internalized thin ideals in the current study (see Table 2 above), supporting the idea that these are separate constructs. Further, although fat stereotypes were unrelated to body dissatisfaction, they appear to have unique roles in specific subgroups of women. Thus, the results of the study suggest that while internalized thin ideals clearly have a more direct role in the body dissatisfaction of normal weight women, it might still be important to investigate the subtle effects of fat stereotypes. Future studies could investigate how fat stereotypes might be incorporated into existing models of body dissatisfaction that include thin ideals.

Another direction for future research is to assess the impact of upward and downward appearance comparisons when assessing fat stereotypes, body surveillance, and body dissatisfaction in normal weight women. The majority of studies examining appearance comparison and body image have used general measures of appearance comparisons, rather than distinguishing between upward and downward comparisons. As described above, it is possible that endorsing fat stereotypes buffers against body dissatisfaction in normal weight women with higher levels of body surveillance because they are more likely to engage in downward appearance comparisons. While findings from past research appear to support this explanation, future research could investigate its veracity directly by including measures of downward and upward appearance comparison. Alternatively, experimental designs manipulating the direction of appearance comparisons could be employed. For example, participants could be presented with images of thin and obese individuals to drive upward and downward appearance comparisons, respectively. The influence of these comparisons in normal

weight women with varying degrees of fat stereotype endorsement and body surveillance then could be assessed.

The current study assessed the extent to which women held fat stereotypes. A final direction for future research could be to assess the effects of experimentally activating or reducing fat stereotypes on body dissatisfaction in women with various levels of body surveillance. Lower body dissatisfaction after activating fat stereotypes, and greater body dissatisfaction after reducing fat stereotypes, in women with higher body surveillance would corroborate the findings of the current study. Interestingly, past research has examined effective ways of reducing weight bias by presenting information that challenges fat stereotypes (e.g., O'Brien et al., 2010). The results of the current study suggest that for normal weight Caucasian women who are concerned with their body, such reduction in fat stereotypes could potentially result in greater levels of body dissatisfaction. By reducing the stereotypes, it is possible that downward appearance comparisons could be diminished, thus reducing the protection afforded by those comparisons on body dissatisfaction. These possible unintended harmful consequences of weight bias reduction in women with a stronger tendency to monitor their body should be assessed. Understandably, encouraging negative judgments of obese individuals should not be used as a tool to improve body satisfaction in these women. Rather, if downward comparisons indeed are driving the effect of fat stereotypes on body dissatisfaction in these women, greater understanding of the reasons why these comparisons buffer against body dissatisfaction could help to develop more adaptive strategies of body image enhancement. For example, if the comparisons help these women to make more accurate judgments about the size of various body parts, thus

improving satisfaction, alternative and adaptive strategies to improve accuracy of size estimation that do not involve disparaging obese people could be explored. Potential specific mechanisms through which fat stereotypes could enhance body satisfaction in women with stronger body surveillance present interesting avenues for future research.

### **Conclusions**

Past research on the relationship between fat stereotypes and body dissatisfaction has tended to focus on overweight and obese individuals. The current study sought to examine this potential relationship in normal weight women. Further, the moderating influence of body surveillance was examined, given its evidenced relationship with body dissatisfaction and cultural standards of beauty. Results indicated that endorsing fat stereotypes, whether implicitly or explicitly, was unrelated to body dissatisfaction in normal weight women. Further, fat stereotyping and body surveillance did not interact to influence body dissatisfaction in the complete sample. However, post-hoc analyses showed that body surveillance significantly moderates the relationship between explicit fat stereotypes and body dissatisfaction in normal weight Caucasian women, over and above the influence of internalized thin ideals. Contrary to predictions, greater explicit fat stereotypes predicted lower body dissatisfaction in normal weight Caucasian women who reported higher body surveillance, while greater explicit fat stereotypes predicted higher body dissatisfaction in normal weight Caucasian women who reported lower body surveillance. However, the interaction between implicit endorsement of fat stereotypes and body surveillance was not significant in normal weight Caucasian women. Thus, the results suggest that explicitly endorsing fat stereotypes acts as a buffer against body dissatisfaction in normal weight Caucasian women who have a greater tendency to

engage in body monitoring, but not in women who have a lower tendency to engage in body monitoring. In other words, holding negative beliefs about obese people seems to enhance body satisfaction in normal weight Caucasian women who frequently monitor their body. Future studies should investigate whether appearance comparisons can explain this unexpected effect. Finally, the findings suggest that future research should continue to assess the influence of fat stereotypes on the body image of specific subgroups of normal weight women, including different racial and ethnic groups.

## References

- Akan, G. E., & Grilo, C. M. (1995). 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. doi: 10.1002/1098-108X(199509)18:2<181::AID-EAT2260180211>3.0.CO;2-M
- Allison, D. B., Basile, V. C., & Yuker, H. E. (1991). The measurement of attitudes toward and beliefs about obese persons. *International Journal of Eating Disorders*, 10(5), 599-607. doi: 10.1002/1098-108X(199109)10:5<599::AID-EAT2260100512>3.0.CO;2-#
- Aruguete, M. S., Yates, A., & Edman, J. (2006). Gender differences in attitudes about fat. *North American Journal of Psychology*, 8(1), 183-192.
- Beck, A. T., Steer, R. A., Ball, R., & Ranieri, W. F. (1996). Comparison of Beck Depression Inventories–IA and –II in psychiatric outpatients. *Journal of Personality Assessment*, 67(3), 588-597. doi:10.1207/s15327752jpa6703\_13
- Berger, J. (Writer). (1972). *Ways of Seeing*. UK: British Broadcasting Corporation.
- Brannan, M. E., & Petrie, T. A. (2008). Moderators of the body dissatisfaction-eating disorder symptomatology relationship: Replication and extension. *Journal of Counseling Psychology*, 55(2), 263-275. doi:10.1037/0022-0167.55.2.263
- Brochu, P. M., & Esses, V. M. (2009). Weight prejudice and medical policy: Support for an ambiguously discriminatory policy is influenced by prejudice-colored glasses. *Analyses of Social Issues and Public Policy*, 9(1), 117-133. doi:10.1111/j.1530-2415.2009.01175.x

- Brochu, P. M., Gawronski, B., & Esses, V. M. (2011). The integrative prejudice framework and different forms of weight prejudice: An analysis and expansion. *Group Processes & Intergroup Relations, 14*(3), 429-444.  
doi:10.1177/1368430210396520
- Brochu, P. M., & Morrison, 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.  
doi:10.3200/SOCP.147.6.681-706
- Brookings, J. B., & Wilson, J. F. (1994). Personality and family-environment predictors of self-reported eating attitudes and behaviors. *Journal of Personality Assessment, 63*(2), 313-326. doi:10.1207/s15327752jpa6302\_10
- Carels, R. A., Wott, C. B., Young, K. M., Gumble, A., Koball, A., & Oehlhof, M. W. (2010). Implicit, explicit, and internalized weight bias and psychosocial maladjustment among treatment-seeking adults. *Eating Behaviors, 11*(3), 180-185.  
doi:10.1016/j.eatbeh.2010.03.002
- Carels, R. A., Young, K. M., Wott, C. B., Harper, J., Gumble, A., Oehlhof, M. W., & Clayton, A. M. (2009). Weight bias and weight loss treatment outcomes in treatment-seeking adults. *Annals of Behavioral Medicine, 37*(3), 350-355.  
doi:10.1007/s12160-009-9109-4
- Cash, T. F., Winstead, B. A., & Janda, L. H. (1986). The great American shape-up: Body image survey report. *Psychology Today, 20*(4), 30-37.
- Cash, T. F., Morrow, J. A., Hrabosky, J. I., & Perry, A. A. (2004). How has body image changed? A cross-sectional investigation of college women and men from 1983 to

2001. *Journal of Consulting and Clinical Psychology*, 72, 1081-1088. doi: 10.1037/0022-006X.72.6.1081
- Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Mahwah, NJ: Erlbaum.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ, US: Lawrence Erlbaum Associates Publishers, Mahwah, NJ.
- Collins, R. L. (1996). For better or worse: The impact of upward social comparison on self-evaluations. *Psychological Bulletin*, 119(1), 51-69. doi: 10.1037/0033-2909.119.1.51
- Cramer, P., & Steinwert, T. (1998). Thin is good, fat is bad: How early does it begin? *Journal of Applied Developmental Psychology*, 19(3), 429-451. doi:10.1016/S0193-3973(99)80049-5
- Crandall, C. S. (1991). Do heavy-weight students have more difficulty paying for college? *Personality and Social Psychology Bulletin*, 17(6), 606-611. doi:10.1177/0146167291176002
- Crandall, C. S. (1994). Prejudice against fat people: Ideology and self-interest. *Journal of Personality and Social Psychology*, 66(5), 882-894. doi:10.1037/0022-3514.66.5.882
- Crandall, C. S., & Eshleman, A. (2003). A justification-suppression model of the expression and experience of prejudice. *Psychological Bulletin*, 129(3), 414-446.
- Crandall, C. S., Eshleman, A., & O'Brien, L. (2002). Social norms and the expression and suppression of prejudice: The struggle for internalization. *Journal of Personality and Social Psychology*, 82(3), 359-378. doi:10.1037/0022-3514.82.3.359

- Cunningham, W. A., Preacher, K. J., & Banaji, M. R. (2001). Implicit attitude measures: Consistency, stability, and convergent validity. *Psychological Science, 12*(2), 163-170. doi:10.1111/1467-9280.00328
- Dalley, S. E., & Buunk, A. P. (2009). "Thinspiration" vs. "fear of fat". Using prototypes to predict frequent weight-loss dieting in females. *Appetite, 52*(1), 217-221. doi:10.1016/j.appet.2008.09.019
- Danielsdóttir, S. S., O'Brien, K. S. K., & Ciao, A. A. (2010). Anti-fat prejudice reduction: A review of published studies. *Obesity Facts, 3*(1), 47-58. doi: 10.1159/000277067
- Davison, K. K., Schmalz, D. L., Young, L. M., & Birch, L. L. (2008). Overweight girls who internalize fat stereotypes report low psychosocial well-being. *Obesity, 16*, S30-S38. doi:10.1038/oby.2008.451
- Demarest, J., & Allen, R. (2000). Body image: Gender, ethnic, and age differences. *The Journal of Social Psychology, 140*(4), 465-472. doi:10.1080/00224540009600485
- Demo, D. H. (1985). The measurement of self-esteem: Refining our methods. *Journal of Personality and Social Psychology, 48*(6), 1490-1502. doi:10.1037/0022-3514.48.6.1490
- Domoff, S. E., Hinman, N. G., Koball, A. M., Storfer-Isser, A., Carhart, V. L., Baik, K. D., & Carels, R. A. (2012). The effects of reality television on weight bias: An examination of the Biggest Loser. *Obesity, 20*(5), 993-998. doi:10.1038/oby.2011.378
- Dovidio, J. F., & Gaertner, S. L. (2004). Aversive racism. In M. P. Zanna (Ed.), *Advances in experimental social psychology, vol. 36*. (pp. 1-52). San Diego, CA: Elsevier Academic Press.



- Durso, L. E., & Latner, J. D. (2008). Understanding self-directed stigma: Development of the Weight Bias Internalization Scale. *Obesity, 16*, S80-S86.  
doi:10.1038/oby.2008.448
- Esses, V. M., Haddock, G., & Zanna, M. P. (1993). Values, stereotypes, and emotions as determinants of intergroup attitudes. In D. M. Mackie, & D. L. Lewis (Eds.), *Affect, cognition and stereotyping: Interactive processes in group perception* (pp. 137-166). San Diego, CA: Academic Press.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*(2), 117-140.
- Fitzsimmons, E. E., & Bardone-Cone, A. M. (2011). Downward spirals of body surveillance and weight/shape concern among African American and Caucasian college women. *Body Image, 8*(3), 216-223. doi:10.1016/j.bodyim.2011.04.003
- Fitzsimmons-Craft, E. E., Harney, M. B., Koehler, L. G., Danzi, L. E., Riddell, M. K., & Bardone-Cone, A. M. (2012). Explaining the relation between thin ideal internalization and body dissatisfaction among college women: The roles of social comparison and body surveillance. *Body Image, 9*(1), 43-49.  
doi:10.1016/j.bodyim.2011.09.002
- Forbes, G. B., Jobe, R. L., & Revak, J. A. (2006). Relationships between dissatisfaction with specific body characteristics and the Sociocultural Attitudes Toward Appearance Questionnaire-3 and Objectified Body Consciousness Scale. *Body Image, 3*(3), 295-300. doi:10.1016/j.bodyim.2006.07.003
- Frederick, D. A., Forbes, G. B., Grigorian, K. E., & Jarcho, J. M. (2007). The UCLA body project I: Gender and ethnic differences in self-objectification and body

satisfaction among 2,206 undergraduates. *Sex Roles*, 57(5-6), 317-327.

doi:10.1007/s11199-007-9251-z

Fredrickson, B. L., & Roberts, T. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly*, 21(2), 173-206. doi:10.1111/j.1471-6402.1997.tb00108.x

Friedman, K. E., Reichmann, S. K., Costanzo, P. R., Zelli, A., Ashmore, J. A., & Musante, G. J. (2005). Weight stigmatization and ideological beliefs: Relation to psychological functioning in obese adults. *Obesity Research*, 13(5), 907-916. doi:10.1038/oby.2005.105

Garner, D.M. (1991). *Eating Disorder Inventory-2: Professional Manual*. Odessa: Psychological Assessment Research, Inc.

Green, S. P., & Pritchard, M. E. (2003). Predictors of body image dissatisfaction in adult men and women. *Social Behavior and Personality: An International Journal*, 31(3), 215-222. doi:10.2224/sbp.2003.31.3.215

Greenleaf, C., Chambliss, H., Rhea, D. J., Martin, S. B., & Morrow Jr, J. R. (2006). Weight stereotypes and behavioral intentions toward thin and fat peers among White and Hispanic adolescents. *Journal of Adolescent Health*, 39, 546-552.

doi:10.1016/j.jadohealth.2006.01.013

Greenleaf, C., & McGreer, R. (2006). Disordered eating attitudes and self-objectification among physically active and sedentary female college students. *Journal of Psychology: Interdisciplinary and Applied*, 140(3), 187-198.

doi:10.3200/JRLP.140.3.187-198

- Greenleaf, C., Starks, M., Gomez, L., Chambliss, H., & Martin, S. (2004). Weight-related words associated with figure silhouettes. *Body Image, 1*(4), 373-384.  
doi:10.1016/j.bodyim.2004.10.004
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology, 74*(6), 1464-1480. doi:10.1037/0022-3514.74.6.1464
- Greenwald, A. G., & Nosek, B. A. (2001). Health of the Implicit Association Test at age 3. *Zeitschrift für Experimentelle Psychologie, 48*(2), 85-93. doi:10.1026//0949-3946.48.2.85
- Gumble, A., & Carels, R. (2012). The harmful and beneficial impacts of weight bias on well-being: The moderating influence of weight status. *Body Image, 9*(1), 101-107.  
doi:10.1016/j.bodyim.2011.07.005
- Harris, M. B., Walters, L. C., & Waschull, S. (1991). Gender and ethnic differences in obesity-related behaviors and attitudes in a college sample. *Journal of Applied Social Psychology, 21*(19), 1545-1566.
- Hebl, M. R., King, E. B., & Perkins, A. (2009). Ethnic differences in the stigma of obesity: Identification and engagement with a thin ideal. *Journal of Experimental Social Psychology, 45*, 1165-1172. doi:10.1016/j.jesp.2009.04.017
- Hilbert, A., Rief, W., & Braehler, E. (2008). Stigmatizing attitudes toward obesity in a representative population-based sample. *Obesity, 16*(7), 1529-1534.  
doi:10.1038/oby.2008.263
- Hilton, J. L., & von Hippel, W. (1996). Stereotypes. *Annual Review of Psychology, 47*, 237-271. doi:10.1146/annurev.psych.47.1.237

- Hodson, G., Dovidio, J. F., & Gaertner, S. L. (2002). Processes in racial discrimination: Differential weighting of conflicting information. *Personality and Social Psychology Bulletin*, 28(4), 460-471. doi:10.1177/0146167202287004
- Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the Implicit Association Test and explicit self-report measures. *Personality and Social Psychology Bulletin*, 31(10), 1369-1385. doi:10.1177/0146167205275613
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology*, 65(4), 599.
- Howell, D. C. (2007). *Statistical methods for psychology* (6<sup>th</sup> ed.). Belmont, CA: Thomson Wadsworth.
- Jackman, M. R. (1977). Prejudice, tolerance, and attitudes toward ethnic groups. *Social Science Research*, 6(2), 145-169. doi:10.1016/0049-089X(77)90005-9
- Kinder, D. R., & Sears, D. O. (1981). Prejudice and politics: Symbolic racism versus racial threats to the good life. *Journal of Personality and Social Psychology*, 40(3), 414. doi: 10.1037/0022-3514.40.3.414
- Klaczynski, P. A., Goold, K. W., & Mudry, J. J. (2004). Culture, obesity stereotypes, self-esteem, and the "thin ideal": A social identity perspective. *Journal of Youth and Adolescence*, 33(4), 307-317. doi:10.1023/B:JOYO.0000032639.71472.19
- Klaczynski, P., Daniel, D. B., & Keller, P. S. (2009). Appearance idealization, body esteem, causal attributions, and ethnic variations in the development of obesity

stereotypes. *Journal of Applied Developmental Psychology*, 30(4), 537-551.

doi:10.1016/j.appdev.2008.12.031

King, E. B., Shapiro, J. R., Hebl, M. R., Singletary, S. L., & Turner, S. (2006). The stigma of obesity in customer service: A mechanism for remediation and bottom-line consequences of interpersonal discrimination. *Journal of Applied Psychology*, 91, 579-592. doi: 10.1037/0021-9010.91.3.579

Latner, J. D., Stunkard, A. J., & Wilson, G. T. (2005). Stigmatized students: Age, sex, and ethnicity effects in the stigmatization of obesity. *Obesity Research*, 13, 1226-1231. doi:10.1038/oby.2005.145

Levitt, D. H. (2003). Drive for thinness and fear of fat: Separate yet related constructs? *Eating Disorders: The Journal of Treatment & Prevention*, 11(3), 221-234.

doi:10.1080/10640260390218729

Lindner, D., Tantleff-Dunn, S., & Jentsch, F. (2012). Social comparison and the 'circle of objectification'. *Sex Roles*, 67(3-4), 222-235. doi:10.1007/s11199-012-0175-x

Lowery, S. E., Kurpius, S. E. R., Befort, C., Blanks, E. H., Sollenberger, S., Nicpon, M. F., & Huser, L. (2005). Body image, self-esteem, and health-related behaviors among male and female first year college students. *Journal of College Student Development*, 46(6), 612-623. doi:10.1353/csd.2005.0062

Major, B., Spencer, S., Schmader, T., Wolfe, C., & Crocker, J. (1998). Coping with negative stereotypes about intellectual performance: The role of psychological disengagement. *Personality and Social Psychology Bulletin*, 24(1), 34-50.

doi:10.1177/0146167298241003

- McKinley, N. M. (1998). Gender differences in undergraduates' body esteem: The mediating effect of objectified body consciousness and actual/ideal weight discrepancy. *Sex Roles, 39*(1-2), 113-123. doi:10.1023/A:1018834001203
- McKinley, N. M. (2006). Longitudinal gender differences in objectified body consciousness and weight-related attitudes and behaviors: Cultural and developmental contexts in the transition from college. *Sex Roles, 54*(3-4), 159-173. doi:10.1007/s11199-006-9335-1
- McKinley, N. M., & Hyde, J. S. (1996). The Objectified Body Consciousness Scale: Development and validation. *Psychology of Women Quarterly, 20*(2), 181-215. doi:10.1111/j.1471-6402.1996.tb00467.x
- McLaren, L., & Kuh, D. (2004). Body dissatisfaction in midlife women. *Journal of Women & Aging, 16*(1-2), 35-54. doi: 10.1300/J074v16n01\_04
- Mercurio, A., & Rima, B. (2011). Watching my weight: Self-weighing, body surveillance, and body dissatisfaction. *Sex Roles, 65*(1-2), 47-55. doi:10.1007/s11199-011-9980-x
- Miller, L. C., Murphy, R., & Buss, A. H. (1981). Consciousness of body: Private and public. *Journal of Personality and Social Psychology, 41*(2), 397-406. doi:10.1037/0022-3514.41.2.397
- Moradi, B. (2010). Addressing gender and cultural diversity in body image: Objectification theory as a framework for integrating theories and grounding research. *Sex Roles, 63*(1-2), 138-148. doi:10.1007/s11199-010-9824-0

- 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*, 31(2), 166-180. doi: 10.1177/0146167204271418
- Nosek, B. A., Smyth, F. L., Hansen, J. J., Devos, T., Lindner, N. M., Ratliff, 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, 36-88. doi: 10.1080/10463280701489053
- O'Brien, K. S., Caputi, P., Minto, R., Peoples, G., Hooper, C., Kell, S., & Sawley, E. (2009). Upward and downward physical appearance comparisons: Development of scales and examination of predictive qualities. *Body Image*, 6, 201-206. doi:10.1016/j.bodyim.2009.03.003
- O'Brien, K. S., Hunter, J. A., & Banks, M. (2006). Implicit anti-fat bias in physical educators: Physical attributes, ideology and socialization. *International Journal of Obesity*, 31(2), 308-314. doi:10.1038/sj.ijo.0803398
- O'Brien, K. S., Hunter, J. A., Halberstadt, J., & Anderson, J. (2007). Body image and explicit and implicit anti-fat attitudes: The mediating role of physical appearance comparisons. *Body Image*, 4(3), 249-256. doi:10.1016/j.bodyim.2007.06.001
- O'Brien, K. S., Puhl, R. M., Latner, J. D., Mir, A. S., & Hunter, J. A. (2010). Reducing anti-fat prejudice in preservice health students: A randomized trial. *Obesity*, 18(11), 2138-2144. doi:10.1038/oby.2010.79
- Osman, A., Downs, W. R., Barrios, F. X., Kopper, B. A., Gutierrez, P. M., & Chiros, C. E. (1997). Factor structure and psychometric characteristics of the Beck Depression

- Inventory-II. *Journal of Psychopathology and Behavioral Assessment*, 19(4), 359-376. doi:10.1007/BF02229026
- 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(5), 345-350. doi: 10.1038/oby.2002.48
- Perez-Lopez, M. S., Lewis, R. J., & Cash, T. F. (2001). The relationship of antifat attitudes to other prejudicial and gender-related attitudes. *Journal of Applied Social Psychology*, 31, 683-697. doi: 10.1111/j.1559-1816.2001.tb01408.x
- Pingitore, R., Spring, B., & Garfield, D. (1997). Gender differences in body satisfaction. *Obesity Research*, 5(5), 402-409.
- Polivy, J., & Herman, C. P. (2002). Causes of eating disorders. *Annual Review of Psychology*, 53(1), 187-213. doi:10.1146/annurev.psych.53.100901.135103
- Powell, A. D., & Kahn, A. S. (1995). Racial differences in women's desires to be thin. *International Journal of Eating Disorders*, 17(2), 191-195.
- Puhl, R., & Brownell, K. D. (2001). Bias, discrimination, and obesity. *Obesity Research*, 9(12), 788-805. doi: 10.1038/oby.2001.108
- Puhl, R. M., & Heuer, C. A. (2009). The stigma of obesity: a review and update. *Obesity*, 17, 941-964. doi: 10.1038/oby.2008.636
- Puhl, R. M., & Latner, J. D. (2007). Stigma, obesity, and the health of the nation's children. *Psychological Bulletin*, 133(4), 557-580. doi:10.1037/0033-2909.133.4.557
- 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. *Health Psychology*, 24(5), 517-525. doi:10.1037/0278-6133.24.5.517



- Quintana, S. M. (1998). Children's developmental understanding of ethnicity and race. *Applied & Preventive Psychology, 7*(1), 27-45. doi:10.1016/S0962-1849(98)80020-6
- Raudenbush, B., & Zellner, D. A. (1997). Nobody's satisfied: Effects of abnormal eating behaviors and actual and perceived weight status on body image satisfaction in males and females. *Journal of Social and Clinical Psychology, 16*(1), 95-110. doi: 10.1521/jscp.1997.16.1.95
- Reynolds, W. M. (1982). Development of reliable and valid short forms of the Marlowe-Crowne Social Desirability Scale. *Journal of Clinical Psychology, 38*(1), 119-125. doi:10.1002/1097-4679(198201)38:1<119::AID-JCLP2270380118>3.0.CO;2-I
- 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*, 1121-1131. doi:10.1037/0022-006X.74.6.1121
- Robins, R. W., Hendin, H. M., & Trzesniewski, K. H. (2001). Measuring global self-esteem: Construct validation of a single-item measure and the Rosenberg Self-Esteem Scale. *Personality and Social Psychology Bulletin, 27*(2), 151-161. doi:10.1177/0146167201272002
- Roddy, S., Stewart, I., & Barnes-Holmes, D. (2010). Anti-fat, pro-slim, or both? Using two reaction-time based measures to assess implicit attitudes to the slim and overweight. *Journal of Health Psychology, 15*(3), 416-425. doi:10.1177/1359105309350232

- Roehling, M. V. (1999). Weight-based discrimination in employment: Psychological and legal aspects. *Personnel Psychology*, *52*(4), 969-1016. doi: 10.1111/j.1744-6570.1999.tb00186.x
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press.
- Rosenberg, M. (1979). *Conceiving the self*. New York, NY: Basic Books.
- Schwartz, M. B., Chambliss, H. O., Brownell, K. D., Blair, S. N., & Billington, C. (2003). Weight bias among health professionals specializing in obesity. *Obesity Research*, *11*(9), 1033-1039. doi: 10.1038/oby.2003.142
- Schwartz, M. B., Vartanian, L. R., Nosek, B. A., & Brownell, K. D. (2006). The influence of one's own body weight on implicit and explicit anti-fat bias. *Obesity*, *14*(3), 440-447. doi:10.1038/oby.2006.58
- Sciaccia, J. P., Melby, C. L., Hyner, G. C., Brown, A. C., & Femea, P. L. (1991). Body mass index and perceived weight status in young adults. *Journal of Community Health*, *16*(3), 159-68. doi: 10.1007/BF01323974
- Seacat, J. D., & Mickelson, K. D. (2009). Stereotype threat and the exercise/dietary health intentions of overweight women. *Journal of Health Psychology*, *14*(4), 556-567. doi:10.1177/1359105309103575
- Silber, E., & Tippett, J. S. (1965). Self-esteem: Clinical assessment and measurement validation. *Psychological Reports*, *16*, 1017-1071. doi:10.2466/pr0.1965.16.3c.1017
- Sinclair, S. L., & Myers, J. E. (2004). The relationship between objectified body consciousness and wellness in a group of college women. *Journal of College Counseling*, *7*(2), 159-161. doi:10.1002/j.2161-1882.2004.tb00246.x

- Spitzack, C. (1990). *Confessing excess: Women and the politics of body reduction*. Albany, NY, US: State University of New York Press.
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, 69(5), 797-811. doi:10.1037/0022-3514.69.5.797
- Stice, E. (2001). A prospective test of the dual-pathway model of bulimic pathology: Mediating effects of dieting and negative affect. *The Journal of Abnormal Psychology*, 110(1), 124-135. doi:10.1037/0021-843X.110.1.124
- Stice, E., & Shaw, H. E. (2002). Role of body dissatisfaction in the onset and maintenance of eating pathology: A synthesis of research findings. *Journal of Psychosomatic Research*, 53(5), 985-993. doi:10.1016/S0022-3999(02)00488-9
- Swami, V., Pietschnig, J., Stieger, S., Tovée, M. J., & Voracek, M. (2010). An investigation of weight bias against women and its associations with individual difference factors. *Body Image*, 7(3), 194-199. doi:10.1016/j.bodyim.2010.03.003
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5<sup>th</sup> ed.). Boston: Allyn and Bacon.
- Teachman, B. A., & Brownell, K. D. (2001). Implicit anti-fat bias among health professionals: Is anyone immune? *International Journal of Obesity*, 25(10), 1525-1531. doi:10.1038/sj.ijo.0801745
- Teachman, B. A., Gapinski, K. D., Brownell, K. D., Rawlins, M., & Jeyaram, S. (2003). Demonstrations of implicit anti-fat bias: The impact of providing causal information and evoking empathy. *Health Psychology*, 22(1), 68-78. doi:10.1037/0278-6133.22.1.68

- Thompson, J. K., Heinberg, L. J., & Tantleff, S. (1991). The Physical Appearance Comparison Scale (PACS). *The Behavior Therapist, 14*, 174.
- Thompson, J. K., & Stice, E. (2001). Thin-ideal internalization: Mounting evidence for a new risk factor for body-image disturbance and eating pathology. *Current Directions in Psychological Science, 10*(5), 181-183. doi:10.1111/1467-8721.00144
- Thompson, J. K., van den Berg, P., Roehrig, M., Guarda, A. S., & Heinberg, L. J. (2004). The Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ-3): Development and validation. *International Journal of Eating Disorders, 35*(3), 293-304. doi:10.1002/eat.10257
- Vartanian, L. R., Herman, C. P., & Polivy, J. (2005). Implicit and explicit attitudes toward fatness and thinness: The role of the internalization of societal standard. *Body Image, 2*(4), 373-381. doi:10.1016/j.bodyim.2005.08.002
- Vartanian, L. R., & Shaprow, J. G. (2008). Effects of weight stigma on exercise motivation and behavior: A preliminary investigation among college-aged females. *Journal of Health Psychology, 13*(1), 131-138. doi:10.1177/1359105307084318
- Wear, R. W., & Pratz, O. (1987). Test-retest reliability for the eating disorder inventory. *International Journal of Eating Disorders, 6*(6), 767-769. doi:10.1002/1098-108X(198711)6:6<767::AID-EAT2260060611>3.0.CO;2-V
- Wiederman, M. W., & Pryor, T. L. (2000). Body dissatisfaction, bulimia, and depression among women: The mediating role of drive for thinness. *International Journal of Eating Disorders, 27*(1), 90-95. doi: 10.1002/(SICI)1098-108X(200001)27:1<90::AID-EAT10>3.0.CO;2-0

- Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological bulletin*, 90(2), 245-271. doi: 10.1037/0033-2909.90.2.245
- Wilson, T. D., Lindsey, S., & Schooler, T. Y. (2000). A model of dual attitudes. *Psychological Review*, 107, 101-126. doi:10.1037/0033-295X.107.1.101
- World Health Organization (January 5, 2012). *BMI classification*. Retrieved April 24, 2012, from [http://apps.who.int/bmi/index.jsp?introPage=intro\\_3.html](http://apps.who.int/bmi/index.jsp?introPage=intro_3.html).
- Woud, M. L., Anschutz, D. J., Van Strien, T., & Becker, E. S. (2011). Measuring thinspiration and fear of fat indirectly. A matter of approach and avoidance. *Appetite*, 56(2), 451-455. doi:10.1016/j.appet.2010.12.012

## Appendix A

## OBESE PERSONS TRAIT SURVEY (OPTS)

For each of the following traits, estimate the percentage (any number between 0 and 100) of Obese People whom you think possess this particular trait. Afterward, please indicate how confident you are in your estimate by circling a number. There are no right or wrong answers. Please give your best estimate.

1. Humorous: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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2. Lazy: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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3. Self-indulgent: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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4. Generous: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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5. Sociable: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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6. Undisciplined: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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7. Friendly: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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8. Gluttonous: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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9. Outgoing: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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10. Intelligent: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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11. Unhealthy: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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12. Honest: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
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13. Sluggish: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
----------------------	---	---	---	---	---	---	---	---	---	---------------------

14. Productive: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
----------------------	---	---	---	---	---	---	---	---	---	---------------------

15. Lack of Willpower: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
----------------------	---	---	---	---	---	---	---	---	---	---------------------

16. Unclean: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
----------------------	---	---	---	---	---	---	---	---	---	---------------------

17. Warm: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
----------------------	---	---	---	---	---	---	---	---	---	---------------------

18. Insecure: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
----------------------	---	---	---	---	---	---	---	---	---	---------------------

19. Organized: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
----------------------	---	---	---	---	---	---	---	---	---	---------------------

20. Unattractive: \_\_\_\_\_ % of obese people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
----------------------	---	---	---	---	---	---	---	---	---	---------------------

For each of the following traits, estimate the percentage (any number between 0 and 100) of Average-Weight People whom you think possess this particular trait. Afterward, please indicate how confident you are in your estimate by circling a number. There are no right or wrong answers. Please give your best estimate.

1. Humorous: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely
----------------------	---	---	---	---	---	---	---	---	---	-----------



confident Confident

2. Lazy: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

3. Self-indulgent: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

4. Generous: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

5. Sociable: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

6. Undisciplined: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

7. Friendly: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

8. Gluttonous: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

9. Outgoing: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

10. Intelligent: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

11. Unhealthy: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

12. Honest: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

13. Sluggish: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

14. Productive: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

15. Lack of Willpower: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

16. Unclean: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

17. Warm: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

18. Insecure: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

19. Organized: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

20. Unattractive: \_\_\_\_\_ % of average-weight people possess this trait.

My confidence in the above estimate:

Not at all confident	1	2	3	4	5	6	7	8	9	Extremely Confident
-------------------------	---	---	---	---	---	---	---	---	---	------------------------

## Appendix B

## WEIGHT IMPLICIT ASSOCIATIONS TEST (W-IAT)

The stimuli used in the W-IAT involve negatively or positively valenced words and images of obese and thin silhouettes, presented below (copyright © 2011 IAT Corp Project Implicit, <https://implicit.harvard.edu/implicit//demo/selectatest.html>, reproduced with permission for research purposes; Nosek et al, 2007). Participants are required to categorize the negatively valenced words into “bad” and the positively valenced words into “good” by pressing specific keys. Participants also are required to categorize the obese images into “fat” and the thin images into “thin” by pressing specific keys. Reaction times for categorization of the stimuli are measured. Table 1 presents the standard schematic overview of the W-IAT (Lane, Banaji, Nosek, & Greenwald, 2007), and Table 2 presents the counterbalanced schematic (Greenwald, Nosek, & Banaji, 2003; Nosek, Greenwald, & Banaji, 2005). The bolded stages represent test trials, and non-bolded stages are practice trials.

Table 1  
*Schematic Overview of W-IAT.*

Block	Number of Trials	Left Key Assignment	Right Key Assignment
1	20	Thin	Fat
2	20	Good	Bad
3	20	Thin Good	Fat Bad
<b>4</b>	<b>40</b>	<b>Thin Good</b>	<b>Fat Bad</b>
5	40	Fat	Thin
6	20	Fat Good	Thin Bad
<b>7</b>	<b>40</b>	<b>Fat Good</b>	<b>Thin Bad</b>

*Note:* For half the participants, the positions of Stages 1, 3, and 4 are switched with those of Blocks 5, 6, and 7 (see Table 2 below).

Table 2  
*Counterbalanced Schematic Overview of W-IAT.*

Block	Number of Trials	Left Key Assignment	Right Key Assignment
1	20	Fat	Thin
2	20	Good	Bad
3	20	Fat Good	Thin Bad
<b>4</b>	<b>40</b>	<b>Fat Good</b>	<b>Thin Bad</b>
5	40	Thin	Fat

6	20	Thin Good	Fat Bad
7	40	<b>Thin</b> <b>Good</b>	<b>Fat</b> <b>Bad</b>

The instructions for each stage are as follows:

**General Instructions:**

In this task, you will be presented with a set of words or images to classify into groups. This task requires that you classify items as quickly as you can while making as few mistakes as possible. Going too slow or making too many mistakes will result in an uninterpretable score. This part of the study will take about 5 minutes. The following is a list of category labels and the items that belong to each of those categories.

Category	Items
Bad	Terrible, Horrible, Awful, Hurt, Evil, Lazy, Stupid, Undisciplined, Insecure, Hostile
Good	Joy, Love, Peace, Wonderful, Laughter, Motivated, Intelligent, Disciplined, Confident, Friendly
Fat	Images of fat people
Thin	Images of thin people

*Keep in mind*

- Keep your index fingers on the ‘e’ and ‘i’ keys to enable rapid response.
- Two labels at the top will tell you which words or images go with each key.
- Each word or image has a correct classification. Most of these are easy.
- Please try to go as fast as possible.
- Expect to make a few mistakes because of going fast. That’s OK.
- For best results, avoid distractions and stay focused.

I am ready to begin

**Stage 1:**

Put your middle or index fingers on the E and I keys of your keyboard. Words or images representing the categories at the top of the screen will appear one-by-one in the middle of the screen. When the item belongs to a category on the left, press the E key; when the item belongs to a category on the right, press the I key. Items belong to only one category. If you make an error, an X will appear – fix the error by hitting the other key. This is a timed task. GO AS FAST AS YOU CAN while making as few mistakes as possible.

Press the space bar to begin.

**Stage 2:**

See above, the categories have changed. The items for sorting have changed as well. The rules, however, are the same.

When the items belong to a category on the left, press the E key; when the item belongs to a category on the right, press the I key. Items belong to only one category. An X appears after an error – fix the error by hitting the other key. GO AS FAST AS YOU CAN.

Press the space bar to begin.

### **Stage 3:**

See above, the four categories you saw separately now appear together. Remember, each item belongs to only one group. For example, if the categories **thin** and **good** appeared on separate sides of the screen, pictures of thin people would go in the **thin** category, not the **good** category.

The green and white labels and items may help to identify the appropriate category. Use the E and I keys to categorize items into the four groups left and right, and correct errors by hitting the other key.

Press the space bar to begin.

### **Stage 4:**

Sort the same four categories again. Remember to go as fast as you can while making as few mistakes as possible. Remember, each item belongs to only one group.

The green and white labels and items may help to identify the appropriate category. Use the E and I keys to categorize items into the four groups left and right, and correct errors by hitting the other key.

Press the space bar to begin.

### **Stage 5:**

Notice above, there are only two categories and they have switched positions. The concept that was previously on the left is now on the right, and the concept that was on the right is now on the left. Remember, items belong to only one category. Practice this new configuration.

When the item belongs to a category on the left, press the E key; when the item belongs to a category on the right, press the I key. If you make an error, an X will appear – fix the error by hitting the other key.

This is a timed task. GO AS FAST AS YOU CAN while making as few mistakes as possible.

Press the space bar to begin.

### **Stage 6:**

See above, the four categories now appear together in a new configuration. Remember, each item belongs to only one group.

The green and white labels and items may help to identify the appropriate category. Use the E and I keys to categorize items into the four groups left and right, and correct errors by hitting the other key.

Press the space bar to begin.

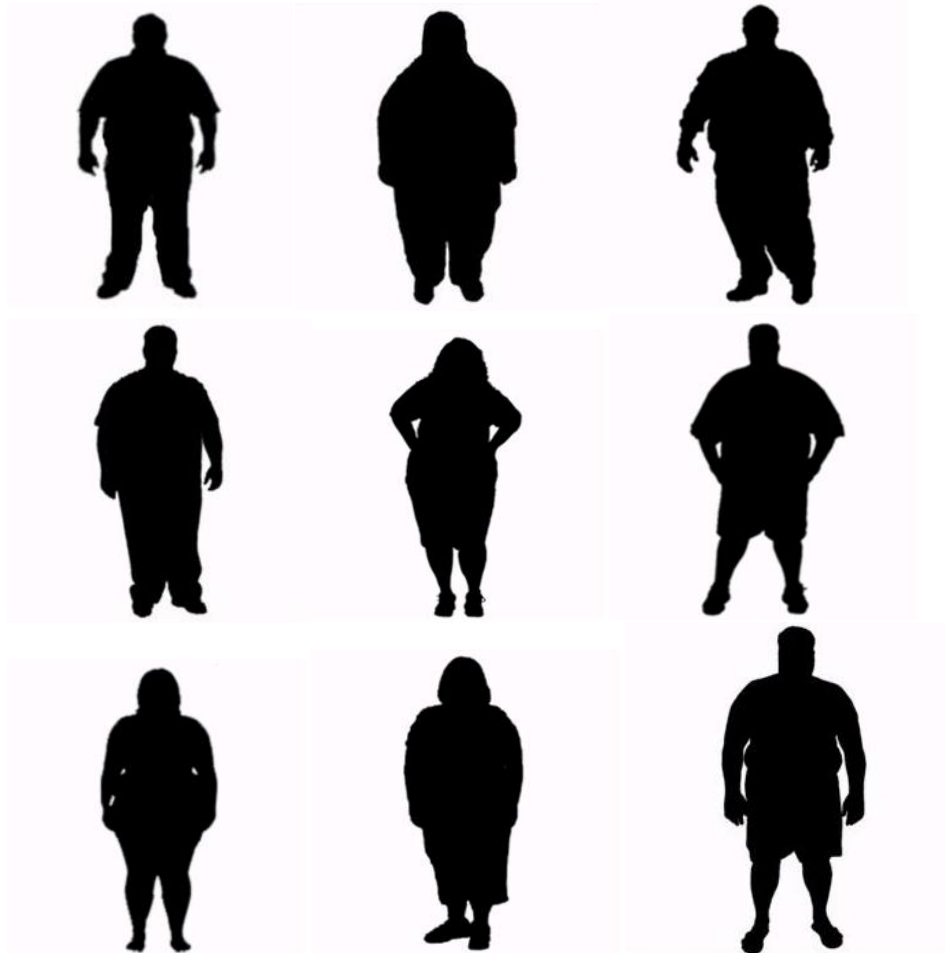
**Stage 7:**

Sort the same four categories again. Remember to go as fast as you can while making as few mistakes as possible. Remember, each item belongs to only one group.

The green and white labels and items may help to identify the appropriate category. Use the E and I keys to categorize items into the four groups left and right, and correct errors by hitting the other key.

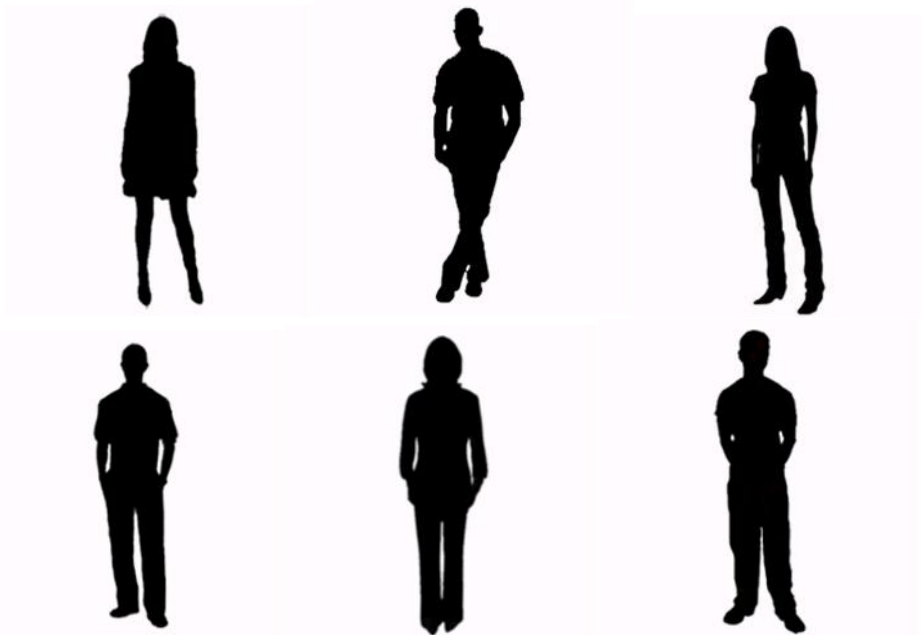
Press the space bar to begin.

Obese images:

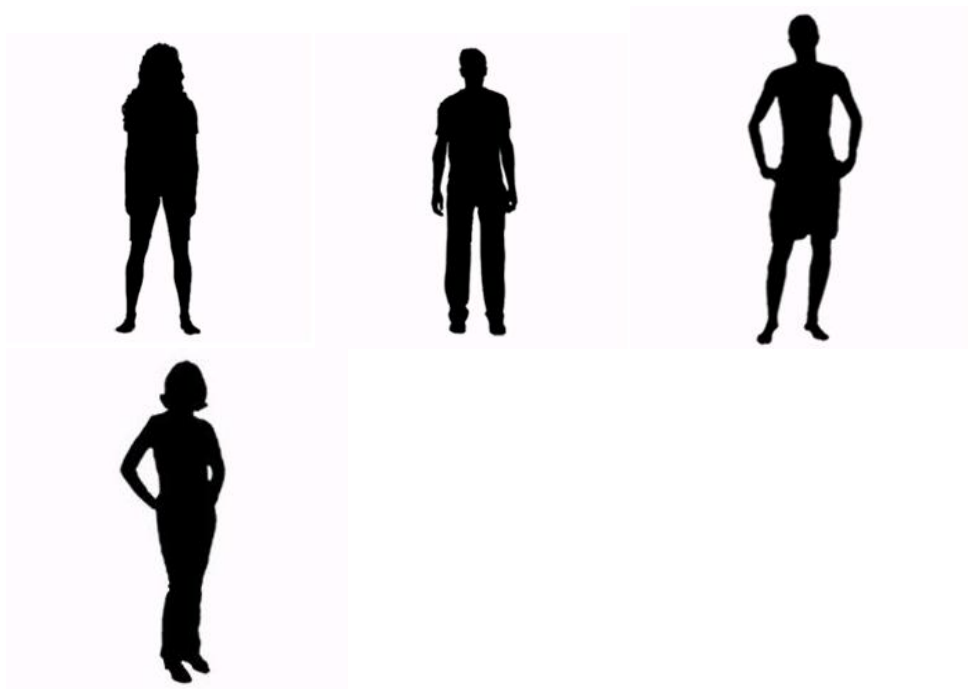




Thin images:







## Appendix C

OBJECTIFIED BODY CONSCIOUSNESS SCALE  
BODY-SURVEILLANCE SUBSCALE

1. I rarely think about how I look. (R)
- |                      |   |   |                                  |   |   |                   |
|----------------------|---|---|----------------------------------|---|---|-------------------|
| 1                    | 2 | 3 | 4                                | 5 | 6 | 7                 |
| Strongly<br>Disagree |   |   | Neither<br>Agree nor<br>Disagree |   |   | Strongly<br>Agree |
2. I think it is more important that my clothes are comfortable than whether they look good on me. (R)
- |                      |   |   |                                  |   |   |                   |
|----------------------|---|---|----------------------------------|---|---|-------------------|
| 1                    | 2 | 3 | 4                                | 5 | 6 | 7                 |
| Strongly<br>Disagree |   |   | Neither<br>Agree nor<br>Disagree |   |   | Strongly<br>Agree |
3. I think more about how my body feels than how my body looks. (R)
- |                      |   |   |                                  |   |   |                   |
|----------------------|---|---|----------------------------------|---|---|-------------------|
| 1                    | 2 | 3 | 4                                | 5 | 6 | 7                 |
| Strongly<br>Disagree |   |   | Neither<br>Agree nor<br>Disagree |   |   | Strongly<br>Agree |
4. I rarely compare how I look with how other people look. (R)
- |                      |   |   |                                  |   |   |                   |
|----------------------|---|---|----------------------------------|---|---|-------------------|
| 1                    | 2 | 3 | 4                                | 5 | 6 | 7                 |
| Strongly<br>Disagree |   |   | Neither<br>Agree nor<br>Disagree |   |   | Strongly<br>Agree |
5. During the day, I think about how I look many times.
- |                      |   |   |                                  |   |   |                   |
|----------------------|---|---|----------------------------------|---|---|-------------------|
| 1                    | 2 | 3 | 4                                | 5 | 6 | 7                 |
| Strongly<br>Disagree |   |   | Neither<br>Agree nor<br>Disagree |   |   | Strongly<br>Agree |
6. I often worry about whether the clothes I am wearing make me look good.
- |                      |   |   |                                  |   |   |                   |
|----------------------|---|---|----------------------------------|---|---|-------------------|
| 1                    | 2 | 3 | 4                                | 5 | 6 | 7                 |
| Strongly<br>Disagree |   |   | Neither<br>Agree nor<br>Disagree |   |   | Strongly<br>Agree |

7. I rarely worry about how I look to other people. (R)

1	2	3	4	5	6	7
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

8. I am more concerned with what my body can do than how it looks. (R)

1	2	3	4	5	6	7
Strongly Disagree			Neither Agree nor Disagree			Strongly Agree

## Appendix D

## EATING DISORDER INVENTORY – 2

Items 2, 9, 12, 19, 31, 45, 55, 59, 62 compose the Body Dissatisfaction subscale.

The items below ask about your attitudes, feelings, and behaviour. Some of the items relate to food or eating. Other items ask about your feelings about yourself.

For each item, decide if the item is true about you ALWAYS (A), USUALLY (U), OFTEN (O), SOMETIMES (S), RARELY (R), or NEVER (N). Choose the letter that corresponds to your rating. For example, if your rating for an item is OFTEN, you would choose O for that item.

Respond to all of the items, making sure that you circle the letter for the rating that is true about you.

		Always (A)	Usually (U)	Often (O)	Sometimes (S)	Rarely (R)	Never (N)
1.	I eat sweets and carbohydrates without feeling nervous	A	U	O	S	R	N
2.	I think that my stomach is too big	A	U	O	S	R	N
3.	I wish that I could return to the security of childhood	A	U	O	S	R	N
4.	I eat when I am upset	A	U	O	S	R	N
5.	I stuff myself with food	A	U	O	S	R	N
6.	I wish that I could be younger	A	U	O	S	R	N
7.	I think about dieting	A	U	O	S	R	N
8.	I get frightened when my feelings are too strong	A	U	O	S	R	N
9.	I think that my thighs are too large	A	U	O	S	R	N
10.	I feel ineffective as a person	A	U	O	S	R	N
11.	I feel extremely guilty after overeating	A	U	O	S	R	N
12.	I think that my stomach is just the right size	A	U	O	S	R	N

13.	Only outstanding performance is good enough in my family	A	U	O	S	R	N
14.	The happiest time in life is when you are a child	A	U	O	S	R	N
15.	I am open about my feelings	A	U	O	S	R	N
16.	I am terrified of gaining weight	A	U	O	S	R	N
17.	I trust others	A	U	O	S	R	N
18.	I feel alone in the world	A	U	O	S	R	N
19.	I feel satisfied with the shape of my body	A	U	O	S	R	N
20.	I feel generally in control of things in my life	A	U	O	S	R	N
21.	I get confused about what emotion I am feeling	A	U	O	S	R	N
22.	I would rather be an adult than a child	A	U	O	S	R	N
23.	I can communicate with others easily	A	U	O	S	R	N
24.	I wish I were someone else	A	U	O	S	R	N
25.	I exaggerate or magnify the importance of weight	A	U	O	S	R	N
26.	I can clearly identify what emotion I am feeling	A	U	O	S	R	N
27.	I feel inadequate	A	U	O	S	R	N
28.	I have gone on eating binges where I felt that I could not stop	A	U	O	S	R	N
29.	As a child, I tried very hard to avoid disappointing my parents and teachers	A	U	O	S	R	N
30.	I have close relationships	A	U	O	S	R	N
31.	I like the shape of my buttocks	A	U	O	S	R	N

32.	I am preoccupied with the desire to be thinner	A	U	O	S	R	N
33.	I don't know what's going on inside me	A	U	O	S	R	N
34.	I have trouble expressing my emotions to others	A	U	O	S	R	N
35.	The demands of adulthood are too great	A	U	O	S	R	N
36.	I hate being less than best at things	A	U	O	S	R	N
37.	I feel secure about myself	A	U	O	S	R	N
38.	I think about bingeing (overeating)	A	U	O	S	R	N
39.	I feel happy that I am not a child anymore	A	U	O	S	R	N
40.	I get confused as to whether or not I am hungry	A	U	O	S	R	N
41.	I have a low opinion of myself	A	U	O	S	R	N
42.	I feel that I can achieve my standards	A	U	O	S	R	N
43.	My parents have expected excellence of me	A	U	O	S	R	N
44.	I worry that my feelings will get out of control	A	U	O	S	R	N
45.	I think my hips are too big	A	U	O	S	R	N
46.	I eat moderately in front of others and stuff myself when they're gone	A	U	O	S	R	N
47.	I feel bloated after eating a normal meal	A	U	O	S	R	N
48.	I feel that people are happiest when they are children	A	U	O	S	R	N
49.	If I gain a pound, I worry that I will keep gaining	A	U	O	S	R	N
50.	I feel that I am a worthwhile person	A	U	O	S	R	N
51.	When I am upset, I don't know if I am sad, frightened, or angry	A	U	O	S	R	N

- |     |  |   |   |   |   |   |   |
|-----|--|---|---|---|---|---|---|
| 52. | I feel that I must do things perfectly or not do them at all                                       | A | U | O | S | R | N |
| 53. | I have the thought of trying to vomit in order to lose weight                                      | A | U | O | S | R | N |
| 54. | I need to keep people at a certain distance (feel uncomfortable if someone tries to get too close) | A | U | O | S | R | N |
| 55. | I think that my thighs are just the right size   | A | U | O | S | R | N |
| 56. | I feel empty inside (emotionally)  | A | U | O | S | R | N |
| 57. | I can talk about personal thoughts or feelings   | A | U | O | S | R | N |
| 58. | The best years of your life are when you become an adult   | A | U | O | S | R | N |
| 59. | I think my buttocks are too large  | A | U | O | S | R | N |
| 60. | I have feelings I can't quite identify   | A | U | O | S | R | N |
| 61. | I eat or drink in secrecy  | A | U | O | S | R | N |
| 62. | I think that my hips are just the right size   | A | U | O | S | R | N |
| 63. | I have extremely high goals  | A | U | O | S | R | N |
| 64. | When I am upset, I worry that I will start eating  | A | U | O | S | R | N |
| 65. | People I really like end up disappointing me   | A | U | O | S | R | N |
| 66. | I am ashamed of my human weaknesses  | A | U | O | S | R | N |
| 67. | Other people would say that I am emotionally unstable  | A | U | O | S | R | N |
| 68. | I would like to be in total control of my bodily urges   | A | U | O | S | R | N |
| 69. | I feel relaxed in most group situations  | A | U | O | S | R | N |
| 70. | I say things impulsively that I regret having  | A | U | O | S | R | N |

said

- |     |  |   |   |   |   |   |   |
|-----|--|---|---|---|---|---|---|
| 71. | I go out of my way to experience pleasure            | A | U | O | S | R | N |
| 72. | I have to be careful of my tendency to abuse drugs   | A | U | O | S | R | N |
| 73. | I am outgoing with most people                       | A | U | O | S | R | N |
| 74. | I feel trapped in relationships                      | A | U | O | S | R | N |
| 75. | Self-denial makes me feel stronger spiritually       | A | U | O | S | R | N |
| 76. | People understand my real problems                   | A | U | O | S | R | N |
| 77. | I can't get strange thoughts out of my head          | A | U | O | S | R | N |
| 78. | Eating for pleasure is a sign of moral weakness      | A | U | O | S | R | N |
| 79. | I am prone to outbursts of anger or rage             | A | U | O | S | R | N |
| 80. | I feel that people give me the credit I deserve      | A | U | O | S | R | N |
| 81. | I have to be careful of my tendency to abuse alcohol | A | U | O | S | R | N |
| 82. | I believe that relaxing is simply a waste of time    | A | U | O | S | R | N |
| 83. | Others would say that I get irritated easily         | A | U | O | S | R | N |
| 84. | I feel like I am losing out everywhere               | A | U | O | S | R | N |
| 85. | I experience marked mood shifts                      | A | U | O | S | R | N |
| 86. | I am embarrassed by my bodily urges                  | A | U | O | S | R | N |
| 87. | I would rather spend time by myself than with others | A | U | O | S | R | N |
| 88. | Suffering makes you a better person                  | A | U | O | S | R | N |
| 89. | I know that people love me                           | A | U | O | S | R | N |
| 90. | I feel like I must hurt myself or others.            | A | U | O | S | R | N |
| 91. | I feel like I really know who I am.                  | A | U | O | S | R | N |



## Appendix E

## SOCIOCULTURAL ATTITUDES TOWARDS APPEARANCE SCALE – 3

Items 3, 4, 7, 8, 11, 12, 15, 16, and 27 compose the Internalization General subscale.

Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

Definitely Disagree = 1

Mostly Disagree = 2

Neither Agree Nor Disagree = 3

Mostly Agree = 4

Definitely Agree = 5

1. TV programs are an important source of information about fashion and "being attractive."
2. I've felt pressure from TV or magazines to lose weight.
3. I do not care if my body looks like the body of people who are on TV. (R)
4. I compare my body to the bodies of people who are on TV.
5. TV commercials are an important source of information about fashion and "being attractive."
6. I do not feel pressure from TV or magazines to look pretty. (R)
7. I would like my body to look like the models who appear in magazines.
8. I compare my appearance to the appearance of TV and movie stars.
9. Music videos on TV are not an important source of information about fashion and "being attractive." (R)
10. I've felt pressure from TV and magazines to be thin.
11. I would like my body to look like the people who are in movies.
12. I do not compare my body to the bodies of people who appear in magazines. (R)
13. Magazine articles are not an important source of information about fashion and "being attractive." (R)
14. I've felt pressure from TV or magazines to have a perfect body.
15. I wish I looked like the models in music videos.
16. I compare my appearance to the appearance of people in magazines.
17. Magazine advertisements are an important source of information about fashion and "being attractive."
18. I've felt pressure from TV or magazines to diet.
19. I do not wish to look as athletic as the people in magazines. (R)
20. I compare my body to that of people in "good shape."
21. Pictures in magazines are an important source of information about fashion and "being attractive."
22. I've felt pressure from TV or magazines to exercise.
23. I wish I looked as athletic as sports stars.
24. I compare my body to that of people who are athletic.
25. Movies are an important source of information about fashion and "being attractive."
26. I've felt pressure from TV or magazines to change my appearance.

27. I do not try to look like the people on TV. (R)
28. Movie stars are not an important source of information about fashion and "being attractive." (R)
29. Famous people are an important source of information about fashion and "being attractive."
30. I try to look like sports athletes.

## Appendix F

## ROSENBERG SELF-ESTEEM SCALE

Please record the appropriate answer per item, depending on whether you strongly agree, agree, disagree, or strongly disagree with it.

3	2	1	0
strongly agree	agree	disagree	strongly disagree

- \_\_\_\_\_ 1. I feel that I am a person of worth, at least on an equal plane with others.
- \_\_\_\_\_ 2. I feel that I have a number of good qualities.
- \_\_\_\_\_ 3. All in all, I am inclined to feel that I am a failure.
- \_\_\_\_\_ 4. I am able to do things as well as most people.
- \_\_\_\_\_ 5. I feel that I do not have much to be proud of.
- \_\_\_\_\_ 6. I take a positive attitude toward myself.
- \_\_\_\_\_ 7. On the whole, I am satisfied with myself.
- \_\_\_\_\_ 8. I wish I could have more respect for myself.
- \_\_\_\_\_ 9. I certainly feel useless at times.
- \_\_\_\_\_ 10. At times I think that I am no good at all.

## Appendix G

## MARLOWE-CROWNE SOCIAL DESIRABILITY SCALE – FORM C

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is *true or false* as it pertains to you personally.

1. It is sometimes hard for me to go on with my work if I am not encouraged.  
\_\_\_\_\_
2. I sometimes feel resentful when I don't get my way. \_\_\_\_\_
3. On a few occasions, I have given up doing something because I thought too little of my ability. \_\_\_\_\_
4. There have been times when I felt like rebelling against people in authority even though I knew they were right. \_\_\_\_\_
5. No matter who I'm talking to, I'm always a good listener. \_\_\_\_\_
6. There have been occasions when I took advantage of someone. \_\_\_\_\_
7. I'm always willing to admit when I make a mistake. \_\_\_\_\_
8. I sometimes try to get even rather than forgive and forget. \_\_\_\_\_
9. I am always courteous, even to people who are disagreeable. \_\_\_\_\_
10. I have never been irked when people expressed ideas very different from my own. \_\_\_\_\_
11. There have been times when I was quite jealous of the good fortune of others.  
\_\_\_\_\_
12. I am sometimes irritated by people who ask favors of me. \_\_\_\_\_
13. I have never deliberately said something that hurt someone's feelings. \_\_\_\_\_

## Appendix H

## BECK DEPRESSION INVENTORY – II

This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the **one statement** in each group that best describes the way you have been feeling during the **past week, including today**. Circle the number beside the statement you have picked. If several statements in the group seem to apply equally well, circle the highest number for that group. Be sure that you do not choose more than one statement for any group, including Item 16 (Changes in Sleeping Pattern) or Item 18 (Changes in Appetite).

<p><b>1. Sadness</b></p> <p>0 I do not feel sad. 1 I feel sad much of the time. 2 I am sad all the time. 3 I am so sad or unhappy that I can't stand it.</p> <p><b>2. Pessimism</b></p> <p>0 I am not discouraged about my future. 1 I feel more discouraged about my future than I used to be. 2 I do not expect things to work out for me. 3 I feel my future is hopeless and will only get worse.</p> <p><b>3. Past Failure</b></p> <p>0 I do not feel like a failure. 1 I have failed more than I should have. 2 As I look back, I see a lot of failures. 3 I feel I am a total failure as a person.</p> <p><b>4. Loss of Pleasure</b></p> <p>0 I get as much pleasure as I ever did from the things I enjoy. 1 I don't enjoy things as much as I used to. 2 I get very little pleasure from the things I used to enjoy. 3 I can't get any pleasure from the things I used to enjoy.</p> <p><b>5. Guilty Feelings</b></p> <p>0 I don't feel particularly guilty. 1 I feel guilty over many things I have done or should have done. 2 I feel quite guilty most of the time. 3 I feel guilty all of the time.</p>	<p><b>6. Punishment Feelings</b></p> <p>0 I don't feel I am being punished. 1 I feel I may be punished. 2 I expect to be punished. 3 I feel I am being punished.</p> <p><b>7. Self-Dislike</b></p> <p>0 I feel the same about myself as ever. 1 I have lost confidence in myself. 2 I am disappointed in myself. 3 I dislike myself.</p> <p><b>8. Self-Criticalness</b></p> <p>0 I don't criticize or blame myself more than usual. 1 I am more critical of myself than I used to be. 2 I criticize myself for all my faults. 3 I blame myself for everything bad that happens.</p> <p><b>9. Suicidal Thought or Wishes</b></p> <p>0 I don't have any thoughts of killing myself. 1 I have thoughts of killing myself, but I would not carry them out. 2 I would like to kill myself. 3 I would kill myself if I had the chance.</p> <p><b>10. Crying</b></p> <p>0 I don't cry anymore than I used to. 1 I cry more than I used to. 2 I cry over every little thing. 3 I feel like crying, but I can't.</p>
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<p><b>11. Agitation</b></p> <p>0 I am no more restless or wound up than usual.</p> <p>1 I feel more restless or wound up than usual.</p> <p>2 I am so restless or agitated that it's hard to stay still.</p> <p>3 I am so restless or agitated that I have to keep moving or doing something.</p> <p><b>12. Loss of Interest</b></p> <p>0 I have not lost interest in other people or activities.</p> <p>1 I am less interested in other people or things than before.</p> <p>2 I have lost most of my interest in other people or things.</p> <p>3 It's hard to get interested in anything.</p> <p><b>13. Indecisiveness</b></p> <p>0 I make decisions about as well as ever.</p> <p>1 I find it more difficult to make decisions than usual.</p> <p>2 I have much greater difficulty in making decisions than I used to.</p> <p>3 I have trouble making any decisions.</p> <p><b>14. Worthlessness</b></p> <p>0 I do not feel I am worthless.</p> <p>1 I don't consider myself as worthwhile and useful as I used to.</p> <p>2 I feel more worthless as compares to other people.</p> <p>3 I feel utterly worthless.</p> <p><b>15. Loss of Energy</b></p> <p>0 I have as much energy as ever.</p> <p>1 I have less energy than I used to have.</p> <p>2 I don't have enough energy to do very much.</p> <p>3 I don't have enough energy to do anything.</p> <p><b>16. Changes in Sleeping Pattern</b></p> <p>0 I have not experienced any change in my sleeping pattern.</p> <p>1a I sleep somewhat more than usual.</p> <p>1b I sleep somewhat less than usual.</p> <p>2a I sleep a lot more than usual.</p> <p>2b I sleep a lot less than usual.</p> <p>3a I sleep most of the day.</p> <p>3b I wake up 1-2 hours early and can't get back to sleep.</p>	<p><b>17. Irritability</b></p> <p>0 I am no more irritable than usual.</p> <p>1 I am more irritable than usual.</p> <p>2 I am much more irritable than usual.</p> <p>3 I am irritable all the time.</p> <p><b>18. Changes in Appetite</b></p> <p>0 I have not experienced any change in my appetite.</p> <p>1a My appetite is somewhat less than usual.</p> <p>1b My appetite is somewhat greater than usual.</p> <p>2a My appetite is much less than before.</p> <p>2b My appetite is much greater than usual.</p> <p>3a I have no appetite at all.</p> <p>3b I crave food all the time.</p> <p><b>19. Concentration Difficulty</b></p> <p>0 I can concentrate as well as ever.</p> <p>1 I can't concentrate as well as usual.</p> <p>2 It's hard to keep my mind on anything for very long.</p> <p>3 I find I can't concentrate on anything.</p> <p><b>20. Tiredness or Fatigue</b></p> <p>0 I am no more tired or fatigued than usual.</p> <p>1 I get more tired or fatigued more easily than usual.</p> <p>2 I am too tired or fatigued to do a lot of the things I used to do.</p> <p>3 I am too tired or fatigued to do most of the things I used to do.</p> <p><b>21. Loss of Interest in Sex</b></p> <p>0 I have not noticed any recent change in my interest in sex.</p> <p>1 I am less interested in sex than I used to be.</p> <p>2 I am much less interested in sex now.</p> <p>3 I have lost interest in sex completely.</p>
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## Appendix I

## DEMOGRAPHIC QUESTIONNAIRE

Age: \_\_\_\_\_ Are you : Male  Female  Transgender  Other: \_\_\_\_\_

**Relationship status:**

Single  In a relationship/cohabiting  Married/common law   
Divorced/separated  Widowed

**What is your sexual orientation?**

Heterosexual  Homosexual  Bisexual  Other: \_\_\_\_\_

**Number of children:** 0  1  2  3  4  more than 4

**What is your racial/ethnic background?**

Caucasian  South Asian  Hispanic   
African-Canadian  European  Native-Canadian   
East Asian  Other: \_\_\_\_\_

**What is your weight classification?**

Severely underweight  Normal weight  Obese   
Underweight  Overweight  Morbidly obese

**Have you ever been diagnosed with an eating disorder?**

Yes  No

**School enrolment:** Full time student  Part time student

**Years in University:**

First year  Third year  More than 4 years   
Second year  Fourth year

Including your current psychology course, how many psychology courses have you taken so far? \_\_\_\_\_

**Academic focus:**

What is/are your major(s)? \_\_\_\_\_

What is/are your minor(s)? \_\_\_\_\_

**Current employment status:**

Unemployed   
Full time   
Part time

**If you are currently employed, what is your occupation?**

Clerical  Labourer   
 Professional  Self-employed   
 Owner/manager  Other: \_\_\_\_\_

**Mother or guardian's employment status:**

Unemployed   
 Full time   
 Part time

**Mother or guardian's occupation:**

Clerical  Labourer   
 Professional  Self-employed   
 Owner/manager  Other: \_\_\_\_\_

**Father or guardian's employment status:**

Unemployed   
 Full time   
 Part time

**Father or guardian's occupation:**

Clerical  Labourer   
 Professional  Self-employed   
 Owner/manager  Other: \_\_\_\_\_



## Appendix J

## Participant Pool Recruitment Advertisement

Title: Psychological Factors and Person Perception

Researchers: Jean Kim

Duration: 60 minutes

Credits: 1.0 credit

Description:

The purpose of the study is to examine psychological factors and person perception in undergraduate students. The study is completed online and in one session. You will be asked to complete a series of questionnaires and a task related to individual differences and perceptions of people. All responses will remain confidential. Once you sign up for the study, the researcher will email you the URL to the study webpage. It may take up to 24 hours to receive this email.

The study will take no more than 60 minutes of your time, and is worth 1 bonus point if you are registered in the pool and you are registered in one or more eligible psychology courses.

## Appendix K

### LETTER OF INFORMATION FOR CONSENT TO PARTICIPATE IN RESEARCH

Title of Study: Psychological Factors and Person Perception

You are asked to participate in a research study conducted by Jean Kim and supervised by Dr. Josée Jarry from the Department of Psychology at the University of Windsor. The study results will be used to fulfil the requirements of a Master's thesis.

If you have any questions or concerns about the research, please feel to contact Jean Kim at kim11f@uwindsor.ca, or Dr. Josée Jarry at 519-253-3000 ext. 2237.

#### PURPOSE OF THE STUDY

The purpose of this study is to explore the relationships between individual differences in various psychological factors and perceptions of people in undergraduate students.

#### PROCEDURES

If you volunteer to participate in this study, you will be asked to do the following things. You will be asked to complete several online questionnaires and an online task about individual differences and perceptions of people. At the end of the study, you will be directed to a separate form that will ask you to provide your name and student number to verify your bonus credit for participation.

The entire study will take approximately 60 minutes of your time. The study must be completed in one online session. If you volunteer to participate, please set aside one uninterrupted hour and complete the study in a quiet area without distractions.

#### POTENTIAL RISKS AND DISCOMFORTS

You will be asked some questions that are personal in nature. A risk of this study is the possibility that thinking about these personal issues may cause some psychological or emotional discomfort. If you have any concerns you wish to discuss, please feel free to contact the principal investigator, Jean Kim, the faculty advisor, Dr. Josée Jarry, or the Student Counselling Centre at 519-253-3000 ext. 4616.

#### POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

Participating in this study will provide you with an opportunity to learn about psychological research. Specifically, you will gain knowledge in conducting psychological research online. Also, you may learn more about yourself and your perceptions of people. Finally, participating in this research will contribute to scientific knowledge about psychological factors and person perception in undergraduate students.

#### COMPENSATION FOR PARTICIPATION

You will receive 1.0 bonus point towards a psychology course for 60 minutes of participation, provided you are registered in the psychology participant pool and enrolled in one or more eligible courses.

#### CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. At the end of the study, we must collect your name and student number for you to receive your bonus credit. However, your data will be kept separate from any identifying information. All files will be encrypted and password-protected, and will be stored in the

University of Windsor data servers. Your data will be retained for 10 years, after which it will be securely deleted from the servers.

## PARTICIPATION AND WITHDRAWAL

Your participation in this study is completely voluntary. If you decide to participate, you may withdraw at any time during the study by clicking on the "Discard responses and exit" button without negative consequences of any kind. However, if you choose to withdraw before completing the survey, you will not receive the bonus credit. You may refuse to answer any questions you do not want to answer by leaving the question blank, and still remain in the study. We encourage you to answer all questions with which you are comfortable answering, as your responses are important to our investigation. After completing the session, you will have the option of removing your data from the study. You will be awarded the bonus credit if you complete the survey, regardless of whether you choose to include or remove your data from the study. The investigator may withdraw you from this research if circumstances arise which warrant doing so.

## FEEDBACK OF THE RESULTS OF THIS STUDY TO THE PARTICIPANTS

Once the research is complete, results will be available to all participants on the University of Windsor REB website.

Web address: [www.uwindsor.ca/reb](http://www.uwindsor.ca/reb)

Date when results are available: September 2013

## SUBSEQUENT USE OF DATA

These data may be used in subsequent studies, in publications, and in presentations. If so, any identifying information will be confidential, and only group data will be reported.

## RIGHTS OF RESEARCH PARTICIPANTS

If you have questions regarding your rights as a research participant, contact: Research Ethics Coordinator, University of Windsor, Windsor, Ontario, N9B 3P4; Telephone: 519-253-3000, ext. 3948; e-mail: [ethics@uwindsor.ca](mailto:ethics@uwindsor.ca)

## SIGNATURE OF INVESTIGATOR

These are the terms under which I will conduct research.

Jean Kim, B.A., B.M.Sc.

Department of Psychology

University of Windsor

**It is recommended that you print out a copy of this letter of information for your records. It also is recommended that you turn off your pop-up blockers before beginning the survey, should you choose to do so.**

## CONSENT OF RESEARCH PARTICIPANT

"I understand the information provided for the study 'Psychological Factors and Person Perception' described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I will print a copy of this form for my own reference."

To acknowledge that you have read the letter of information, and that you are providing informed consent to participate in this study, please click "I agree" below.

I agree

No thank you

## Appendix L

## POST-STUDY INFORMATION

Thank you for participating in this study. Your time and willingness to participate are greatly appreciated.

After reading the following post-study information, please go to <http://uwindsor.fluidsurveys.com/s/kim-bonus-credit-psychfactorspersonperc/> to receive your bonus credit.

Fat stereotypes are negative beliefs associated with excess weight. Common fat stereotypes include the beliefs that overweight and obese people are lazy, unfriendly, and self-indulgent. Past research has shown that believing fat stereotypes is associated with negative mental health outcomes. This research has focused on the relationship between holding fat stereotypes and mental health in overweight and obese women. In this study, we are exploring whether or not these stereotypical beliefs are related to body image in normal weight women. For example, does believing that most overweight and obese people are lazy relate to body dissatisfaction in women who are of normal weight? If so, does this relationship differ for normal weight versus overweight women?

Past research also has demonstrated that the tendency to closely examine and look at one's body is harmful to body satisfaction. A second interest in this study is to explore if women who have this tendency, and who also hold fat stereotypes, experience more body dissatisfaction than do women who do not examine their body and hold fat stereotypes.

For further information on these topics, please consult the following references:

Frederick, D. A., Forbes, G. B., Grigorian, K. E., & Jarcho, J. M. (2007). The UCLA body project I: Gender and ethnic differences in self-objectification and body satisfaction among 2,206 undergraduates. *Sex Roles: A Journal of Research*, 57(5-6), 317-327. doi:10.1007/s11199-007-9251-z

Friedman, K. E., Reichmann, S. K., Costanzo, P. R., Zelli, A., Ashmore, J. A., & Musante, G. J. (2005). Weight stigmatization and ideological beliefs: Relation to psychological functioning in obese adults. *Obesity Research*, 13(5), 907-916. doi:10.1038/oby.2005.105

Puhl, R., & Brownell, K. D.. (2001). Bias, discrimination, and obesity. *Obesity Research*, 9(12), 788-805.

If you have any concerns about the study, or if you are interested in additional information, please feel free to contact the primary investigator, Jean Kim, at [kim11f@uwindsor.ca](mailto:kim11f@uwindsor.ca). **Please print this page for your reference.**

If you wish to talk about any personal issues that came to your attention today, please contact the Student Counselling Centre at 519-253-3000 ext. 4616.

Additional Community Resources:

Bulimia Anorexia Nervosa Association

Telephone: 519-969-2112

Email: [info@bana.ca](mailto:info@bana.ca)

Website: [www.bana.ca](http://www.bana.ca)

Community Crisis Centre of Windsor

Telephone: 519-973-4435

Website: <http://windsoressex.cioc.ca/record/WIN0762>

Distress Centre – Windsor-Essex County

Telephone: 519-256-5000

Website: [www.dcwindsor.com](http://www.dcwindsor.com)

## VITA AUCTORIS

NAME	Jean Kim
PLACE OF BIRTH	Toronto, Ontario
YEAR OF BIRTH	1986
EDUCATION	Aldershot High School, Burlington, Ontario 2000 – 2004 University of Western Ontario, London, Ontario 2004 – 2008 B.M.Sc. (Hons) Physiology 2009 – 2011 B.A. (Hons) Psychology University of Windsor, Windsor, Ontario 2011 – 2013 M.A. Clinical Psychology