

Effect of Exposure to Body-Based Imagery on Weight Bias and Body Image Satisfaction
in College Students

By

Sarah Ann Fortner

A THESIS

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This study examined the effect of exposure to fat positive exercise images as well as stereotypical fat imagery and stereotypical thin exercise images on participants' self-reported weight bias and body image. The study hypothesized that participants exposed to fat positive imagery would exhibit less social distance, fat phobia, and internalized weight bias, along with better body image satisfaction than those exposed to stereotypical or thin imagery. Following randomized exposure to one of four experimental conditions (Fat Positive-No Text, Fat Positive-Text, Stereotypical Fat, and Thin), 185 participants (137 females, 44 males, and 4 non-binary individuals) completed questionnaires assessing social distance, body image state, fat phobia, and internal weight bias. Analyses revealed no significant differences among the four experimental conditions on any of the dependent variables; however, the mean scores on the measures of social distance, body image satisfaction, fat phobia, and internal weight bias trended in the expected directions for the Fat Positive-Text condition. The lack of statistical significance may be due to the small sample size and certain qualities of the relatively homogenous sample population that need to be addressed in future studies. Nevertheless, the results suggest that additional research on this topic should be conducted.

Key Words: body image, exercise, fat phobia, fat studies, media images, weight bias,

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I understand that my project will become part of the permanent collection of Oregon State University, University Honors College. My signature below authorizes release of my project to any reader upon request.

Sarah Ann Fortner

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Introduction

The effects of bias and discrimination are well understood in today's world. Research has shown that prejudice, stereotyping, and bias can negatively affect the health, social standing, and mental wellbeing of targeted groups (Stuber, Meyer, & Link, 2008). Steps are often taken, both legally and in the realm of social justice, to protect oppressed groups. However, one form of bias and discrimination that is rarely acknowledged, is weight-based discrimination or fat bias (Brownell, 2005). This is even though such bias has increased exponentially over the last decades, and is on par with bias based on race or gender (Diedrichs & Puhl, 2017). Bias and discrimination against fat people is the topic of this investigation.

Throughout this document, the word "fat" will be used in favor of "obese" or "overweight." Researchers in the field of Fat Studies, The National Association to Advance Fat Acceptance (NAAFA), and other fat activists endorse the use of the word "fat" rather than the medicalized, pathologizing terms, "obese" and "overweight" (Brownell, 2005; Meleo-Erwin, 2015). These two terms are anti-fat, imply that fatness is a disease, and that there is a target weight for which everyone should be aiming. The phrasing "obese people" has also been found to evoke stronger negative evaluations than the term "fat people" (Vartanian, 2010). Using the term "fat" rather than body mass index (BMI) defined terminology is much like using the term "queer" as advocated by the field of Queer Studies. That is, Fat Studies scholars are working to reclaim a term, which was formerly a slur, as a common descriptor.

Discrimination, prejudice, and stereotypes directed at fat individuals fall under the heading of weight bias or fat phobia (Diedrichs & Puhl, 2017). One of the many ways

weight bias is perpetuated is through stereotypical, dehumanizing, and unflattering images of fat people. These are commonplace across various media, appearing everywhere from magazines, news stories, films and television shows, even to student textbooks (Diedrichs & Puhl, 2017; Watkins & Gerber, 2016).

Previous research has indicated that participants who view negative, stereotypical photographs of fat people express more negative attitudes about fat people, and that viewing non-stereotypical images might mitigate their bias (Carels et al., 2013; McClure, Puhl, & Heuer, 2011; Pearl, Dovidio, & Puhl, 2015; Puhl, Luedicke, & Heuer, 2013; Pearl, Puhl, & Brownell, 2012). The current study attempted to extend this research by assessing self-reported social distance, body image satisfaction, fat phobia, and internal weight bias in response to stereotypical fat and stereotypical thin imagery contrasted to non-stereotypical fat imagery, including fat positive imagery not examined in previous studies. The imagery utilized focused on physical activity, as weight bias is particularly prevalent in fitness settings (Chambliss & Blair, 2005). The aim of this research was to determine if exposure to positive fitness imagery of fat people is a viable way to reduce weight bias in a college student population.

Hypotheses

Participants exposed to fat positive imagery will exhibit significantly better scores on the Social Distance Measure (Puhl et al., 2013), the Body Image State Scale (Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002) the Fat Phobia Scale – Short Form (Bacon, Scheltema, & Robinson, 2001), and the Weight Bias Internalization Scale - Modified (Pearl & Puhl, 2013) following their exposure compared to those exposed to thin or stereotypical fat imagery.

Literature Review

Introduction to Weight Bias

Nearly 50% of Americans would rather give up a year of their life than become “obese,” and 15% indicate that they would give up 10 years of life (Schwartz, Vartanian, Nosek, & Brownell 2006). This aversion to fatness has roots in not only perceived health concerns, but also extreme social stigma against fat people. This stigma is known as weight bias. Weight bias is defined as the “stigmatization, bullying, prejudice, and discrimination against overweight and obese individuals based on their body weight and appearance” (Diedrichs & Puhl, 2017, pp. 392). Like other types of bias and prejudice, weight bias is partially influenced by social consensus. Sechrist and Stangor write, “Prejudice is a social norm—we become prejudiced if we think other people are too” (2005, pg 103). Prevalence of both institutional and interpersonal forms of weight bias have been found to match, or even exceed in some cases, rates of racial and gender bias in America (Puhl, Andreyeva, & Brownell, 2008). Weight bias directed at women is particularly prevalent, and studies suggest that men, white individuals, and young adults are the most likely demographic groups to display fat-phobic attitudes (Diedrichs & Puhl, 2017).

Fat phobia is certainly salient today. A social media search of the terms “obese” or “fat” results in thousands of negatively valenced online comments about fatness and fat people (Chou, Prestin, & Kunath, 2014). Fat people are assumed to be lazy, mean, unintelligent, ugly, sloppy, and lacking in willpower (Tomiyama, 2014; Brochu & Esses, 2011). These assumptions lead to patterns of discriminatory speech and behavior directed at fat individuals, in nearly every area of their lives.

Effects of Bias

Experiencing weight bias and discrimination on a day to day basis is detrimental to one's overall wellbeing (Major, Eliezer, & Rieck, 2012). Researchers have found that discrimination, or even the anticipation of discrimination, puts people into a state of heightened physiological arousal that can have long term health impacts (Williams & Neighbors, 2001). Weight based discrimination is no different. Those who face weight bias, and internalized negative stigma regarding their weight, face negative health consequences (Schafer & Ferraro, 2011). Major et al. found that fat people exposed to a stigmatizing situation had increased blood pressure and lowered executive control. One longitudinal study (Schafer & Ferraro, 2001) found that participants who perceived weight based discrimination fared much worse physiologically than those who did not perceive discrimination, regardless of weight status or other extraneous variables. Being exposed to stigmatizing media messages also leads fat people, perhaps ironically, to consume more calories and gain more weight (Major, Hunger, Bunyan, & Miller, 2014). This pattern of behavior can trigger a "vicious cycle" in which weight gain results in self-hatred, which results in more weight gain and more self-hatred (Tomiyama, 2014). Unlike members of other marginalized social groups, fat people do not tend to hold favorable attitudes towards their own group (Wang, Brownell, & Wadden, 2004). This is due to internalized weight bias. When weight bias is internalized, it causes psychological maladjustment and distress (Carels et al., 2013). In fact, weight bias internalization is a stronger predictor of negative mental and physical health effects than simply experiencing weight stigma (Pearl & Puhl, 2015). The constant stress of weight stigma and stigma internalization can exacerbate pre-existing physical ailments or even

independently result in poor long term health (Hunger, Major, Blodorn, & Miller, 2015). The psychological and physical effects of weight stigma are dangerous to the health and mental well-being of fat individuals, perhaps more dangerous than the health implications of the weight itself.

“Obesity,” per many health organizations and media outlets, is a problem reaching “epidemic proportions” worldwide (Mitchell, Wyatt, & Hill, 2011). This “epidemic” is painted as one of the most severe public health crises of our modern era. This line of reasoning equates weight with health. However, the “obesity paradox” literature (Hainer, & Aldhoon-Hainerova, 2013) has shown health to be independent of size. Furthermore, the beneficial effects of exercise and nutritious diet can be obtained regardless of weight change (Bacon & Aphramor, 2011; Sawyer, Angadi, & Gaesser, 2014). Often, connections between weight and poor health are based on correlational data, but spoken of in causal terms. Rather than weight causing poor health, third variables that are not accounted for, such as socioeconomic status, genetics, health behaviors, and weight bias itself, may be causal factors (Bacon & Aphramor, 2011).

The Health at Every Size™ (HAES) approach to health is gaining popularity, particularly in fat activism circles. HAES is a paradigm that focuses on reaching holistic health without focusing on weight loss as a goal (Robinson, 2013). The HAES model promotes physical activity for joy and health, rather than weight control. It has a foundation in celebrating diversity in body size and shape, disavowing dieting, and exploring the many social, cultural, genetic, and environmental factors that contribute to both physical and psychosocial health (Robinson, 2013). HAES researchers support a non-diet, mindful eating approach to food and body self-acceptance at all sizes (Hundall,

2014). The HAES model warns of the harmful health consequences of weight cycling, or the repetitive cycle of gaining and losing weight due to dieting (Bhammar & Gaesser, 2014). The HAES system is a paradigm shift away from pathologizing and demonizing fatness, with the goal of fighting weight bias in society, as well as discouraging unhealthy dieting, drastic lifestyle changes, and risky medical interventions like weight loss surgery (Ernsberger, 2014).

“Benevolent” Weight Bias

Unfortunately, although weight bias is detrimental to physical and mental wellbeing, it is not widely recognized as such. Unlike many other forms of bias, disparaging fat people is not only seen as socially acceptable, it is often viewed as a helpful means of encouraging weight loss (Brownell, 2005). This stance is based on many erroneous concepts related to the nature of fatness. First, it is assumed that the ability to lose weight is entirely based on the motivation of the individual and, with enough control, anyone could stop being fat. This ignores evidence that weight is based on a multitude of environmental, genetic, and sociocultural factors that are often far outside of any single person’s control (Bacon & Aphramor, 2011; Robinson, 2013). Second it is assumed that stigmatizing fat people will encourage them to lose weight, when in fact the opposite effect is much more likely. Researchers have found that exposure to weight stigmatizing material or speech causes fat individuals to engage in fewer weight controlling behaviors and to feel less capable of controlling their eating (Haines, Neumark-Sztainer, Eisenberg, & Hannan, 2006; Major, Hunger, Bunyan, Miller 2014; Puhl & Brownell, 2006). Additionally, viewing fat people as responsible for their

own weight is one of the greatest indicators of holding anti-fat biases (Crandall & Reser, 1994). The Anti-Fat Attitudes Questionnaire is a measure of weight bias that addresses three subcategories: concern about personal weight (Fear of Fat), belief that weight is controllable (Willpower), and prejudice toward fat people (Dislike). Crandall and Reser found Willpower to be a reliable predictor of Dislike. This means that people are likely to hold biased beliefs if they believe a lack of willpower made a person fat, and in turn believe that bullying them will encourage weight loss.

An example of problematic images and speech being used in a misguided attempt to fight obesity, is the anti-childhood obesity *Strong4Life* campaign (Skinner, 2013). The 2012 campaign produced by Children’s Healthcare of Atlanta depicted unflattering pictures of fat children with accompanying text such as, “Big bones didn’t make me this way. Big meals did” or “It’s hard to be a little girl if you’re not” (<http://www.strong4life.com>). This campaign was intended to “shock families into recognizing that obesity is a problem” (<http://www.npr.org/2012/01/09/144799538/controversy-swirls-around-harsh-anti-obesity-ads>). However, the ads were met with backlash from parents, fat activists, and NAAFA, leading to the creation of the body/health positive counter campaign, *Stand4Everybody* (<http://www.naafaonline.com/newsletterstuff/oldnewsletterstuff/February%202012%20NAAFA%20Newsletter.html>).

Weight Bias in Employment and Education

Economically, weight bias affects fat people immensely. Fat people are rated as less desirable candidates for hire, despite having similar or identical credentials to non-fat applicants (Grant & Mizzi, 2014). Once hired for a position, fat people tend to be paid less than their non-fat counterparts and they are rarely protected by employment related anti-discrimination laws (Fikkan & Rothblum, 2005). This is particularly true for women, as there is little and conflicting evidence that weight has a negative effect on men's wages (Fikkan & Rothblum, 2005). Fat women are more likely than fat men to feel the effects of weight bias in the workplace, but all genders experience some occupational penalty for their size. Stereotypical beliefs can lead to harsher disciplining of fat employees and lower rates of occupational retention. A wage gap exists for fat employees, particularly female fat employees. Cawley (2000) estimates that white women who are two standard deviations above the mean weight are paid on average 7% less than standard weight white women. One study found that women who were fat at age 16 suffered a wage penalty at age 23, whether they maintained that size or not (Sargent & Blanchflower, 1994). Per a 1996 study on the economic effects of weight, "obese" women have lower family incomes than those whose weight falls in the "recommended" range (Averett & Korenman). The same study states that fat women not only earn less money, they are also more likely to marry men who made less money than average, putting them at more economic risk. Disparate wages and discrimination in the workplace mean that being fat can result in poverty, rather than the common hypothesis that poverty results in fatness.

The economic disparity faced by fat people doesn't start in the workforce. Rather, it starts in schools. Studies show that adolescents who are fat are less likely to obtain a college degree (Fowler-Brown, Ngo, Phillips, & Wee, 2010). Parents of fat young women are less likely to pay for their daughter's education, as opposed to those of average weight young women (Crandall, 1995). Adolescent girls who are fat finish fewer years of school overall (Gortmaker, Must, Perrin, Sobol, & Dietz, 1993). Having a higher BMI results in fewer post-interview offers for admission into psychology graduate programs (Burmeister, Kiefner, Carels, & Musher-Eizenman, 2013). This link between obtaining a college education and weight certainly contributes to an economic disadvantage for fat individuals, particularly women. After overcoming the hurdle of being accepted into higher education, weight bias does not cease. Fat phobic attitudes are common among university students, with fat phobia even being described as "the status quo" (Ambwani, Thomas, Hopwood, Moss, & Grilo, 2014; Hayran, Akan, Ozkan, & Kocaoglu, 2013). These types of attitudes are even more common in students seeking degrees related to nutrition, nursing, and physical education (Chambliss, Finley, & Blair, 2003; Peters & Jones, 2010; Waller, Lampan, Lupfer-Johnson, 2012). Researchers have found that professors teaching physical education majors are weight biased against larger sized students and that they teach using weight biased material (Fontana, Furtado, Mazzardo, Hong, & de Campos, 2017). This level of bias in pre-health programs is a significant problem because maintaining a weight biased attitude within a health profession can negatively impact client care (Robinson, 2013).

Weight Bias in Medical Settings

A setting that one would expect to be understanding and educated about the medical realities regarding weight and weight bias is the healthcare industry; however, that is unfortunately often not usually the case. After family members, physicians are the second most frequent source of weight stigma directed at fat individuals (Puhl & Brownell, 2006). Unequal, prejudiced treatment of fat individuals is common in nearly every form of medical care. Of mental health professional charged with treating eating disordered patients, 56% had observed colleagues making disparaging remarks about fat patients, and 35% indicated that practitioners feel uncomfortable treating obese patients (Puhl et al., 2013). This is problematic because fat people may turn to mental health professionals when the mental toll of stigma becomes too much. If their therapist is also biased, a person may have no recourse to improve their psychological wellbeing. A study of UK trained medical workers, using the Fat Phobia Scale and the Beliefs about Obese People scale, found that only 1.4% of participants could be said to have “positive or neutral attitudes” towards fat patients (Swift et al., 2013). A cross sectional study using the Fat Phobia Scale found an average amount of weight bias among physician assistants within the New York Society of Physician Assistants (Wolf, 2012). Registered nurses and clinical support staff in pediatric hospitals also have elevated levels of weight bias towards fat children under their care (Garcia, 2016). It is particularly important that healthcare professionals mitigate their levels of weight bias, as misattributing symptoms to weight or focusing on weight loss as a treatment method can be very detrimental to patient health (Robinson, 2013). Symptoms can be attributed to weight that in a thin patient would be further examined and explored in detail, leading to more effective

treatment. Feeling shamed or blamed for their fatness can also dissuade a patient from returning to seek further treatment, potentially compromising their future health.

Weight Bias in Fitness Settings

Public health campaigns promoting physical activity have become common in the wake of the “obesity epidemic.” The “Let’s Move” campaign created by First Lady, Michelle Obama, repeatedly mentions losing weight as a goal of exercise. It states, “Children need 60 minutes of play with moderate to vigorous activity every day to grow up to a healthy weight” (Let’s Move Campaign, n.d.). This statement implies that children do not need to simply be healthy, but that they need to achieve a specific weight to do so. This weight-focused health perspective is not unique. In fact, in our current societal context, this goal may seem obvious. After all, people are exposed to advertisements promising “healthy” weight loss via a new exercise, pill, or diet nearly every day. However, the relationship between fitness, weight loss, and health is not as straightforward as it is often portrayed in popular culture. The correlation between health and weight is well researched, while causation between these variables is not (Bacon & Aphramor, 2011). However, research has found that physical activity levels are a greater predictor of health and wellness than BMI or weight (Bacon & Aphramor, 2011; Sawyer, Angadi, & Gaesser, 2014). This means it is important for people of all body types to engage in some form of physical activity if they wish to gain health benefits. Ironically, although fat people are frequently encouraged to lose weight via exercise, society does not make the act of exercise easy for fat individuals. The environments in which people exercise, such as gyms or other public spaces, are often not welcoming to fat people, and

weight bias in fitness settings is a significant barrier to many fat people who seek to exercise publicly (Chambliss & Blair, 2005). People perceived to be overweight are often shamed or otherwise criticized if they attempt to exercise publicly. In those who study exercise and sports science professionally, weight biased attitudes are very common (Chambliss, Finley, & Blair 2004). Exercise professionals tend to hold beliefs that fat people are fully responsible for their body size and that losing weight is an attainable goal for anyone (Souza, 2015). Experiences of weight stigma at the gym are associated with poor emotional and physical health, as well as exercise avoidance (Schvey et al., 2016; Souza, 2015).

In children, experiencing weight criticism while exercising, particularly among young girls, is associated with reduced sports enjoyment and reduced physical activity levels (Faith, Leone, Ayers, Heo, & Pietrobelli, 2002). Windram-Geddes (2013) chronicled the experiences of young girls in physical education courses, noting that the girls tended to list losing weight and burning calories as a major, if not the only, reason to participate in sports. Peer victimization of children, particularly if it is weight related, has a negative impact on physical activity levels in addition to depressive symptoms (Storch et al., 2007). Researchers have found that weight criticism from family, as well as peers, results in children holding negative attitudes towards sports and physical activity (Faith et al.). This connection between weight shaming and exercise is very relevant for young adults as well as children. Vartanian and Shaprow (2008) found that among college aged women, stigma experiences were positively correlated with body dissatisfaction and were related to an increase in the desire to avoid exercise. Young adulthood marks the largest rate of decline in physical activity, and only 50% of college students meet the standard

exercise recommendations for good health (Ebben & Brudzynski, 2008). Therefore, it is important that barriers to physical activity, particularly in vulnerable populations, are dismantled.

Weight Bias in Media

A particularly common form of weight bias in everyday life occurs via media depictions of fat people (Ata & Thompson, 2010). A recent study found that among images accompanying news stories about obesity online, 72% depicted fat people in a stigmatizing manner (Heuer, McClure, & Puhl, 2011). Common weight stigmatizing tropes include fat people being physically inactive, unhygienic, or eating high calorie, high fat foods. Also common, particularly within news stories focused on obesity are “headless fatties” which depict only the bodies or body parts of fat people, not their faces, in order to dehumanize them (Skinner, 2013). These stigmatizing images contribute to the normalization of weight bias (Hinman et al., 2015). Weight loss-focused reality television shows such as *The Biggest Loser* reinforce misconceptions about the dichotomy between weight and health, while also disparaging fat participants (Diedrichs & Puhl, 2017). Negative media representation of fat people includes the absence of fat people as well as the stereotypical portrayals. Fouts and Burggraf (2000) found that 76% of female characters on television shows were below average in weight compared to only 24% of the general population. When fat people are present on screen, they are often secondary characters and exist to be the target of weight related, body shaming jokes (Greenberg & Worrell, 2005).

Images that portray the thin ideal, as well as those that disparage fatness, are detrimental to the public's attitudes about fatness (Diedrichs & Puhl, 2017). Whenever a magazine, TV commercial, or advertisement needs to market a product using a model, it is common for that model to be thin. Exposure to thin media images is known to play a significant role in the development of body image dissatisfaction in females (Dalley, Buunk, & Umit, 2009). Following exposure to images of thin models, women are more likely to choose "diet" varieties of snack foods, demonstrating that thin media images may encourage habitual restrained eating (Krahe & Krause, 2010). Adolescent girls asked to watch music videos featuring thin models demonstrated significantly higher body dissatisfaction than those who simply listened to the same music (Bell, Lawton, & Dittmar, 2007).

This thin ideal sends a clear message about body size, that is, the only acceptable shape is thin. This obsession with a thin body type extends heavily into the diet and fitness industry, which consistently use only thin models to advertise their magazines and weight loss products (Dworkin & Wachs, 2009). Within these industries, the images of thin people are touted as "healthy" and "strong," with the implication that anyone who does not meet this physical ideal is not either of those things (Dworkin & Wachs, 2009). Media imagery is a very strong influence in the lives of the public, and representation matters in shaping public opinion. The mainstream portrayals of fat individuals, and the lack thereof, which currently dominate in our society contribute to weight biased attitudes and general body dissatisfaction (Ata & Thompson, 2010; Dalley, Buunk, & Umit, 2009).

Reducing Weight Bias

The many detrimental effects of weight bias and its sources are becoming clear to researchers in the psychological and medical research communities. What requires even more investigation, however, is how weight bias might be mitigated in the general population and in specific high-risk settings. Because media images are such a salient and pervasive source of weight biased material, changing the way fat people are portrayed could be key to reducing the prevalence or severity of weight bias in our society (McClure, Puhl, & Heuer, 2011). Previous research has examined how changing imagery surrounding fatness and “obesity” might change the way fatness and fat people are perceived (Carels et al., 2013; McClure et al., 2011; Pearl et al., 2015; Puhl et al., 2013; Pearl et al., 2012).

McClure et al. (2011) presented participants with a neutral news story on obesity statistics, accompanied with no image or an image of a fat person that was either non-stereotypical, stereotypical, flattering, or unflattering. These researchers found that participants exposed to stereotypical or unflattering photographs expressed higher levels of explicit weight bias. Pearl et al. (2012) exposed participants to either a positive (non-stereotypical) or negative (stereotypical) image of a fat person who was either a Black man, White man, Black woman, or White woman. They found that participants who viewed a positive image expressed lower scores on negative attitudes and social distance measures regarding fat people, regardless of the race or gender of the image subject. Carels et al. (2013) administered one of two weight bias implicit association tests (IAT) to participants in which one depicted fat and thin people participating in stereotype consistent behaviors, and one in which fat and thin people were depicted participating in

stereotype inconsistent behaviors. They found that implicit weight bias was significantly stronger when stereotype consistent behaviors were depicted. Puhl et al. (2013) conducted three experiments in which participants were exposed to stereotypical images of fat people or non-stereotypical images of fat people, varied by gender and race. The researchers found that stereotypical images increased participants' ratings of social distance, anti-fat attitudes, laziness, and dislike regarding fat people. In this study, images portraying African American females resulted in higher levels of social distance and dislike as compared to White females, although there were no significant differences regarding gender of the subject. These studies support the conclusion that the way fat people are portrayed affects the way people react to them with respect to weight bias. When fat people are portrayed in a non-stereotypical, positive manner, the weight bias of the image viewer tends to be reduced (Carels et al., 2013; McClure et al., 2011; Pearl et al., 2015; Puhl et al., 2013; Pearl et al., 2012).

Because fitness centers and public gyms are a high risk setting for weight bias, Watkins, Ebbeck, and Levy (2014) investigated the impact of a fitness environment tailored to larger women that adhered to the HAES model. The center had no mirrors or scales, and provided magazines featuring plus-sized models and fat positive imagery to exercising participants. The researchers found that large women in this environment had improved affect as compared to controls. Souza (2015) conducted a study which gathered information regarding how to increase fat acceptance in fitness center from fitness professionals, size-acceptance groups, and others relevant participants. This study found that while participants viewed education as a necessary step to combat weight bias, modeling, environmental, and behavioral changes were held in higher regard. These

included such steps as complimenting patrons on increased function rather than weight loss, advocating for fat positive imagery in the facility, and ensuring that facilities accommodate large body types. Pearl et al. (2015) examined exercise promotion in a non-stigmatizing manner. Participants were exposed to an image of a lean woman exercising, a fat woman exercising, a fat woman performing stereotypically, or a neutral image of a fat woman. Across participants, neutral images of fat women elicited reduced weight biased attitudes and increased reports of satisfaction during exercise.

The current research described in this document seeks to replicate and expand upon these previous studies. The purpose of this study was to focus on mitigating weight bias in a specific vulnerable population and situation, college students in a fitness setting. This study set out to determine how exposure to non-stigmatizing images of fat individuals exercising affects participants' weight bias as well as body image. The hypothesis that participants exposed to positive, non-stigmatizing images will exhibit less social distance, more body satisfaction, less fat phobia, and less internal weight bias than those exposed to images of thin people exercising or stereotypical obesity imagery, was tested. These variables were measured after exposing participants to one of four conditions, images of fat women exercising (no text), images of fat women exercising (with fat positive text), images of fat women engaging in stereotype consistent behavior such as being sedentary and eating high calorie foods, and images of thin women exercising. Images from the fat positive online campaign *Stand4Everybody* were used in the Fat Positive-Text condition as they represent a form of motivational poster that could be displayed in a public fitness center. This research is significant in that it investigated

the potential for fat positive images to mitigate weight bias, particularly in a venue where bias is typical.

Methods

Participants

Participants for this study were recruited via the School of Psychological Science Experiment Sign-Up System, which utilizes Sona Systems software. Students taking many undergraduate-level psychology courses are eligible to participate in research studies to earn extra credit in those courses. Participation was voluntary, and students had other means of obtaining extra credit beyond participation in research. Data were collected from January 26th to March 21st, 2017.

In total, 185 students participated in this randomized experimental study (74.1% female, 23.8% male, 2.2% nonbinary gendered individuals). Their average age was 20.3 years ($SD= 3.8$). Based on self-reported BMI, the participants were classified as 5.9% underweight, 61.6% normal weight, 24.3% overweight, and 8.1% obese. Of the sample, 64.3% were White, 20.4% Asian, 6.5% Hispanic, 4.3% “Other,” 3.2% Black or African American, 0.5% American Indian or Alaska Native, and 0.5% Native Hawaiian or Pacific Islander. Because the Experience of Weight Bias Discrimination Scale (EWBDS) measures historical events in participants’ lives, it is used as a demographic characteristic or independent variable (Farrow & Tarrant, 2009). The overall average score for all participants on the EWBDS was 2.25 ($SD= 1.12$), indicating a low level of weight based discrimination experiences within the sample.

Measures

Social Distance Measure (SDM). The SDM (Puhl et al., 2013) is a 6-item questionnaire measuring desired social distance from the target person depicted in the photograph. Participants are asked to indicate their agreement or disagreement on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree) in response to the following statements: “I would feel comfortable being friends with the person in this photo,” “I would share a car pool with the person in this photo each day,” “I wouldn’t mind if the person in this photo moved next door to me,” “I wouldn’t mind having someone like the person in this photo as my coworker,” “I wouldn’t mind if the person in this photo married into my family,” and “The person in this photo is the kind of person that I tend to avoid.” The last item on the scale is reverse coded. Scores range from 1 to 5, with 1 indicated a desire for social distance and 5 indicating a desire for social closeness. Puhl et al. developed this measure and report high internal consistency (Cronbach’s $\alpha = .92$). Participants completed this measure six times, once after viewing each of the six images.

Body Image State Scale (BISS). The BISS (Cash et al., 2002) is a 6-item questionnaire that assesses individuals’ evaluation and affect about their physical appearance at a moment in time. Scores range from 1 to 9, with 1 indicated low body satisfaction and 9 indicating high body satisfaction. Cash et al. report acceptable levels of internal consistency as well as construct and convergent validity. Participants completed this measure directly after viewing all six images and completing the SDMs.

Fat Phobia Scale - short form (FPS-SF). The FPS-SF (Bacon et al., 2001) is a 14-item questionnaire that assesses attitudes about fat individuals. Fourteen pairs of adjectives commonly used to describe fat individuals are listed (e.g., “no will power” vs “has will power”). Respondents indicate on scale of 1 to 5 which adjective they feel best describes their feelings and beliefs. Scores range from 1 to 5, with 1 being low fat phobia and 5 being high fat phobia. A score of 3.6 indicates an average amount of fat phobia, while a 4.4 or above indicates a high level of fat phobia. Bacon et al. developed this measure to serve as a shortened version of the full Fat Phobia Scale (Robinson, Bacon, & O'Reilly, 1993). Bacon et al. report high internal consistency (Cronbach's $\alpha = .91$) and a correlation between the original Fat Phobia Scale and the shortened version ($r = 0.90$). Participants completed this measure once, randomly with the subsequent measures and after the BISS.

Weight Bias Internalization Scale - Modified (WBIS-M). The WBIS-M (Pearl & Puhl, 2013) is an 11-item measure. It is a modified version of the Weight Bias Internalization Scale (WBIS), applicable to individuals across different body weight categories. This questionnaire evaluates beliefs about negative societal stereotypes and how self-statements about individuals with overweight and obesity apply to oneself. Content areas include acceptance/rejection of weight status, desire for change, effect of perceived weight status on mood, perceived personal value, ease of life, public appearance and social interaction, and recognition of the existence and unfairness of weight stigma. Respondents rate their agreement with items on a scale of 1 (strongly disagree) to 7 (strongly agree). From the original WBIS, phrases containing the word

“overweight” are replaced with “my weight.” For example, an item beginning with “As an overweight person...” is changed to “Because of my weight...” Scores range from 1 to 7 with 1 being low internal bias, and 7 being high internal bias. Pearl and Puhl found it to have high internal consistency (Cronbach’s $\alpha = .94$). Participants completed this measure once, randomly with the FPS-SF and the EWBDS and after the BISS.

Experience of Weight Based Discrimination Scale (EWBDS). The EWBDS (Farrow & Tarrant, 2009) is a 6-item questionnaire that evaluates personal experiences with, feelings about, and frequency of instances of weight discrimination. It measures historical events in participants’ lives; therefore, it was used as a descriptive or demographic variable. Farrow and Tarrant developed this measure based on a gender discrimination measure developed by Schmitt, Branscombe, Kobrynowicz, and Owen (2003). Respondents indicate extent of agreement on a scale of 1 (totally disagree) to 7 (agree very much). Scores range from 1 to 7, with 1 indicating no experiences with weight based discrimination and 7 indicating many experiences with weight based discrimination. Farrow and Tarrant reported good internal consistency for the EXBDS (Cronbach’s $\alpha = .89$). Participants completed this measure once, randomly with the FPS-SF and WBIS-M and after the BISS.

Procedure

After enrolling in the experiment, participants electronically received a link to the experimental survey. Participants accessed the study online using the Qualtrics software. Participants ($N= 185$) were randomly assigned to one of four experimental conditions, Fat

Positive-No Text ($n= 47$), Fat Positive-Text ($n= 45$), Stereotypical Fat ($n= 46$), or Thin ($n= 47$). Each condition involved viewing six distinct images. The images all depicted White women, as there was a lack of racial and gender diversity present in the source material for the Fat Positive-Text condition.

The researcher collected images for the fat-stereotypical condition from license free sources on the internet, using the search term "fat woman," "obese woman," "overweight woman," or "fat lazy woman." They depict fat, white women engaging in sedentary behavior (e.g. laying on a couch) or standing up with no face visible. The researchers collected images for the Fat Positive-No Text condition from the UConn Rudd Center for Food Policy and Obesity Media Gallery (<http://www.uconnruddcenter.org/weight-bias-stigma>) and from license free sources on the internet, using the search term "fat woman exercising" or "fat woman." These images depict fat, white women engaging in physical activity. The researchers collected images for the Fat Positive-Text condition from the *Stand4Everybody* online campaign (<http://istandagainstweightbullying.tumblr.com/>). These images depict fat, White, women engaging in physical activity, with various captions presented underneath the image with fat positive sayings such as, "I Stand For Never Letting Your Size Keep You From Following Your Dreams." These "I Stand" images are meant to simulate the type of body positive posters that might appear in a public space such as a fitness center. Researchers collected images for the Thin condition from license free sources on the internet, they were found using the search term "thin woman exercising." These images depict thin body typed, White women engaging in physical activity.

Participants read an introduction followed by a consent form. The consent form did not disclose the full purpose of the study to avoid priming participants. This incomplete deception ensured that participants would not develop opinions or attitudes about the images prior to exposure. This method of deception has been used previously in a similar study conducted by Mclure et al. (2011) with no recorded negative effects on the participants.

If individuals agreed to proceed, they then viewed a set of six images presented in random order. Each image appeared on the screen for an indefinite amount of time, until the participant was ready to move on. After each image, the SDM (Puhl et al., 2013) appeared for participants to complete. After viewing every image and completing the SDM for each, the participants received the BISS (Cash et al., 2002) to document body image satisfaction directly after viewing the images. The participants then received the FPS-SF (Bacon et al., 2001), WBIS-M (Pearl & Puhl, 2013), and the EWBDS (Farrow & Tarrant, 2009) in random order. After finishing all questionnaires, participants then received the following prompt: “Based on the series of photographs you viewed, what are your subjective thoughts, feelings, and ideas surrounding these images? Please write at least a paragraph relating your experience.” These qualitative responses were not analyzed as they are to be a part of a separate study.

After completing all questionnaires and the writing sample, participants completed a demographic information form in which they self-reported their gender, age, ethnicity, height, and weight. Participants then received a debriefing statement regarding the experiment. The demographic form and debriefing statement, like all other materials in the study, appeared online. The debriefing statement explained that the full purpose of

this study was to investigate weight bias. Participants then received resources to learn more about the topic of weight bias and Fat Studies, should they wish to further explore the subject. After learning the full nature of the experiment, participants received the option of withdrawing their responses. If they indicated that they would like to be removed, their data would not have been utilized. However, no participants withdrew from the study.

Analyses were performed using Microsoft Excel 2016 and IBM SPSS 24.0. Descriptive statistics, bivariate correlations, and analysis of variance (ANOVA) analyses were performed on the data.

Results

Descriptive Characteristics

ANOVAs revealed no significant differences in demographic characteristics (e.g. race, BMI, age, gender, or experiences of weight bias), across experimental conditions. Across all conditions, the overall mean score on the SDM was 3.96 ($SD= 0.81$). The overall mean score on the BISS was 5.21 ($SD= 1.27$). The mean score on the FPS-SF was 2.82 ($SD= 0.72$). The overall mean score on the WBIS-M was 3.12 ($SD= 1.31$).

Correlations

A bivariate correlation analysis was performed comparing every variable against each other. Analysis revealed several significant correlations between the variables. See Table 1 for the full array of correlations between variable.

Analyses revealed a strong positive correlation between BMI and experiences of weight based discrimination, $r(183) = 0.28, p = 0.00$, meaning that as participant BMI increased, so did their experiences of weight based discrimination. Analyses revealed a strong, positive correlation between BMI and internalized weight bias, $r(183) = 0.41, p = 0.00$, meaning that as BMI increased, participants exhibited more internalized weight bias. In turn, there was a strong positive correlation between internalized weight bias and experiences of weight based discrimination, $r(183) = 0.45, p = 0.00$.

Analyses revealed a negative correlation between body satisfaction and experiences of weight based discrimination, $r(183) = 0.28, p = 0.00$, meaning that as weight based discrimination increases, body satisfaction decreases. Analyses revealed a negative correlation between body satisfaction and internalized weight bias, $r(183) = -0.70, p = 0.00$, meaning that as internalized weight bias increases, body satisfaction decreases. There was a positive correlation between body satisfaction and fat phobia, $r(183) = 0.17, p = 0.024$, meaning that as body satisfaction increased, fat phobia scores also increased.

BMI positively correlated with gender, $r(183) = 0.20, p = 0.05$, meaning that male participants tended to have higher BMIs than female or non-binary participants (genders were coded as follows, Non-binary = 1, Female = 2, Male = 3). There was an overall strong negative correlation between body satisfaction and BMI, $r(183) = -0.37, p = 0.00$, meaning that as BMI increases, body satisfaction decreases. However, even though men tended to have higher BMIs, a positive correlation between body satisfaction and gender, $r(183) = 0.16, p = 0.034$, indicates that men were more satisfied with their bodies than women and other genders.

Gender identity and social distance scores were negatively correlated, $r(183) = -0.17, p = 0.023$, meaning that men desired to be farther from the subject of the photo that was viewed while women and non-binary participants felt more socially comfortable with the subjects of the photos. There was a strong positive correlation between social distance scores and fat phobia scores, $r(183) = 0.19, p = 0.01$, meaning that a desire for increased social distance corresponded to increased fat phobia. Analyses revealed a negative correlation between internal weight bias and fat phobia, $r(183) = -0.15, p = 0.046$, meaning that as fat phobia increases, internalized weight bias decreases.

TABLE 1: Bivariate Correlation Matrix Including All Variables

		Condition	Gender	Age	BMI	Ethnicity	FPS-SF	BISS	EWBDS	WBIS-M	SDM
Condition	Pearson Correlation	1	.009	-.101	.057	.026	.098	.020	.075	-.020	-.026
	Sig. (2-tailed)		.900	.172	.438	.729	.186	.785	.311	.782	.726
Gender	Pearson Correlation	.009	1	.155*	.203**	.161*	.075	.156*	-.014	-.093	-.167*
	Sig. (2-tailed)	.900		.035	.005	.029	.309	.034	.855	.210	.023
Age	Pearson Correlation	-.101	.155*	1	.126	-.047	-.048	-.061	-.067	-.039	.020
	Sig. (2-tailed)	.172	.035		.087	.529	.517	.411	.366	.595	.790
BMI	Pearson Correlation	.057	.203**	.126	1	-.019	-.005	-.370**	.276**	.413**	.113
	Sig. (2-tailed)	.438	.005	.087		.794	.942	.000	.000	.000	.124
Ethnicity	Pearson Correlation	.026	.161*	-.047	-.019	1	.004	-.097	.108	.004	-.140
	Sig. (2-tailed)	.729	.029	.529	.794		.958	.189	.143	.952	.058
FPS-SF	Pearson Correlation	.098	.075	-.048	-.005	.004	1	.166*	-.021	-.147*	.189**
	Sig. (2-tailed)	.186	.309	.517	.942	.958		.024	.781	.046	.010
BISS	Pearson Correlation	.020	.156*	-.061	-.370**	-.097	.166*	1	-.277**	-.698**	-.136
	Sig. (2-tailed)	.785	.034	.411	.000	.189	.024		.000	.000	.066
EWBDS	Pearson Correlation	.075	-.014	-.067	.276**	.108	-.021	-.277**	1	.450**	.065
	Sig. (2-tailed)	.311	.855	.366	.000	.143	.781	.000		.000	.381
WBIS-M	Pearson Correlation	-.020	-.093	-.039	.413**	.004	-.147*	-.698**	.450**	1	.071
	Sig. (2-tailed)	.782	.210	.595	.000	.952	.046	.000	.000		.337
SDM	Pearson Correlation	-.026	-.167*	.020	.113	-.140	.189**	-.136	.065	.071	1
	Sig. (2-tailed)	.726	.023	.790	.124	.058	.010	.066	.381	.337	

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

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

N= 185 for all variables

Primary Analyses

One-way ANOVAs compared the effects of image content on self-reported social distance, body image satisfaction, fat phobia, and internalized weight bias. There were no significant effects of condition on the FPS-SF [$F(3, 181) = 0.88, p = 0.45$], SDM [$F(3, 181) = 0.70, p = 0.55$], BISS [$F(3, 181) = 1.8, p = 0.15$], or WBIS-M [$F(3, 181) = 0.78, p = .51$]. These results suggest that the intervention had little to no effect on participant responses. Table 2 presents the average scores and standard deviations for each dependent measure by condition.

Table 2. Dependent Variable Means by Condition

Condition		SDM	BISS	FPS-SF	WBIS-M
Fat Positive – No Text	Mean	3.9829	4.9645	2.7812	3.2921
	N	47	47	47	47
	Std. Deviation	.70918	1.15257	.65574	1.43539
Fat Positive- Text	Mean	4.0506	5.4296	2.7413	2.9879
	N	45	45	45	45
	Std. Deviation	.81625	1.33309	.73054	1.29737
Stereotypical Fat	Mean	3.8182	5.4275	2.8059	2.9506
	N	46	46	46	46
	Std. Deviation	1.03349	1.27253	.82074	1.17014
Thin	Mean	3.9965	5.0390	2.9666	3.2263
	N	47	47	47	47
	Std. Deviation	.62150	1.27651	.65157	1.31847
Total	Mean	3.9619	5.2117	2.8247	3.1165
	N	185	185	185	185
	Std. Deviation	.80644	1.26766	.71653	1.30726

While there were no significant differences among conditions on the dependent variables, the mean plots show that the average scores were trending in the hypothesized directions for some conditions, as depicted in the following figures.

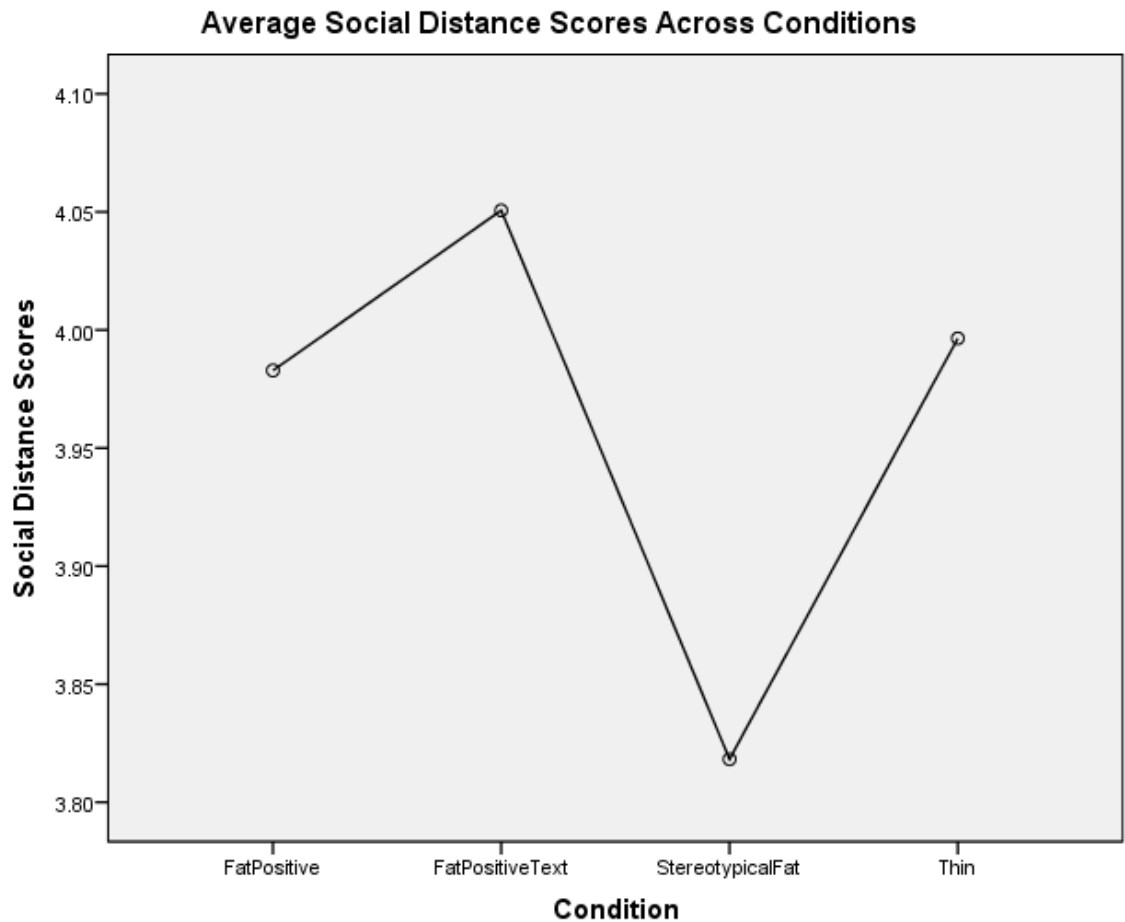


Figure 1. This figure depicts average social distance scores across conditions. A high score on the SDM indicates greater comfort being near the subject depicted in the image. A low score indicates greater discomfort being near the subject depicted.

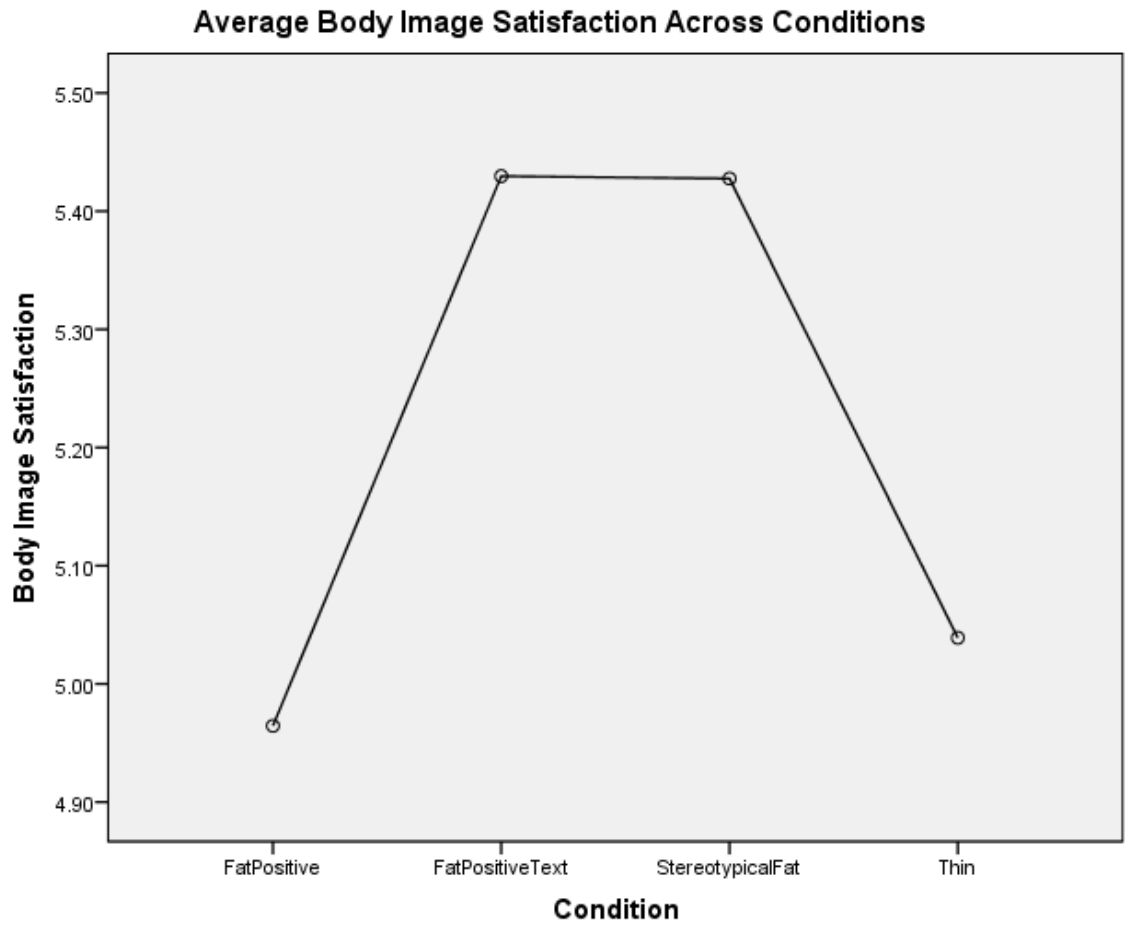


Figure 2. This figure depicts body image satisfaction scores across condition. A high score on the BISS indicates greater body image satisfaction. A low score indicates lesser body image satisfaction.

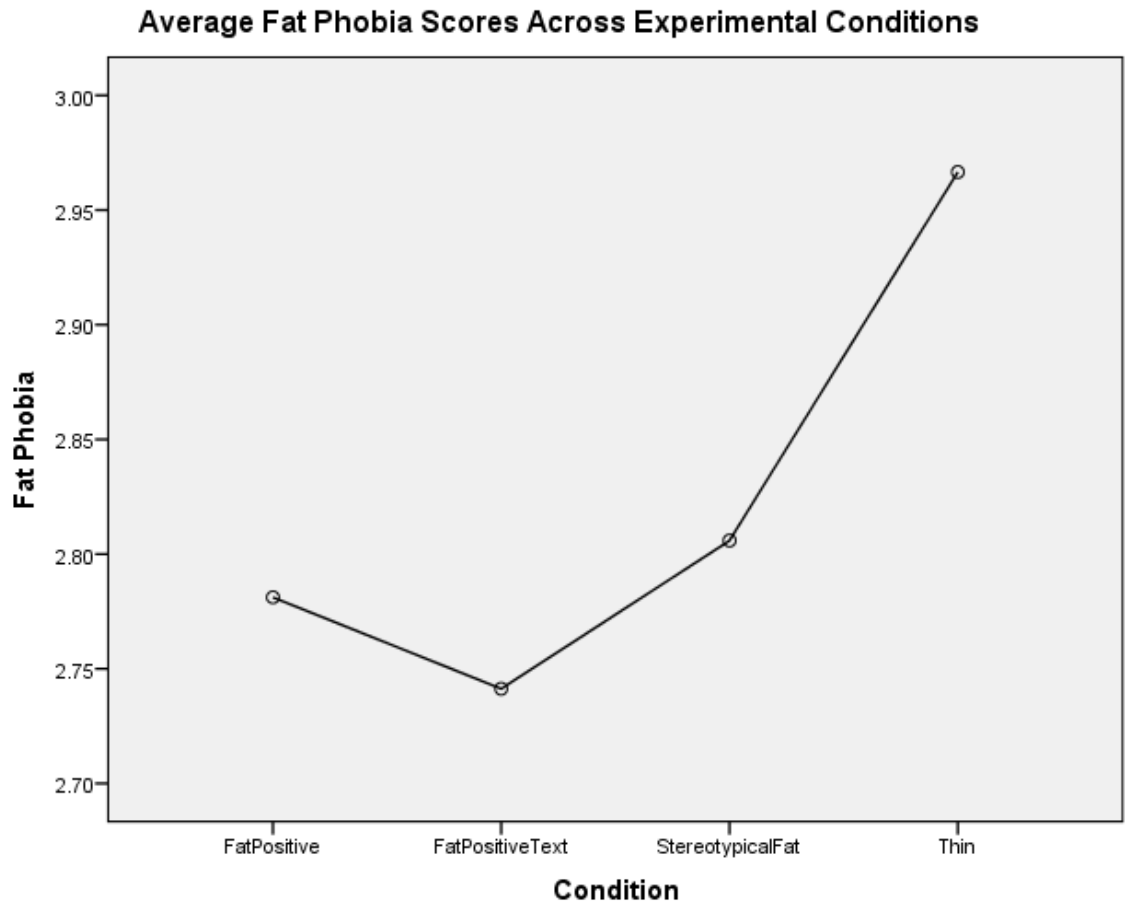


Figure 3. This figure represents the average fat phobia scores for each experimental condition. A high score on the FPS-SF indicates a greater level of fat phobia. A low score indicates a lesser level of fat phobia.

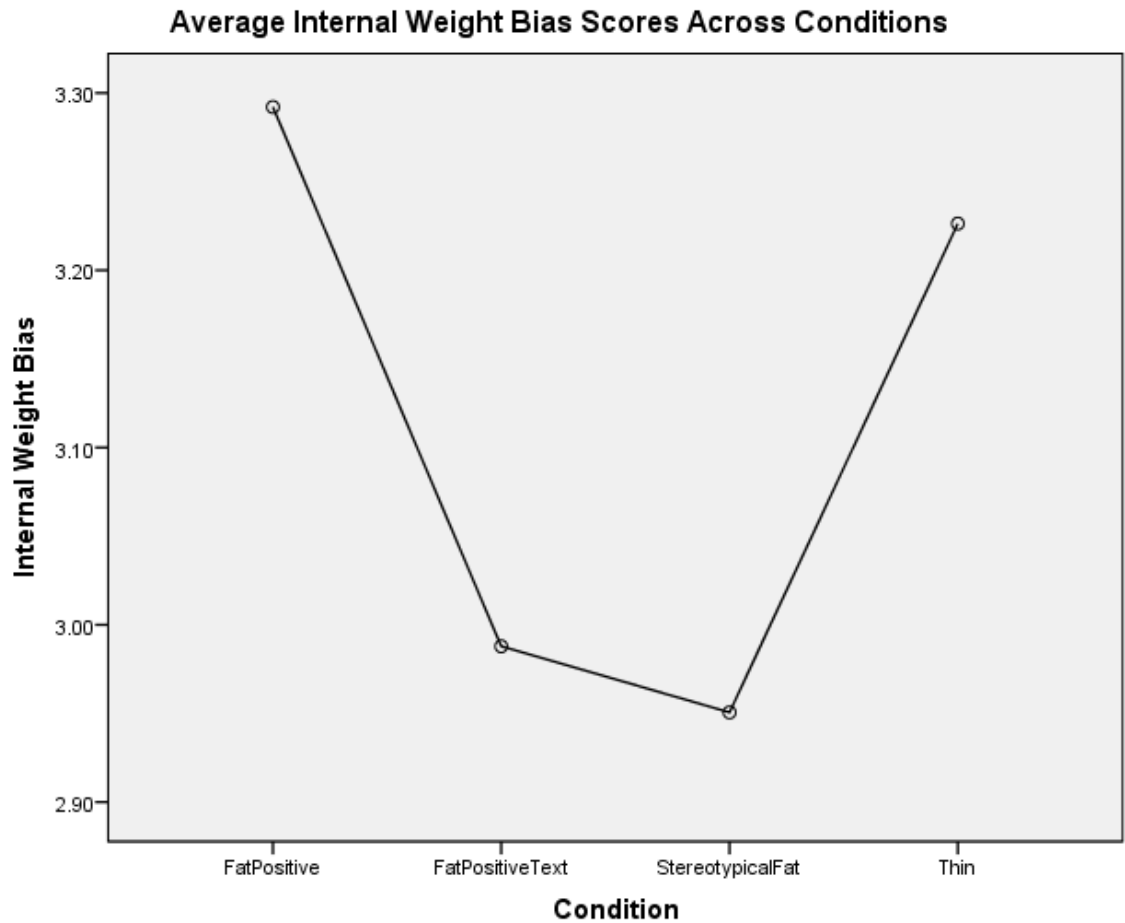


Figure 4. This figure depicts average internalized weight bias scores across experimental conditions. A high score on the WBIS-M indicates greater internalized weight bias. A low score indicates lesser internalized weight bias.

Univariate ANOVAs analyzing the interaction effects between categorical variables (i.e., BMI, gender, EWBDS) and experimental condition were run for each dependent variable. Analyses revealed no significant interaction effects. ANOVAs based on gender did not include non-binary identifying participants due to their low occurrence within the sample. Combining the two fat positive conditions into one overall fat positive condition did not change the significance of the results across conditions.

Discussion

The purpose of this research was to determine the efficacy of fat positive exercise imagery on weight bias and body image in college students. It was expected that participants exposed to fat positive images would exhibit significantly higher scores on the SDM and the BISS, as well as lower scores on the FPS-SF and the WBIS-M following their exposure compared to those exposed to Thin images or Stereotypical Fat imagery. The results of this study did not support these hypotheses even when experimental conditions were examined in concert with BMI category, gender, and history of weight-based bullying. Results of a correlational analyses between all variables in the study were largely in line with previous literature in that men tended to have more body satisfaction, even though their BMIs tended to be higher. A higher BMI was associated with less body satisfaction overall. Women and non-binary identifying people tended to desire less social distance between themselves and the subjects of the images shown. Within the sample, participants with a higher BMI tended to experience more weight based discrimination, and feel more internal weight bias. Participants who were more satisfied with their body, and who felt less internal weight bias, tended to be more fat phobic. A positive correlation between fat phobia and social distance scores was determined, though this result is unexpected. More research is needed to determine why there would be a trend between these variables.

Regarding the main analyses, there were no significant differences in demographic characteristics between experimental groups, meaning that randomization to conditions successfully mitigated possible pre-existing differences. Thus, the lack of

significant findings could not be attributed to demographic differences among the groups at pretest.

While there were no significant differences in dependent variables across conditions, the mean scores for each condition often trended in the expected direction, particularly for the condition of most interest, the Fat Positive-Text condition. Participants reported desiring the least social distance from people depicted in the images for this condition. This finding is consistent with the hypothesis. Fat Positive-No Text and Thin condition scores were comparable. Participants who viewed the stereotyped images of fat people expressed a desire for the greatest distance between them and the subjects depicted, as hypothesized. This trend is consistent with the findings of Pearl and Puhl (2013).

BISS scores partially trended in expected directions with the Fat Positive-Text condition having the highest average body image satisfaction score. Surprisingly, however, the Fat Positive-No Text condition expressed the least satisfaction. It is unclear why the Fat Positive-No Text images resulted in this low score. Because previous studies investigating fat positive imagery have focused on measures of weight bias alone rather than including measures of body image, more research, particularly on the latter variable is required. The Thin condition resulting in lowered body satisfaction scores was expected, given previous research on this topic (Dalley, Buunk, & Umit, 2009). The stereotypical images resulted in elevated body image, perhaps due to social comparison. That is, participants might have felt better about their own physiques compared to these negative images of fat people (i.e., “At least I don’t look like that!”)

The Fat Positive-Text condition resulted in the second lowest average WBIS-M score, while the Fat Positive-No Text condition had the highest. In this case, the Fat Positive-Text condition elicited the expected results while the Fat Positive-No Text condition did not. Participants who viewed stereotypical images tended to have lower internalized weight bias scores, possibly for the same reason that stereotypical images elicited high BISS scores. Participants may have felt better about their own weight when comparing themselves to negative images of fat people. Participants who viewed Fat Positive-No Text and thin images tended to have higher internalized weight bias scores. Low WBIS-M scores were expected for participants within the fat positive conditions, thus more research is needed to determine why scores were high within the Fat Positive-No Text condition. High WBIS-M scores were expected within the Thin condition, consistent with previous research on exposure to thin images (Dalley, Buunk, & Umit, 2009).

Fat phobia scores trended completely in the expected direction. The Fat Positive-Text condition shows the lowest average score, followed by the Fat Positive-No Text condition, the Stereotypical Fat condition, and the Thin condition, with the highest FPS-SF score. This trend, while not statistically significant supports the hypothesis that participants exposed to fat positive imagery will exhibit lower FPS-SF scores than those exposed to stereotypical fat or thin imagery.

Overall, the Fat Positive-Text condition produced, albeit nonsignificant, results consistent with the hypotheses. This condition was of most interest in the study as these images represent a potential resource that could be displayed in fitness settings to mitigate weight bias and improve body image among members.

There are several potential ways the design of this study could have been improved, which may have resulted in statistically significant findings. The sample size of the study may not have been sufficiently large to produce significant results. Also, previous research (Carels et al., 2013; McClure et al., 2011; Pearl et al., 2015; Puhl et al., 2013; Pearl et al., 2012) investigating fat positive imagery relied on community samples. Thus, the sample of college students may have been too homogeneous for those results to be replicated.

Furthermore, during the academic term this study was conducted, students within certain sections of Abnormal Psychology and General Psychology were specifically given information regarding fat phobia and weight bias as part of the curriculum. This exposure to fat positive information may have made some participants less susceptible to expressing weight bias or may have altered weight biased beliefs to the extent that exposure to negative images no longer elicited bias. Were the study to be recreated, it would be preferable to take a sample of randomly selected college students, not only those taking psychology classes, particularly those in which weight bias is addressed.

While all the images utilized in the study had White women as the subject, some women in each condition were performing different exercises and were clearly different ages. This may have had some unknown effect on participant response. In the future, all image variables should be controlled for, not just race and gender.

Participant responses may have been affected by the fact that they were asked to self-report their biases. Schupp and Renner (2011) found that anti-fat bias is implicit in nature, and occurs independently from explicit processing goals. In future studies, the

Implicit Association Testing (IAT) could be utilized to avoid the potential of participants underestimating their own biases.

Another possibility for the nonsignificant findings is that weight bias is already so much ingrained, with this cohort of college students having grown up with the “obesity crisis” that brief exposure to but a few fat positive images was insufficient to alter the feelings that such images invoke. While the results of this study were not significant, the concept of using fat positive imagery to reduce weight bias and increase body image satisfaction should not be cast aside. Overall the Fat Positive-Text condition tended to conform to the hypothesis more consistently than the Fat Positive-No Text condition. The mean scores for the explicitly Fat Positive-Text images were trending in the expected directions for every dependent variable. Pearl et al. (2015) found that neutral images of fat women elicited reduced weight biased attitudes and increased reports of satisfaction during exercise to a greater extent than images of fat women exercising.

Although participants’ qualitative responses were not analyzed as a part of this study, responses to the fat positive imagery are illuminating. These sample responses, to the Fat Positive-Text images, show the positive effect images like this can potentially have on people, “After viewing the six photos, I felt empowered and inspired.” and “I think it was cool seeing images that portrayed people, who did not follow society's standards on weight, being active...I think for me it was shocking seeing images like this, because so many times I see images that show people of this size sitting on the couch eating.”

Watkins et al. (2014) found that women exposed to fat positive imagery in a fitness environment had improved affect and less disordered eating, and other studies not

focused on a college student population found significantly reduced bias when exposed to fat positive imagery (Carels et al., 2013; McClure et al., 2011; Pearl et al., 2015; Puhl et al., 2013; Pearl et al., 2012).

While the results of this study were not significant, the impact that fat positive images may have in practice is important. Weight bias continues to be an extremely damaging form of discrimination and abuse in our society. It is important to continue finding ways to educate people about the myths, facts, and social realities of fatness, while at the same time supporting those who are negatively affected by fat phobia. Increasing access to positive images of fat people is one potential avenue for support and education. Research on how fat positive images influence weight bias and body satisfaction should be continued and extended, to further investigate the viability of using such images to reduce societal fat phobia.

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Appendices

Appendix A. Consent Form

Project Title: Images and Attitudes Study
Principal Investigator: Dr. Patti Watkins
Student Researcher: Sarah Fortner, Katy Krieger, Madison Gerber
Version Date: 10/12/16

WHAT IS THE PURPOSE OF THIS FORM?

This form contains information you will need to help you decide whether to be in this research study or not. Please read the form carefully and contact Dr. Patti Watkins if you have any questions.

Email: pwatkins@oregonstate.edu

STUDY PURPOSE: The purpose of this research study is to determine how the content of photographs affects people's opinions about various subjects. This research is being conducted as part of a University Honors College Undergraduate Thesis.

ACTIVITIES: The study activities include viewing a series of six photographs, answering a short survey after each one, then answering a series of four additional questionnaires. Lastly, you will be asked to write a short response paragraph indicating what you thought about the pictures you viewed. In order for your data to be used in this research, you must respond to all presented items. If you do not fully complete a questionnaire you will be prompted to do so before continuing.

Study duration: 40 Minutes

RISKS: It is possible you may feel some psychological discomfort when prompted to answer questions about personal attitudes, perceptions and feelings. There are no physical risks associated with this study. What happens if I feel distress?

Participation in this study is voluntary, you are free to leave the study at any time without penalty. Links to resources about distress and mental healthcare will be available at the conclusion of the study.

What other choices do I have?

Participation in this study is voluntary. If you choose to opt out of this study and would like to earn extra credit in another manner, please contact your instructor or refer to your course syllabus for alternative means of earning equivalent credit.

BENEFITS: We do not know if you will directly benefit from being in this study. However, you may develop a greater understanding of some larger societal issues.

PAYMENT: You will not be paid for being in this research study. If you have scheduled this session through the SONA system as a student enrolled in a Psychology class, then you will receive one unit of extra credit for your participation. Please consult your syllabus to determine your instructor's full policy on extra credit through research participation.

CONFIDENTIALITY: The information you provide will not have personal identifiers, such as your name, attached to it. Your name will not be connected to your responses on this survey in any way.

The security and confidentiality of information collected from you online cannot be guaranteed. Information collected online can be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. Confidentiality will be kept to the extent permitted by the technology being used. Your decision to take part or not take part in this study will not affect your grades, your relationship with your professors, or standing in the University.

We will share anonymous responses with other researchers at Oregon State University that are listed on this consent document.

If the results of this project are published, data will be presented as group averages, and your identity will not be made public. Analyzed and interpreted results of this study will be accessible in the form of an Undergraduate thesis stored in the University Honors College Scholars Archive. Results may also be presented in professional conferences/journals, again reported as group averages with no identifiers associated.

What other choices do I have if I do not take part in this study?

Participation in this study is voluntary. If you decide to participate, you are free to withdraw at any time without penalty. If you choose to withdraw from this project before it ends, the researchers may keep information collected about you and this information may be included in study reports.

All OSU Psychology classes that give extra credit for participating in research studies provide alternative extra credit options if you do not wish to participate.

STUDY CONTACTS: If you have any questions about this research project, please contact: Dr. Patti Watkins, Email: pwatkins@oregonstate.edu

If you have questions about your rights or welfare as a participant, please contact the Oregon State University Institutional Review Board (IRB) Office, at (541) 737-8008 or by email at IRB@oregonstate.edu

I understand the explanation of the research process and agree to participate in the study.

- Yes
- No

Appendix B. Measures

Social Distance Measure (Puhl et al., 2013)

Please rate your level of agreement or disagreement with the following statements.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I would feel comfortable being best friends with the person in this photo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I would share a car pool with the person in this photo each day	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wouldn't mind if the person in this photo moved next door to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wouldn't mind having someone like the person in this photo as my coworker	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I wouldn't mind if the person in this photo married into my family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The person in this photo is the kind of person I tend to avoid	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Body Image State Scale (Cash et al., 2002)

For each of the items below, check the box beside the one statement that best describes how you feel **RIGHT NOW AT THIS VERY MOMENT**. Read the items carefully to be sure the statement you choose accurately and honestly describes how you feel right now.

1. Right now I feel . . .

- Extremely dissatisfied* with my physical appearance
- Mostly dissatisfied* with my physical appearance
- Moderately dissatisfied* with my physical appearance
- Slightly dissatisfied* with my physical appearance
- Neither dissatisfied nor satisfied* with my physical appearance
- Slightly satisfied* with my physical appearance
- Moderately satisfied* with my physical appearance
- Mostly satisfied* with my physical appearance
- Extremely satisfied* with my physical appearance

2. Right now I feel . . .

- Extremely satisfied* with my body size and shape
- Mostly satisfied* with my body size and shape
- Moderately satisfied* with my body size and shape
- Slightly satisfied* with my body size and shape
- Neither dissatisfied nor satisfied* with my body size and shape
- Slightly dissatisfied* with my body size and shape
- Moderately dissatisfied* with my body size and shape
- Mostly dissatisfied* with my body size and shape
- Extremely dissatisfied* with my body size and shape

3. Right now I feel . . .

- Extremely satisfied* with my weight
- Mostly dissatisfied* with my weight
- Moderately dissatisfied* with my weight

Slightly dissatisfied with my weight
Neither dissatisfied nor satisfied with my weight
Slightly satisfied with my weight
Moderately satisfied with my weight
Mostly satisfied with my weight
Extremely dissatisfied with my weight

4. Right now I feel . . .
Extremely physically *attractive*
Very physically *attractive*
Moderately physically *attractive*
Slightly physically *attractive*
Neither attractive nor unattractive
Slightly physically *unattractive*
Moderately physically *unattractive*
Very physically *unattractive*
Extremely physically *unattractive*

5. Right now I feel . . .
A great deal worse about my looks than I usually feel
Much worse about my looks than I usually feel
Somewhat worse about my looks than I usually feel
Just slightly worse about my looks than I usually feel
About the same about my looks as usual
Just slightly better about my looks than I usually feel
Somewhat better about my looks than I usually feel
Much better about my looks than I usually feel
A great deal better about my looks than I usually feel

6. Right now I feel that I look . . .
A great deal better than the average person looks
Much better than the average person looks
Somewhat better than the average person looks
Just slightly better than the average person looks
About the same as the average person looks
Just slightly worse than the average person looks
Somewhat worse than the average person looks
Much worse than the average person looks
A great deal worse than the average person looks

Fat Phobia Scale – Short Form (Bacon et al., 2001)

Listed below are 14 pairs of adjectives sometimes used to describe obese or fat people. For each adjective pair, please mark the dot closest to the adjective that you feel best describes your feelings and beliefs.

lazy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	industrious
no will power	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	has will power
attractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	unattractive
good self- control	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	poor self-control
fast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	slow
having endurance	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	having no endurance
active	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	inactive
weak	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	strong
self- indulgent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	self-sacrificing
dislikes food	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	likes food
shapeless	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	shapely
Under eats	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	overeats
insecure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	secure
low self- esteem	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	high self-esteem

Demographic Survey

What is your current gender identity?

- Non-binary/Genderqueer/Gender non-conforming
- Female
- Male

How old are you in years?

Give your best estimate for your current weight (lbs)

What ethnicity best describes you?

- White
- Black or African American
- American Indian or Alaska Native
- Asian
- Native Hawaiian or Pacific Islander
- Other

Give your best estimate for your current height (ex: 5' 11")

Appendix C. Debriefing Statement

The purpose of this research is to determine if the content of images has an effect on levels of expressed weight bias. Weight bias refers to discrimination or stereotypical attitudes directed at fat people because of their size, shape, or weight. We use the term “fat” here because fat activists endorse the use of the word “fat” rather than the medicalized, pathologizing terms “obese” and “overweight”.

Weight bias has increased exponentially over the past decade or so, with some research showing that it is as prevalent as discrimination based on race and gender (Puhl, Andreyeva, & Brownell, 2008). Weight bias is also quite common among college students. This is understandable given the sociocultural environment in which we were raised. For instance, media portrayal of fat people in movies, on television, in magazines, even in our college textbooks (McHugh & Kasardo, 2012) are quite disparaging, and at the same time, the media promotes an extremely thin ideal of beauty. For this research, we chose images involving physical activity or sedentary behavior because exercise is an important contributor to well-being that is often discouraged in fat people by weight biased fitness environments.

The purpose of this study was to attempt to identify which type of images may actually lessen the negative attitudes and biases many hold about fat people, particularly in fitness settings. In this study, participants viewed either stereotypical images of fat people, fat positive images with accompanying text, fat positive images with no text, or images of thin people. We hypothesize that participants who view fat positive images will exhibit less weight bias than those who view photos of stereotypical or thin people.

Please follow these links to learn more about Fat Studies and the topic of weight bias:

- National Association to Advance Fat Acceptance
- Association for Size Diversity and Health
- The UConn Rudd Center

If you are interested in guided learning on this topic, Oregon State University offers the course Fat Studies (PSY 466/WGSS 466/WGSS 566) which examines body weight, shape, and size as an area of human difference subject to privilege and discrimination that intersects with other systems of oppression based on gender, race, class, age, sexual orientation, and ability. Also offered is the course Women, Weight, and Body Image (PSY 465/PSY 565) which focuses on women's increasing struggles with weight, eating disorders, and broader body image issues in contemporary society. The topic of weight bias is integral to both courses and is framed as a social justice issue.

If you felt distress at viewing these images or answering the survey questions please follow these links for helpful resources, or contact the research team:

- Counseling and Psychological Services at OSU
- National Eating Disorder Association

RESEARCH CONTACT:

Dr. Patti Watkins, Email: pwatkins@oregonstate.edu

Appendix D. Photos by Condition

Fat Positive-No Text



Source: UConn Rudd Center for Food Policy & Obesity.



Source: www.123rf.com



Source: Getty Images



Source: Getty Images

Fat Positive-Text

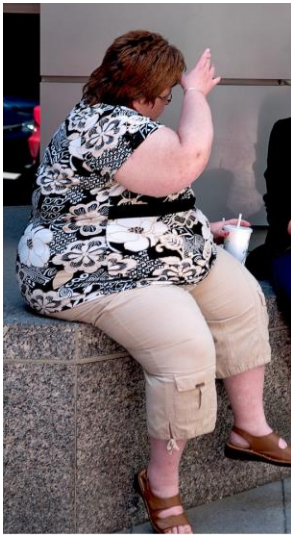


Source: I Stand Against Weight Bullying Campaign (<http://istandagainstweightbullying.tumblr.com/>)

Stereotypical Fat



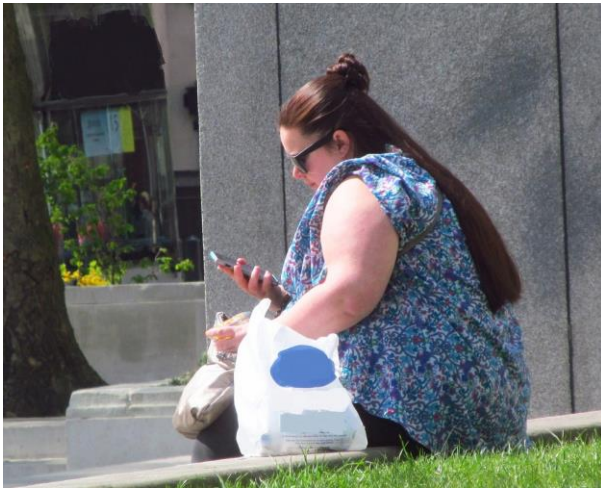
Source: Leal-Olivas, D. (2015). An Obese Woman in London. Retrieved from: www.paimages.co.uk



Source: <http://www.alamy.com>



Source: <http://photopin.com>



Source: Holt, D. (2015) Retrieved from: www.flickr.com



Source: www.shutterstock.com



Source: <http://www.wisegeek.com/>

Thin



Source: Center for Disease Control Public Health Image Library



Source: www.freestockphotos.biz



Source: <https://pixnio.com>



Source: : www.freestockphotos.biz



Source: Wikimedia Commons



Source: www.freestockphotos.biz

