Influence of Weight Bias and Associated Factors on Perceptions of Plus Size Models

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Research Article

Keywords: weight bias, weight stigma, plus size models, thin ideal

Posted Date: February 12th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-156932/v1>

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Abstract

Purpose: The fashion industry has recently begun to utilize plus size models. The aim of this study was to explore whether these models would be viewed more critically in comparison to thin models or subjected to weight bias and associated factors.

Methods: University students ($N = 330$, $M_{\text{age}} = 18.62$, $SD_{\text{age}} = 1.33$) viewed images of thin and plus size models and rated each image. They then filled out measures assessing weight bias (measured through the Antifat Attitudes Questionnaire), sociocultural attitudes regarding athletic and thin body types, and body appreciation.

Results: Plus size models were rated more critically than thin models ($p < 0.01$). Thin and plus size model ratings were also highly correlated ($p < 0.01$), but weight bias was still predictive of plus model ratings within a regression model that included thin model ratings ($p < 0.01$). Further, mediational analyses found that weight bias partially mediated the relationship between thin and plus size model ratings. Males were more likely to rate both model types more critically ($p < 0.01$), but weight bias was found to partially mediate the relationship between male ratings of plus-sized models ($p < .001$).

Conclusions: Despite the recent steps to include more body diversity among the fashion industry, plus size models still appear to be subjected to weight bias, especially among males.

Level of Evidence: Level III, case–control analytic study.

Introduction

The majority of Americans have overweight/obese status [1]. Yet, weight stigma (defined as implicit or explicit discrimination against an individual due to their weight status) remains widespread [2–3] and harmful to physical and mental health [4]. While weight discrimination can be damaging to everyone, there may be group differences in terms of the frequency of receiving weight biased comments. Women are at greater risk for weight discrimination, as are heavier individuals [5]. Further, there may be group differences with biased attitudes; males typically have higher weight bias [6] and White women may express more weight bias than Black women [7].

The media is frequently viewed as a source of weight bias [2]. The fashion industry and clothing retailers have similarly been criticized for using models with little body fat. These image standards may have harmful effects on women's body image [8]. Increasing awareness of this issue has prompted some clothing retailers to incorporate more body diversity among models. In time, this shift toward body diversity may have potential to modify longstanding sociocultural attitudes, yet in our current day it is unclear as to whether exposure to plus size models would be a welcome change or subtly stigmatized.

While research on media and its consequences on weight bias is more ubiquitous, research focusing on this body diversity and the relatively new use of plus size models appears to be just emerging. For example, one study found that female exposure to plus size models may lower weight bias [9]. Further studies have found that exposure to plus size models raised body satisfaction and body image among females [10–11]. However, most research has focused only on females and is lacking in racial diversity. Thus, more research on plus size models is needed and warranted, and it would be further beneficial to broaden the population from which this data has been collected.

Despite movements designed to reduce weight bias, it is hypothesized that 1) plus size models will be rated more critically than thin models. Further, it is hypothesized that 2) ratings of the plus size models will be positively associated with weight bias, as well as more internalized sociocultural attitudes towards preferences for thin or muscular figures. Also, it is hypothesized that individuals with higher appreciation for their own bodies would be more accepting of plus size models. We further hypothesized that 3) key participant characteristics, such as gender, race or BMI would be associated with ratings of plus size models, such that males, individuals with lower BMI's, and individuals identifying with a race that is more likely to idealize the thin ideal (Caucasians and Asian Americans) would rate plus size models more critically, consistent with past research [7, 12].

Methods

Participants

In order to participate, students had to be at least 17 years of age. A total of 330 students ($M_{\text{age}} = 18.620$, $SD_{\text{age}} = 1.33$) from a U.S. southeastern university completed the survey (Table 1). Students identified as white (69.4%), black (15.5%), Hispanic or Latinx (5.1%), Asian (4.4%) or other (4%). Most students were freshman (80.4%), female (60.4%), and identified as straight (91.2%). Height and weight were self-reported ($M_{\text{BMI}} = 23.8$; Min = 16.64; Max = 41.6).

Procedure

All data was collected through an online survey using Qualtrics. Initially, participants were informed that the study was about fashion. Participants reported basic demographic information (age, year of college, race, gender, sexual orientation, and height and weight; Table 1) and questions about fashion. The questions about fashion were to maintain the impression that the study was about fashion, thereby hopefully reducing socially desirable responding.

Next, participants viewed 22 images of models and answered questions about each. Whether the participant saw a thin or plus size model was randomized per image. For example, all participants saw the same clothing for the first image, but approximately half saw a thin model and the other half saw a plus size model. Models wearing the same outfit could then be compared, ensuring that the actual clothing item was controlled for. Participants then filled out virtual measures, and then were debriefed on the study's true purpose and asked to provide consent to use their data. The university's institutional review board approved the study.

Measures

Model Rating Scale. A simple 3-item scale was constructed in order to assess participants' attitudes towards the models (Table 2). There were also three questions that focused on the clothing rather than the model, in an effort to create the appearance that the scale was focused on fashion rather than just the model. Thus, these questions were not used for data analysis. The three questions of interest centered on perceptions of the model, using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree, with higher scores indicating more approval of the model). The scale has a minimum of 3 points and a maximum of 15 points. The scale had excellent internal consistency with a Chronbach's alpha of .91, and each of the three questions individually had excellent internal consistency (Table 2).

Questions were designed based on forms of weight stigma established throughout the literature; for the first question, "is this model an appropriate choice for this dress," past research has established that people of overweight or obesity status are more likely to be seen as less capable for a job position [2, 13]. Women who were overweight were seen as having a less professional appearance [14]. This stigma is apparent even when facial attractiveness is taken into account [15]. Therefore, the first question was designed to assess whether plus size models are seen as capable at modeling clothing in comparison to thin models. Participants were asked whether the model was an appropriate choice for this dress.

The second question, "does the model seem confident," focused on trait-attribution, as negative traits are more likely to be assigned to people who are overweight or obese [3]. The second question asked whether the model seems confident, as individuals with higher adiposity are more likely to be seen as having lower self-regard [13]. The third question focused on physical attractiveness. In a study using undergraduate males, BMI was found to be a strong determinate for attractiveness [16]. Therefore, the third question, "does the model look attractive in this dress," asked whether the model looks attractive.

Anti-Fat Attitudes Questionnaire (AFAQ) is a 13-item questionnaire developed to assess attitudes regarding fat [17], and has been found to be a robust way to measure weight bias [18]. Participants rated their level of agreement on a 10-point Likert scale (0 = very strongly disagree; 9 = very strongly agree), with higher scores indicating greater bias. The scale is divided into three subscales; the seven-item Dislike subscale measures overall bias of higher weight individuals. The three-item Fear of Fat subscale measures concern for gaining weight oneself. The three-item Willpower subscale measures the perception that

higher weight can be controlled through motivation. A confirmatory factor analysis has supported the division of three scales [19]. Each subscale has established reliability and validity (Dislike $\alpha = .70$, Fear of Fat $\alpha = .85$, & Willpower $\alpha = .75$). In the current investigation, each scale had good or excellent internal consistency (Dislike $\alpha = .93$, Fear of Fat $\alpha = .89$, & Willpower $\alpha = .86$).

Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4) is a 22-item questionnaire that measures attitudes embodiment of social attitudes on appearance, with a subscale on both athletic ideas and thin ideals, with each subscale consisting of 5 items [20]. There are also three subscales focusing on a source of the pressure: family, peers, and media, each consisting of 4 items. All questions use a 5-point Likert scale, with 1 = Definitely Disagree to 5 = Definitely Agree, and higher scores symbolizing higher internalization or pressure. Each subscale had good validity and good reliability; Athletic ($\alpha = .87 - .92$), Thin ($\alpha = .86 - .92$), Family Pressure ($\alpha = .85 - .90$), Peer Pressure ($\alpha = .88 - .90$), and Media Pressure ($\alpha = .94 - .96$) [20]. In the current investigation, each scale had good or excellent internal consistency (Athletic $\alpha = .91$, Thin $\alpha = .81$, Family Pressure $\alpha = .90$, Peer Pressure $\alpha = .94$, and Media Pressure $\alpha = .96$).

Body Appreciation Scale (BAS) contains ten items that assesses participants' positive feelings towards their body, using a 5-point Likert scale (from "never" to "always") [21]. Higher scores indicate more body appreciation. The BAS has established reliability and excellent validity ($\alpha = .94$) [21]. In the current study, the scale had excellent internal consistency ($\alpha = .95$).

Statistical Analyses

Data was analyzed using SPSS 27. A paired-samples t-test was used to determine whether students rated plus size models differently in comparison to thin models, ratings for each image was summed and averaged across model types. Correlations were used to examine relationships among thin and plus size model ratings and weight bias, sociocultural attitudes toward weight, and body appreciation (Table 3). In order to examine variable predictions of plus size model ratings beyond participant thin rating patterns, hierarchal multiple regressions were run, with thin models in the first block and variables of interest in the second block. Each regression was calculated with thin model ratings in block 1, and a single AFA or SATAQ subscale in block 2, and plus size models ratings as the predictor (Table 4).

T-tests were also used to examine differences in model ratings based on gender, race, and BMI. Race was divided among groups that are more likely to endorse the thin ideal (European and Asian Americans) or not as likely (African Americans)[7, 12, 22]. Individuals who identified as Latinx were not included in this analysis, as data for this group in terms of idealization of the thin figure may be complex and depend on several factors, such as identification with ethnic background, and the current study did not control for these factors [22]. Hierarchal multiple regressions were also used to examine key participant demographics, both with thin model ratings in block 1, and either gender, race, or BMI (separately) at block 2, and plus size model ratings as the predictor (Table 5).

Additionally, mediational analyses were conducted. First, it was examined whether fat dislike possibly accounted for differences in ratings between thin- and plus-size models. Additionally, gender was included as a covariate to examine whether this pattern was observed across both males and females. Second, the relationship between gender and plus size model ratings was examined further to explore whether AFA Dislike and AFA Willpower both potentially mediated the relationship. Thin model ratings were included for these models as a covariate to account for overall response patterns. Bootstrapping was utilized for indirect effects across all mediational analyses as this technique is robust to nonnormal data [23].

Results

Comparison of Thin and Plus Size Model Ratings

There was a significant difference between the scores for plus size models ($M = 11.65$, $SD = 2.14$) and thin models ($M = 12.39$, $SD = 1.63$); $t(329) = -9.06$, $p < .001$. Thin models received more positive ratings.

Associations Among Model Ratings and Weight-Related Constructs

Higher ratings of thin models were positively associated with ratings of plus size models and body appreciation (Table 3). Higher ratings of thin models were negatively correlated with AFA Dislike and AFA Willpower scale, and pressure to be thin from peers. Plus size model ratings were negatively correlated with AFA Dislike and Willpower, a drive to look athletic, pressure to be thin from peers, but positively correlated with pressure to be thin from the media.

Predictions of Plus Sized Model Ratings

In the model with AFA Dislike, thin model ratings significantly predicted plus size ratings and accounted for 5.3% of the variation in plus size model ratings in block 1. The addition of the AFA Dislike subscale in block 2 explained an additional 7% of the variation, suggesting a .28 decrease on the scale for plus size models for every standard deviation of the AFA Dislike Scale. Similar patterns were encountered for AFA Willpower, SATAQ Athletic, and SATAQ Media subscales (Table 4).

Predictions and Differences Among Model Ratings and Participant Characteristics

Men ($M = 10.51$, $SD = 2.01$) and women ($M = 12.39$, $SD = 1.89$); $t(328) = -8.60$, $p < .001$ had significantly different ratings of plus size models. There was also a significant difference for thin models when comparing ratings from men ($M = 11.98$, $SD = 1.67$) and women ($M = 12.66$, $SD = 1.55$); $t(328) = -3.75$, $p < .001$. In terms of weight bias, men reported higher levels of dislike of fat ($M = 18.8$, $SD = 9.2$) than women ($M = 13.4$, $SD = 7.9$); $t(328) = 5.40$, $p < .001$ and higher belief that weight is a matter of willpower ($M = 12.5$, $SD = 5.2$) than women ($M = 10.0$, $SD = 4.6$); $t(328) = 4.61$, $p < .001$. Women reported a higher fear of fat ($M = 11.8$, $SD = 5.7$) than men ($M = 9.6$, $SD = 4.8$); $t(328) = -3.65$, $p < .001$. Model ratings were not significantly different for African Americans in comparison to European Americans and Asian Americans. BMI was also found to be nonsignificant in relation to model ratings.

Gender and race were significantly predictive of plus-sized model ratings beyond thin-sized model ratings (Table 5). Through separate analyses, gender explained an additional 8% variability in ratings of plus size models, and race explained an additional 1%. Thus, female and Black participants rated plus size models more positively.

Mediational Analysis

Model Ratings as Mediated by AFA Dislike, Controlling for Gender. Thin model ratings were significantly predictive of plus size model ratings without considering AFA Dislike, $b = .78$, $t(317) = 16.25$, $p < .001$. There was a significant, negative relationship between thin models ratings and AFA Dislike, $b = -1.81$, $t(318) = -6.48$, $p < .001$. The mediator, AFA Dislike, was significant in predicting plus size model ratings after controlling for thin model ratings, $b = -.05$, $t(317) = -5.89$, $p < .001$. The relationship between both model ratings was still significant after controlling for AFA Dislike, $b = .87$, $t(318) = 18.48$, $p < .001$, suggesting partial mediation. Bootstrapped indirect effects, in comparison to the direct effect, suggested the proportion of the total effect that operates indirectly on the relationship between thin and plus size model ratings was 14.6%. This suggests that AFA Dislike accounts partially for the overall lower scores among plus size models in comparison to thin models, even when controlling for gender. The two other AFA subscales were considered as mediators, but were not found to be significant.

Gender and Plus Size Model Ratings as Mediated by AFA Subscales, Controlling for Thin Size Model Ratings. Gender was significantly predictive of plus size model ratings without considering the mediators, $b = 1.25$, $t(318) = 7.94$, $p < .001$. There was a significant, negative relationship between gender and AFA Dislike, $b = -4.07$, $t(318) = -4.37$, $p < .001$, and separately, there was a significant, negative relationship between gender and AFA Willpower, $b = -2.22$, $t(318) = -3.91$, $p < .001$. The mediators were significant in predicting plus size model ratings, controlling for gender, for AFA Dislike, $b = -0.04$, $t(316) = -3.89$, $p < .001$, and AFA Willpower, $b = -0.04$, $t(316) = -2.53$, $p < .05$. The relationship between gender and plus size model ratings was significant after specifically controlling for both mediators, $b = .99$, $t(316) = 6.46$, $p < .001$, suggesting partial mediation. Bootstrapped indirect effects for both mediators, in comparison to the direct effect, suggested the proportion of the total effect that operates indirectly on the relationship between gender and plus size model ratings was 6% for AFA Dislike and 3.5% for AFA Willpower. Men were more critical towards plus size models, and had higher levels of AFA Dislike and AFA Willpower.

Discussion

The current study aimed to explore the relatively new use of plus size models and designed to investigate whether 1) plus size models would be rated more critically than thin models and if 2) weight bias, sociocultural attitudes and body appreciation would be associated with ratings of plus size models. We further hypothesized that 3) key participant characteristics, such as gender, race or BMI would be associated with ratings of plus size models as well.

While the correlation between the ratings of plus size and thin models was positive and significant (suggesting some similarities in how participants rated the models), as hypothesized, with plus size models were significantly rated more critically. Higher levels of weight stigma were linked to critical ratings of plus size models. This is consistent with the idea that weight bias remains widespread [2–3]. Additionally, weight stigma remained consistently predictive of plus size model ratings, even when controlling for ratings of thin-models (thereby accounting for overall response patterns or tendencies from participants). Further, AFA Dislike was found to partially mediate the relationship between thin and plus size model ratings, suggesting that weight bias accounted for the difference between these ratings to some extent. Therefore, even though there is a call for more plus size models in the fashion industry, negative judgments aimed toward the plus size models was still evident.

There was not a significant relationship between ratings of plus size models and a desire to be thin. It is possible that while participants may develop an internal desire for thinness, this may not translate to a negative attitude toward those who are heavier. In contrast, a desire to appear athletic was associated with and predicted lower ratings of plus size models. This desire may be more “externalized” or applied towards others. Whether a dislike of excess weight drives the desire to be muscular or vice versa will be an important area of future inquiry.

Participants who endorsed a higher dislike of fat also rated thin models more critically. This was unexpected as past research has indicated that individuals who have an anti-fat bias may have a stronger preference for thinner figures [24]. However, participants responses in the current study may reflect a greater degree of criticalness, in general, than a dislike for thinness. Not only was the correlation between higher dislike of fat and ratings of plus sized models greater than the correlation between higher dislike of fat and ratings of thin model, but the results of the regression show a larger disdain for plus sized models after accounting for the ratings of thin models. Similarly, Carels and Musher-Eizenman [24] also found that a general tendency to judge individuals more on physical appearance was associated with higher weight bias. Future research could explore how bias relates to critical attitudes among individuals.

It was also hypothesized that, consistent with past research, participants may rate plus size models differently based on gender, race, and BMI. Males were found to rate plus size models more critically than female participants. Additionally, AFA Dislike and AFA Willpower were found to partially mediate the relationship between gender and plus size model ratings. These results are consistent with past research, as women tend to report less anti-fat attitudes [17]. One explanation posited for this is that women may be more likely to internalize the societal messages praising thinness, while men may be more likely to externalize messages and develop consequential dislike of body types higher in fat [25]. In the current study, men reported higher dislike of fat and sense that fat was a matter of willpower, and women reported higher fear of fat, consistent with the speculation above.

This draws attention to problematic responses to weight for both males and females. Yet, some early studies exposing females to plus size models have shown promise in terms of lowering anti-fat attitudes [9, 26]. Perhaps the use of plus size models for women's clothing has lowered dislike of fat in females – whether exposure to plus size models would have an impact on males' dislike would be an interesting area of inquiry as well. Additionally, repeated exposure of thin models has been tied to negative effects on mental health [27–28] or body dissatisfaction [29]. It may be worth investigating whether exposure to plus size models be a viable option for lowering fear of fat among females.

Race was not found to play a role in ratings of plus size models through t-tests. This was unexpected, as past research supports differing levels of weight bias among people of different backgrounds [7, 12, 22]. With only 53 Black participants,

this study had power to detect a moderate effect size (Cohen's $d = .45$, power of .80) and therefore lacked sufficient power to detect more modest differences. While a hierarchical regression did find race to be predictive of plus size model ratings, increased power may produce a more pronounced effect.

It is less surprising that BMI did not play a role when considering that individuals may internalize weight bias and apply this bias towards others [5]. Individuals with a higher BMI could hold similar levels of weight bias compared to individuals with lower BMI. This idea is supported by literature, individuals who are overweight may hold anti-fat attitudes and prefer thinner individuals [30].

In conclusion, perceptions of plus size models unfortunately still appear to be impacted by weight bias. Future studies focusing on whether plus size models can be used to shift participant attitudes on body acceptance, anti-fat attitudes, and weight bias would be informative, especially with repeated exposure to plus size models in order to investigate whether there is a dose-dependent relationship. For now, this study captures overall current attitudes towards plus size models and explores characteristics that may apply more critical attitudes towards plus size models.

Strengths

This investigation expands on current literature surrounding the relatively new use of plus-size models as well as adding to general weight bias literature. The current study also utilizes a more diverse sample as well as the inclusion of male participants. The study also aimed to reduce socially desirable responding and increase internal validity by initially informing the participants that the study was about fashion.

Limitations

While the current study does have some strengths, limitations are present as well. Participants were university students, which is not representative of the entire population. The study utilized self-reported height and weight, which are often not reported accurately [31]. Further, the data is correlational and causation cannot be determined. Additionally, screening participants for eating disorders may have been beneficial, as eating pathology has been linked to high weight bias [32]. Then, while the scale used for the study did have a high Cronbach's alpha and did correlate with weight bias as expected (suggesting good reliability and validity), it still is a newly developed scale, and may need further construct validity.

What Is Already Known On This Subject?

The harmful effects (weight bias, body image concerns) of the media and fashion industries' use of an idealized thin body type has been well documented. However, recent use of plus size models among the fashion industry has prompted new research suggesting that viewing these models may reduce weight bias and improve body image and appreciation. Unfortunately, research on plus size models is relatively scarce and primarily focused on White female participants only.

What Does This Study Add?

Participants were more critical of plus size models in comparison to thin models, especially males. Weight bias was found to mediate this more critical evaluation of plus size models in comparison to thin models. An idealization of a more athletic figure was also predictive of a more critical attitude towards plus size models, but not the idealization of a thin figure.

Declarations

Corresponding Author: J. Caroline Miller

Conflict of Interest: The authors have no conflicts of interest to declare.

Funding: No funding was received for the current study.

Ethics Approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Institutional Review Board of East Carolina University.

Informed Consent: Informed consent was received from all participants.

Data Availability: The dataset generated during and analyzed during the current study are available from the corresponding author on reasonable request.

References

1. Hales CM, Carroll MD, Fryar CD, Ogden CL (2020) Prevalence of obesity and severe obesity among adults: United States, 2017–2018. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. Retrieved from: <https://permanent.fdlp.gov/gpo133054/db360-h.pdf>
2. Puhl R, Brownell KD (2001) Bias, discrimination, and obesity. *Obes Res* 9(12):788–805. <https://doi.org/10.1038/oby.2001.108>
3. Puhl RM, Heuer CA (2009) The Stigma of Obesity: a Review and Update. *Obesity* 17(5):941–964. <https://doi.org/10.1038/oby.2008.636>
4. Papadopoulos S, Brennan L (2015) Correlates of weight stigma in adults with overweight and obesity: A systematic literature review. *Obesity* 23(9):1743–1760. <https://doi.org/10.1002/oby.21187>
5. Puhl RM, Andreyeva T, Brownell KD (2008) Perceptions of weight discrimination: prevalence and comparison to race and gender discrimination in America. *Int J Obes* 32(6):992–1000. <https://doi.org/10.1038/ijo.2008.22>
6. Musher-Eizenman D, Carels RA (2009) The impact of target weight and gender on perceptions of likeability, personality attributes, and functional impairment. *Obes Facts* 2(5):311–317. <https://doi.org/10.1159/000235915>
7. Hebl MR, Heatherton TF (1998) The Stigma of Obesity in Women: The Difference is Black and White. *Pers Soc Psychol Bull* 24(4):417–426. <https://doi.org/10.1177/0146167298244008>
8. Grabe S, Ward LM, Hyde JS (2008) The role of the media in body image concerns among women: A meta-analysis of experimental and correlational studies. *Psychol Bull* 134(3):460–476. <https://doi.org/10.1037/0033-2909.134.3.460>
9. Smirles KE, Lin L (2018) Changes in anti-fat weight bias in women after exposure to thin and plus-sizes models. *Soc Sci J* 55(2):193–197. <https://doi.org/10.1016/j.soscij.2018.02.002>
10. Clayton RB, Ridgway JL, Hendrickse J (2017) Is plus size equal? the positive impact of average and plus-sized media fashion models on women's cognitive resource allocation, social comparisons, and body satisfaction. *Commun Monogr* 84(3):406–422. doi:10.1080/03637751.2017.1332770
11. Moreno-Domínguez S, Servián-Franco F, Reyes del Paso Gustavo A, Cepeda-Benito A (2019) Images of thin and plus-size models produce opposite effects on Women's body image, body dissatisfaction, and anxiety. *Sex Roles* 80(9): 607–616. doi:10.1007/s11199-018-0951-3
12. Nouri M, Hill LG, Orrell-Valente JK (2011) Media exposure, internalization of the thin ideal, and body dissatisfaction: Comparing Asian American and European American college females. *Body Image* 8(4):366–372. <https://doi.org/10.1016/j.bodyim.2011.05.008>
13. Larkin JC, Pines HA (1979) No fat persons need apply: experimental studies of the overweight stereotype and hiring preference. *Sociol Work Occup* 6(3):312–327. <https://doi.org/10.1177/073088847900600303>
14. Rothblum ED, Miller CT, Garbutt B (1988) Stereotypes of obese female job applicants. *Int J of Eat Disord* 7(2):277–283. [https://doi.org/10.1016/0001-8791\(90\)90044-3](https://doi.org/10.1016/0001-8791(90)90044-3)
15. Pingitore R, Dugoni BL, Tindale RS, Spring B (1994) Bias against overweight job applicants in a simulated employment interview. *J Appl Psychol* 79(6):909–917. <https://doi.org/10.1037/0021-9010.79.6.909>

16. Tovée MJ, Maisey DS, Emery JL, Cornelissen PL (1999) Visual cues to female physical attractiveness. *Proc Biol Sci* 266(1415):211–218. <https://doi.org/10.1098/rspb.1999.0624>
17. Crandall CS (1994) Prejudice against fat people: ideology and self-interest. *J Pers Soc Psychol* 66(5):882–894. <https://doi.org/doi:10.1037//0022-3514.66.5.882>
18. Lacroix E, Alberga A, Russell-Mathew S, McLaren L, von Ranson K (2017) Weight bias: A systematic review of characteristics and psychometric properties of self-report questionnaires. *Obes Facts* 10(3):223–237. doi:10.1159/000475716
19. Magallares A, Morales JF (2014) Spanish adaptation of the Antifat Attitudes Scale/Adaptación al castellano de la Escala de Actitud Antiobesos. *J Soc Psychol* 29(3):563–588. <https://doi.org/10.1080/02134748.2014.972707>
20. Schaefer LM, Burke, NL, Thompson JK, Dedrick, RF, Heinberg, LJ, Calogero, RM, ... Anderson DA (2015) Development and validation of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4). *Psychol Assess* 27(1):54–67. <https://doi.org/doi:10.1037/a0037917>
21. Avalos L, Tylka TL, Wood-Barcalow N (2005) The Body Appreciation Scale: development and psychometric evaluation. *Body Image* 2(3):285–297
22. <https://doi.org/10.1016/j.bodyim.2005.06.002>
23. Rakhkovskaya LM, Warren CS (2014) Ethnic identity, thin-ideal internalization, and eating pathology in ethnically diverse college women. *Body Image* 11(4):438–445. <https://doi.org/10.1016/j.bodyim.2014.07.003>
24. Shrout PE, Bolger N (2002) Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychol Methods* 7(4):422–445. <https://doi.org/10.1037/1082-989X.7.4.422>
25. Carels RA, Musher-Eizenman DR (2010) Individual differences and weight bias: Do people with an anti-fat bias have a pro-thin bias? *Body Image* 7(2):143–148. <https://doi.org/10.1016/j.bodyim.2009.11.005>
26. Aruguete MS, Yates A, Edman J (2006) Gender Differences in Attitudes about Fat. *N Am J Psychol* 8(1):183–192. <https://search.proquest.com/docview/197979537?> Retrieved from
27. Bessenoff GR (2006) Can the media affect us? Social comparison, self-discrepancy, and the thin ideal. *Psychol Women Q* 30(3):239–251. <https://doi.org/10.1111/j.1471-6402.2006.00292.x>
28. Stewart SJ, Ogden J (2020) The impact of body diversity vs thin-idealistic media messaging on health outcomes: an experimental study. *Psychol Health Med*, 1–13. <https://doi.org/10.1080/13548506.2020.1859565>
29. Turner SL, Hamilton H, Jacobs M, Angood LM, Dwyer DH (1997) The influence of fashion magazines on the body image satisfaction of college women: An exploratory analysis. *Adolescence* 32(127):603–614. Retrieved from: <https://pubmed.ncbi.nlm.nih.gov/9360734/>
30. Groesz LM, Levine MP, Murnen SK (2002) The effect of experimental presentation of thin media images on body satisfaction: A meta-analytic review. *Int J of Eat Disord* 31:1–16. <https://doi.org/10.1002/eat.10005>
31. Wang SS, Brownell KD, Wadden TA (2004) The influence of the stigma of obesity on overweight individuals. *Int J Obes* 28(10):1333–1337. <https://doi.org/10.1038/sj.ijo.0802730>
32. Rowland ML (1990) Self-reported weight and height. *Am J of Clin Nutr* 52(6):1125–1133. <https://doi.org/10.1093/ajcn/52.6.1125>
33. Vartanian LR, Porter AM (2016) Weight stigma and eating behavior: A review of the literature. *Appetite* 102:3–14. <https://doi.org/10.1016/j.appet.2016.01.034>
34. Journal: *Eating and Weight Disorders, Studies on Anorexia, Bulimia and Obesity*
35. Title: *Influence of Weight Bias and Associated Factors on Perceptions of Plus Size Models*
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Tables

Table 1

Participant Demographics

Variable	
Age <i>M</i> (SD)	18.62 (1.33)
BMI <i>M</i> (SD)	23.88 (5.56)
Sex <i>n</i> (%)	
<i>Female</i>	199 (60.3%)
<i>Male</i>	131 (39.7%)
Race <i>n</i> (%)	
<i>Asian</i>	14 (4.2%)
<i>Black</i>	53 (16.1%)
<i>Hispanic/Latinx</i>	16 (4.8%)
<i>Middle Eastern</i>	2 (.6%)
<i>Native American</i>	4 (1.2%)
<i>Pacific Islander</i>	1 (.3%)
<i>White</i>	229 (69.4%)
<i>Multiracial/Other</i>	9 (2.7%)
Sexual Orientation <i>n</i> (%)	
<i>Straight</i>	301 (91.2%)
<i>Gay</i>	9 (2.7%)
<i>Bisexual</i>	14 (4.2%)
<i>Pansexual</i>	2 (.6%)
<i>Asexual</i>	3 (.9%)
<i>Other</i>	1 (.3%)
Year in College <i>n</i> (%)	
<i>Freshman</i>	265 (80.3%)
<i>Sophomore</i>	42 (12.7%)
<i>Junior</i>	18 (5.5%)
<i>Senior</i>	5 (1.5%)

Table 2

Model Rating Scale

Question	Chronbach's Alpha
1. Do you like this dress?	-
2. Is this model an appropriate choice for this dress?*	.92
3. Does the model seem confident?*	.91
4. Does the model look attractive in this dress?*	.92
5. How much do you think people would pay for this dress?	-
6. Would you want to be seen with someone wearing this dress?	-

Note. * denotes questions of interest.

Table 3

Correlations Between Ratings of Thin and Plus Models and Variables

	Thin Model Ratings	Plus Model Ratings	AFA Dislike	AFA Fear	AFA Willpower	SATAQ Athletic	SATAQ Thin	SATAQ Family	SATAQ Peer	SATAQ Media	BAS	WBIS
Thin Model Ratings	1											
Plus Model Ratings	.72***	1										
Weight Stigma - Dislike	-.38***	-.52***	1									
AFA Fear	-.05	-.10	.27***	1								
AFA Willpower	-.15**	-.35***	.54***	.41**	1							
SATAQ Athletic	-.10	-.22**	.17**	.09	.12*	1						
SATAQ Thin	-.01	-.04	.09	.39***	.05	.56***	1					
SATAQ Family	-.08	-.07	.27***	.35**	.09	.14*	.38***	1				
SATAQ Peer	-.17**	-.16**	.31***	.28**	.10	.22***	.41***	.65***	1			
SATAQ Media	.06	.13*	.04	.43**	.07	.09	.44***	.51***	.53***	1		
Body Appreciation	.11*	.06	-.18**	-.43**	-.03	-.06	-.36***	-.32***	-.31***	-.35***	1	

*** Denotes significance at the 0.001 level (2-tailed), ** Denotes significance at the 0.01 level (2-tailed), * Denotes significance at the 0.05 level (2-tailed).

AFA = Antifat Attitudes; SATAQ = Sociocultural Attitudes Towards Appearance Questionnaire

Table 4

Hierarchical Regression for Variables Predicting Plus-Sized Model Ratings

Variables	R ²	F(df)		
Block 1				
Thin-Sized Models	.53	359.39 (1, 319)***		
	ΔR^2	$\Delta F(df)$	β	<i>t</i>
Block 2				
AFA Dislike	.07	234.67 (2, 318)***	-.28	-7.23***

Variables	R ²	F(df)		
Block 1				
Thin-Sized Models	.52	354.44 (1, 326)***		
	ΔR^2	$\Delta F(df)$	β	<i>t</i>
Block 2				
AFA Fear	.00	179.93 (2, 325)	-.07	-1.77

Variables	R ²	F(df)		
Block 1				
Thin-Sized Models	.52	352.81 (1, 328)***		
	ΔR^2	$\Delta F(df)$	β	<i>t</i>
Block 2				
AFA Willpower	.06	223.23 (2, 327)***	-.25	-6.76***

Variables	R ²	F(df)		
Block 1				
Thin-Sized Models	.52	755.94 (1, 323)***		
	ΔR^2	$\Delta F(df)$	β	<i>t</i>
Block 2				
SATAQ Thin	.00	378.90 (2, 322)	.02	.92

Variables	R ²	F(df)		
Block 1				
Thin-Sized Models	.71	335.33 (1, 322)***		
	ΔR^2	$\Delta F(df)$	β	<i>t</i>
Block 2				
SATAQ Athletic	.02	390.57 (2, 321)***	.15	3.89***

Variables	R ²	F(df)		
Block 1				
Thin-Sized Models	.52	355.04 (1, 323)***		
	ΔR^2	$\Delta F(df)$	β	<i>t</i>
Block 2				
SATAQ Family	.00	177.04 (2, 322)	.01	.25

Variables	R ²	F(df)		
Block 1				
Thin-Sized Models	.52	348.82 (1, 326)***		
	ΔR^2	$\Delta F(df)$	β	<i>t</i>
Block 2				
SATAQ Peer	.00	174.80 (2, 325)	.04	.94

Variables	R ²	F(df)		
Block 1				
Thin-Sized Models	.53	365.72 (1, 327)***		
	ΔR^2	$\Delta F(df)$	β	<i>t</i>
Block 2				
SATAQ Media	.01	188.63 (2, 326)*	-.09	-2.44*

***. Correlation is significant at the 0.001 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).

AFA = Antifat Attitudes; SATAQ = Sociocultural Attitudes Towards Appearance Questionnaire

Table 5

Hierarchical Regression for Participant Characteristics Predicting Plus-Sized Model Ratings

Variables	R²	F(df)		
Block 1				
Thin-Sized Models	.52	352.81 (1, 328)***		
	ΔR²	ΔF(df)	β	t
Block 2				
Gender	.08	246.99 (2, 327)***	.30	8.28***

Variables	R²	F(df)		
Block 1				
Thin-Sized Models	.51	289.99 (1, 280)***		
	ΔR²	ΔF(df)	β	t
Block 2				
Race	.01	.90 (2, 279)*	.09	2.12*

Variables	R²	F(df)		
Block 1				
Thin-Sized Models	.52	349.68 (1, 326)***		
	ΔR²	ΔF(df)	β	t
Block 2				
BMI	.01	178.13 (2, 325)	.07	1.92

***. Correlation is significant at the 0.001 level (2-tailed); **. Correlation is significant at the 0.01 level (2-tailed); *. Correlation is significant at the 0.05 level (2-tailed).