The Impact of Applicants' Weight and Education About Obesity on Applicant Ratings

Rachel M. Scrivano and Jenna L. Scisco*
Eastern Connecticut State University
Gary W. Giumetti*
Quinnipiac University

ABSTRACT. Obese women may be discriminated against based on their appearance, especially during the hiring process (Agerström & Rooth, 2011). However, previous research has suggested that an education intervention can reduce obesity bias. The present study sought to reduce obesity bias by providing brief education about uncontrollable causes of obesity. Participants ($N = 166$) were randomly assigned into 1 of 6 conditions where they viewed a voice-over PowerPoint presentation by either an obese or non-obese candidate whose job talk focused on research about controllable causes of obesity, uncontrollable causes of obesity, or a control presentation on sleep and memory. Then, participants completed measures of implicit obesity bias, explicit beliefs about the controllability of obesity, hiring decisions, and impressions of the candidate. Results indicated that participants rated the obese candidate as more likely to accept the job offer than the non-obese candidate, $p = .009$. Additionally, professor roles (e.g., approachability) were evaluated significantly more favorably for the obese candidate than the non-obese candidate, $p = .001$. Further, education about the controllable causes of obesity (e.g., diet) led to significantly higher explicit beliefs about obesity controllability than the control, $p = .006$, and marginally higher than the uncontrollable causes presentation, $p = .084$. These findings suggest that obese female candidates may be perceived more favorably on select characteristics than non-obese female candidates, and that brief education focusing on controllable causes of obesity may increase explicit beliefs about the controllability of obesity.

Approximately one-third of the U.S. adult population meets the body mass index (BMI) criteria for being considered obese (National Institute of Diabetes and Digestive and Kidney Diseases, 2012). Similarly, 27.7% of workplace employees are considered obese (Luckhaupt, Cohen, Li, & Calvert, 2014). Research has found that obese individuals, particularly women, are discriminated against based on their appearance, especially during the hiring process. For example, interviewers have neglected to invite obese candidates to interviews due to implicit biases toward their application photographs,

despite the candidates' qualifications for the position (Agerström & Rooth, 2011). Past studies have attempted to reduce obesity's negative stigma (Burmeister et al., 2017), but weight discrimination still exists. Therefore, the purpose of the present study was to reduce discrimination in the hiring process against obese individuals by providing education on the uncontrollable causes of obesity (e.g., genetics).

Attitudes Toward Obese Job Applicants
Some of the most common forms of obesity bias include obese individuals receiving low ratings

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*Faculty mentor

on specific attributes, traits, and characteristics as compared to non-obese individuals. For instance, in one study, students viewed overweight job applicants to be less attractive and associated more negative words with their photos (e.g., untidy/neat) than average weight applicant photos (Polinko & Popovich, 2001). Moreover, Pingitore, Dugoni, Tindale, and Spring (1994) found that obese applicants were more negatively rated on personality traits (i.e., nonproductive, unattractive, and indecisive) than average weight applicants. Research has suggested that these negative attitudes toward obese individuals may influence hiring decisions. For instance, Pingitore et al. (1994) found that obese applicants were less likely to be hired than average weight applicants. Another study that evaluated hiring based on images of women who ranged from skinny to obese found that those with slender bodies were hired more than those with larger bodies. Women who had greater BMIs were also rated as having lower helping behavior (Swami, Chan, Wong, Furnham, & Toveé, 2008).

Not all attitudes toward obese job applicants are negative, however. For example, Krueger, Stone, and Stone-Romero (2014) had student participants assess manipulated female applicant photos on items that included job suitability and traits such as motivation, health, attractiveness, cognitive ability, and social skills. Then, the students indicated whether they would recommend hiring the applicant. Unlike other experiments, this study found that the students rated overweight applicants as more suitable for the job than average weight applicants if they were higher in conscientiousness, which was manipulated by supplying participants with the applicants' personality assessment scores. In addition, the overweight applicants were ranked as being higher in general cognitive ability, jolliness, and self-control as opposed to the average weight applicant. This research suggests that not all people think negatively of obese individuals.

Based on previous research, it was anticipated that obese candidates would be less likely to be recommended for hiring than non-obese candidates in the present study. However, given the mixed results in the literature on ratings of various traits of obese individuals (e.g., cognitive ability, jolliness, and self-control), it was unclear if obese candidates would be rated more or less favorably than non-obese candidates on professor roles and personal characteristics. Therefore, our first hypothesis was that hiring recommendations, professor role ratings, and personal characteristics would be rated

differently for an obese female candidate than a non-obese female candidate.

Implicit and Explicit Biases Toward Obese Individuals

Many studies have utilized the implicit association test (IAT) in order to evaluate implicit bias toward obese individuals. Implicit bias refers to stereotypes people are unaware they have, whereas explicit bias refers to judgments that stem from individual consciousness. One particular study by Agerström and Rooth (2011) utilized a version of the IAT with images of obese and average weight men and women, and participants were asked to quickly categorize words to match the images. Sample words chosen included lazy, productive, hardworking, and slow. When words such as lazy and slow were more quickly associated with obese images than average weight images, this demonstrated implicit obesity bias. Agerström and Rooth (2011) found that hiring personnel who held more implicit bias (as demonstrated through the IAT) were less likely to call back an obese applicant for a job interview. In another IAT study, Sabin, Marini, and Nosek (2012) found that medical doctors had strong implicit biases toward obese individuals.

In previous studies, explicit bias was measured using survey questions to determine the degree to which participants preferred average weight or obese individuals through Likert-type scale ratings. One study found that, regardless of participant BMI, thinner people were more preferred (Sabin et al., 2012). In another study utilizing a survey measure, participants rated obese individuals as having more negative symptoms such as depression or binge eating (Carels et al., 2013). Flint et al. (2016) also found that obese individuals were less recommended for hire versus average weight individuals, especially when considering workplace activity level (e.g., standing, manual, or heavy manual) in addition to having more negative beliefs towards the obese applicants.

Using Education to Reduce Implicit and Explicit Obesity Bias

Those who demonstrate bias toward obese individuals may do so because they believe that obesity is under an individual's control rather than due to uncontrollable factors. *Controllable causes of obesity* (within an individual's control) include consuming extra calories through food and beverage intake and not expending adequate calories through physical activity. On the other hand, *uncontrollable*

causes of obesity (outside of an individual's control) include genetic dispositions and an obesogenic environment (e.g., an environment that discourages physical activity such as walking; Persky & Eccleston, 2011; Puhl, Schwartz, & Brownell, 2005). Previous research has suggested that education about uncontrollable causes of obesity can reduce obesity bias. For example, one study evaluated whether implicit and explicit bias could be reduced if participants completed a 12-hour class that discussed both controllable and uncontrollable factors of obesity. It was found that, after the class, participants displayed reduced implicit and explicit obesity bias (O'Brien et al., 2010). Another study had one group of participants listen to a 1-hour lecture about obesity while the other group role-played as an obese individual. The lecture provided insight on how obese persons are discriminated against by society and health professionals in regard to treatment plans, as well as stressed the importance of patient involvement during treatment. The researchers found that explicit bias was significantly reduced in the role-playing condition, and in both conditions, sympathy increased toward obese individuals (Matharu et al., 2014). Diedrichs and Barlow (2011) also found that explicit bias was reduced when participants partook in a 2-hour course discussing weight bias and controllable and uncontrollable factors that influence body weight.

Building on past research, the present study was the first to experimentally examine if brief education about the uncontrollable causes of obesity could reduce hiring bias against an obese candidate. It was anticipated that education about the uncontrollable causes of obesity would result in a reduction of implicit obesity bias, explicit beliefs about the controllability of obesity, and hiring bias toward obese candidates. Due to this, our second hypothesis was that education about the uncontrollable causes of obesity would reduce hiring bias against the obese candidate as compared to controllable causes of obesity education. Our third hypothesis was that implicit obesity bias and explicit beliefs about the controllability of obesity would be reduced for individuals receiving content about uncontrollable causes of obesity education (e.g., genetics, environment) compared to individuals receiving content about controllable causes of obesity education (e.g., diet, exercise), or participants viewing a control presentation (on sleep and memory).

Method

Participants
Participants were recruited from two Northeastern universities in the United States via posters, e-mails from the psychology department, and Experimetrix, an online recruitment tool. Students who participated (*N* = 166) received either partial course credit for select psychology classes or a $10 Amazon gift card. Participants were mostly women (60.6%). Participants identified as White/European American (81.3%), Black/African American (6.6%), Asian (4.8%), Native Hawaiian/Other Pacific Islander (1.2%), and American Indian/Alaskan Native (0.6%). Nine participants (5.4%) did not report their race. Participants were enrolled as first-year students (22.9%), sophomores (12.0%), juniors (38.0%), seniors (21.7%), and graduate students/other (4.8%). One participant (0.6%) did not report class year. The average age of participants was 20.48 years (*SD* = 2.31).

Design
The current study utilized a 2 (photo: obese woman vs. non-obese woman) x 3 (education: controllable causes of obesity vs. uncontrollable causes of obesity vs. control) between-subjects experimental design to measure the effect on candidate ratings, hiring recommendations, implicit obesity bias, and explicit beliefs about the controllability of obesity. Female candidates were used for this study due to the larger amount of discrimination they face in the workplace versus male candidates (Agerström & Rooth, 2011).

Measures and Materials
Candidate photos. Photos of two professionally dressed women were selected from an online image database (see Appendix A). One of the photos depicted an obese woman, and the other photo depicted an average weight woman. Because the photos were of two different women in different clothing, participants were asked to rate the attractiveness of the woman in the photo on a 5-point Likert-type scale from 1 (*very unattractive*) to 5 (*very attractive*). Candidate attractiveness differed significantly between the two photos (the average weight candidate was rated as more attractive). Therefore, attractiveness was entered as a covariate for all analyses, thereby controlling for attractiveness.

Research presentations. Three PowerPoint presentations were created of a research-based job talk for a candidate for a professor position, with the content either focusing on the controllable causes of obesity (e.g., diet and exercise),

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the uncontrollable causes of obesity (i.e., lack of sidewalks in neighborhoods for exercise and genetics), or sleep and memory (control condition). All presentations lasted for 5 minutes, included an image of an obese or non-obese candidate photo on all 12 PowerPoint slides, and had the same female voice-over for each presentation (see Appendix B for sample slides from each presentation).

Post presentation measures. Four items were used to measure hiring recommendations (α = .74), three items were used to measure professor role ratings (α = .75), and three items were used to measure personal characteristics (α = .79; see Table 1 for the specific items). All items were created for this study. Responses were on a 4-point Likert-type scale from 1 (*not likely at all*) to 4 (*very likely*). We took the mean of each set of items and created composites to represent hiring recommendations, professor role ratings, and personal characteristics in our analyses.

Explicit beliefs about the controllability of obesity. The Beliefs About Obese Persons Scale (Allison, Basile, & Yuker, 1991) is an 8-item scale (α = .74) that measures beliefs about the controllability of obesity. A sample item is, "In many cases, obesity is the result of a biological disorder." Participants responded on a 7-point Likert-type scale from 1 (*strongly disagree*) to 7 (*strongly agree*). Higher scores on this scale indicate a stronger belief that obesity is not under the obese person's control.

Implicit obesity bias. An online open-source implicit association test (IAT; Mason & Ozturk, 2013) was used to assess implicit obesity bias. The IAT contained silhouettes of obese and thin individuals (Sabin et al., 2012) paired with high-performance (e.g., "efficient") or low-performance adjectives (e.g., "lazy"; see Agerström & Rooth, 2011). The IAT was scored using the algorithm described by Greenwald, Nosek, and Banaji (2003). Positive scores indicated implicit obesity bias.

Procedure

The study was approved by the Institutional Review Board at both universities. When participants arrived in the lab, they were told that the psychology department was planning to hire a new faculty member and that their input was vital for deciding whom to hire. After signing the informed consent form, participants viewed a 5-minute voice-over job talk video for their randomly assigned candidate and condition. During the video, an image of their candidate appeared in the corner of the PowerPoint slides. Once finished, participants were asked to complete the post presentation measures, the Beliefs About Obese Persons Scale, and the IAT. Then, participants were debriefed.

Statistical Analyses

For Hypotheses 1 and 2, given that we had three post presentation outcomes, we conducted a

TABLE 1			
Differences in Hiring Recommendations, Personal Characteristics, and Professor Roles for the Obese vs. Non-Obese Candidates			
Outcome Variable	Obese	Non-Obese	*p*
	M (*SD*)	*M* (*SD*)	
Hiring Recommendations	3.19 (0.53)*	3.11 (0.56)*	.025
How likely would you be to recommend this candidate for a job offer?	2.93 (0.68)	2.96 (0.69)	.394
How serious do you feel the candidate is about working at this university?	3.12 (0.81)	3.04 (0.82)	.129
How well do you think this candidate would perform as a professor?	3.02 (0.77)	2.95 (0.84)	.070
If offered the position, how likely do you feel this candidate is to accept?	3.67 (0.52)*	3.47 (0.63)*	.009
Personal Characteristics	3.20 (0.62)	3.29 (0.60)	.952
How intelligent do you think the candidate is?	3.05 (0.66)	3.25 (0.62)	.234
How knowledgeable about the subject matter do you think the candidate is, based on the research presentation?	3.39 (0.70)	3.39 (0.73)	.492
How motivated do you think the candidate is?	3.15 (0.82)	3.22 (0.81)	.800
Professor Roles	3.44 (0.49)*	3.25 (0.61)*	.001
How comfortable would you be in approaching this candidate for help if he/she was your professor?	3.57 (0.61)*	3.36 (0.71)*	.004
How understanding of students' needs do you think this candidate would be?	3.33 (0.63)*	3.11 (0.75)*	.004
How responsive would this candidate be to a student with special needs?	3.40 (0.63)*	3.27 (0.74)*	.033
Note. *Difference is significant at *p* < .05.			

Multivariate Factorial Analysis of Covariance (MANCOVA) to examine the impact of candidate photo and presentation content on hiring recommendations, professor role ratings, and personal characteristics, while controlling for applicant attractiveness as a covariate. For Hypothesis 3, we conducted two factorial Analyses of Variance to examine the impact of candidate photo and presentation content on implicit obesity bias and explicit beliefs about the controllability of obesity, respectively.

Results

Hypothesis 1 received partial support, and Hypothesis 2 was not supported. The overall MANCOVA revealed a significant main effect for attractiveness, $F(3, 156) = 9.06$, $p < .001$, partial $\eta^2 = 0.148$, and a significant main effect for photo condition, $F(3, 156) = 5.74$, $p = .001$, partial $\eta^2 = 0.099$. However, there was no significant main effect for presentation condition, $F(6, 312) = 0.82$, $p = .56$, partial $\eta^2 = 0.015$, nor a significant interaction between photo condition and presentation condition, $F(6, 312) = 1.10$, $p = .36$, partial $\eta^2 = 0.021$. Examination of the main effect for photo condition revealed a significant difference between the non-obese and the obese candidate on hiring recommendations, $F(1, 158) = 5.11$, $p = .025$, partial $\eta^2 = 0.031$. Additionally, there were significant differences between the non-obese and the obese candidate on professor role ratings, $F(1, 158) = 10.71$, $p = .001$, partial $\eta^2 = 0.063$. To determine which ratings drove these results, we also examined the differences at the item level for hiring recommendations, professor role ratings, and personal characteristics. As shown in Table 1, for hiring recommendations, participants rated the obese candidate as being more likely to accept the job offer than the non-obese candidate, but none of the other three hiring recommendations items differed significantly between the obese and non-obese candidates. Additionally, for professor role ratings, participants reported being more comfortable approaching the obese candidate for help than the non-obese candidate, that the obese candidate would be more supportive of students' needs than the non-obese candidate, and that the obese candidate would be more responsive to a student with special needs than the non-obese candidate.

Hypothesis 3 was partially supported. Presentation information significantly impacted explicit beliefs about the controllability of obesity, $F(2,158) = 3.92$, $p = .022$, partial $\eta^2 = 0.05$. Post-hoc tests revealed that the controllable presentation resulted in significantly greater explicit beliefs about the controllability of obesity ($M = 24.40$, $SD = 5.91$) than the control presentation ($M = 27.55$, $SD = 6.39$), $p = .006$. Additionally, there was a marginally significant difference between the controllable presentation ($M = 24.40$, $SD = 5.91$) and the uncontrollable presentation ($M = 26.41$, $SD = 5.69$), $p = .084$, with higher explicit beliefs about the controllability of obesity in the controllable presentation than the uncontrollable presentation. With regard to implicit obesity bias, results indicated that presentation condition did not significantly impact implicit obesity bias, $F(2,158) = 0.05$, $p = .956$, partial $\eta^2 = 0.00$.

Discussion

Currently, no law in the United States prohibits employers from discriminating against overweight or obese applicants during the hiring process. However, due to the extensive rate at which obesity discrimination occurs, some believe a law would help lessen the amount of discrimination (Puhl & Heuer, 2011). In the meantime, discrimination against overweight and obese job applicants needs to decrease in order to give these individuals respect and an equal opportunity in the workplace. To that end, the present study aimed to investigate the possibility of reducing obesity bias in the hiring process by providing brief education about the uncontrollable causes of obesity during a mock job talk given by a female candidate for a professor position.

Results indicated that the obese candidate was rated as more understanding of students' needs, more approachable, and more responsive to students with special needs as compared to the non-obese candidate. To our knowledge, few studies have researched positive attitudes or perceptions toward obese individuals. However, these results are similar to the findings by Krueger et al. (2014) that obese individuals can be viewed positively, with participants reporting, for example, that the obese candidate was jollier than the non-obese candidate. In addition, the obese candidate was rated as being more likely to accept the job offer than the non-obese candidate. We interpret this finding neutrally because it could potentially reflect that the obese candidate was either perceived negatively, such as being less likely to receive other job offers, or positively, such as being very interested in the position and a good fit for the job at the university.

Previous research has evaluated the media's

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influence on obese attitudes. One study found that those who viewed positive images of obese individuals were less apt to socially distance themselves from the model as compared to the group who viewed stigmatizing images (Pearl, Puhl, & Brownell, 2012). The obese candidate image in the present study may be a more positive image because she is not engaging in any stereotypical activity regarding obesity. According to a content analysis study by Heuer, McClure, and Puhl (2011), images of obese individuals portray them as less likely to wear professional clothing and more likely to have inappropriately sized clothing. Furthermore, photos of obese individuals tend to be taken from the side or rear view or to be posed in a sedentary position. However, our image depicted a well-dressed candidate who could arguably be either standing or sitting. Due to this, participants might have rated the obese candidate higher on approachableness and understanding because the image failed to invite discrimination, therefore not resulting in the desire to socially distance themselves. Rather, participants could have viewed the candidate as an asset to their educational needs. Additionally, professors are not required to be physically fit or agile in order to perform their job responsibilities, thus possibly reducing the impact of both implicit and explicit weight bias on them in the current study.

We also found that education about the causes of obesity had an impact on explicit beliefs about the controllability of obesity, but not implicit obesity bias. In particular, participants who viewed a presentation indicating that the causes of obesity were under the obese individual's control had significantly more explicit beliefs about the controllability of obesity than those who viewed the control presentation or the uncontrollable causes presentation. However, the latter difference was only marginally significant. These findings suggest that a very brief educational intervention about the controllable causes of obesity may actually increase explicit beliefs about the controllability of obesity, and individuals who believe obesity is controllable have more negative attitudes toward obese individuals (Allison et al., 1991). However, previous studies have shown that education and educational interventions have decreased antifat biases in participants (Diedrichs & Barlow, 2011; Matharu et al., 2014; O'Brien et al., 2010).

Limitations and Future Research
The educational approach used in the present study to reduce obesity bias and hiring discrimination

was very brief (5 minutes). Therefore, the relatively small effect size and marginally significant differences might have been due to the short duration of our educational intervention as compared to previous research. For example, a study that found significance had participants complete a 12-hour course (O'Brien et al., 2010), which is considerably longer than our 5-minute presentation. Although a shorter educational program may be more feasible in the real world, a longer course could be more effective at reducing bias and discrimination (Anderson & Whiston, 2005).

Another limitation of our design is that our study only featured images of women with a voice-over during the PowerPoint presentation, which might not have been as impactful as the candidate presenting face-to-face to participants. Moreover, the present study utilized two different women for the average weight and obese candidate. Despite controlling for attractiveness statistically, it is possible that the average weight candidate was rated as more attractive than the obese candidate due to the different face and clothing. Therefore, observed differences in candidate ratings in this study might have been the result of physical characteristics other than body weight. To correct for this, past studies used makeup and prostheses for the average weight candidate to appear overweight or obese (Pingitore et al., 1994).

Although past research has stated that women are more vulnerable to discrimination based on weight (Agerström & Rooth, 2011), future research should include male professor photo conditions to investigate if they too are affected during the hiring process. Future research should also increase mundane realism because this might influence future results. Particularly, having participants come to a real office versus a lab setting might create an authentic atmosphere and environment so the experiment exemplifies a real hiring situation. Additionally, participants might view a video of a live candidate delivering a job talk to increase the believability of the scenario. Future research should consider other ways to reduce hiring discrimination in the workplace such as intervention techniques other than education or the creation of a law prohibiting weight-based discrimination in the workplace. Furthermore, the majority of past studies researching obesity bias have focused on negative stereotypes, but the present study found evidence to support positive perceptions of obese individuals. Therefore, future studies should research positive attitudes toward the obese

population to further understand its significance. Lastly, future research could examine if the weight status of a rater influences their perceptions of a job candidate.

Implications and Conclusion

Presently, the labor force is made up of 57% women (United States Department of Labor, 2017). However, weight discrimination is still prominent in the hiring process, especially toward women (Agerström & Rooth, 2011). Therefore, the hiring process needs to be fair for these individuals. Moreover, there has been evidence to support that, similar to educational interventions, health-related interventions have helped participants with short- and long-term physical and health behaviors (e.g., exercising and eating healthy; Fettig & Ferraro, 1998; Wright, Broadbent, Graves, & Gibson, 2016). Because the United States is among the top obese countries, interventions for general health and well-being are important for lessening health risks and possibly improving employee performance in the workplace (Schmier, Jones, & Halpern, 2006). Additionally, having those on hiring committees receive education on uncontrollable factors that lead to obesity may allow their hiring decision to be based off of credentials rather than appearances, although future research is needed on this topic.

In conclusion, the present study demonstrated that an obese, female candidate for a professor position was rated more positively on certain characteristics than a non-obese candidate. This finding contributes to the literature on the positive perceptions of obese individuals. Furthermore, brief education about the controllable causes of obesity may increase negative attitudes toward obese individuals. This provides unique insight into how focusing education on controllable factors of obesity such as diet and exercise may exacerbate negative beliefs about obese individuals.

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Author Note. Rachel M. Scrivano, Jenna L. Scisco, Department of Psychology, Eastern Connecticut State University; Gary W. Giumetti, Department of Psychology, Quinnipiac University

Rachel M. Scrivano is now at Department of Psychology, The College of William and Mary.

Correspondence concerning this article should be addressed to Jenna L. Scisco, Department of Psychology, Eastern Connecticut State University, 122 Webb Hall, Willimantic, CT 06226. E-mail: sciscoj@easternct.edu.

APPENDIX A

The image on the left represents the obese candidate (McClinton, 2005), and the image on the right represents the non-obese candidate (Simpson, 2013).

APPENDIX B

The image on the left represents a controllable causes of obesity PowerPoint slide while the image in the center represents an uncontrollable causes of obesity PowerPoint slide. Candidate photos were shown on the bottom of each slide. The right image represents a control PowerPoint slide on sleep and memory.

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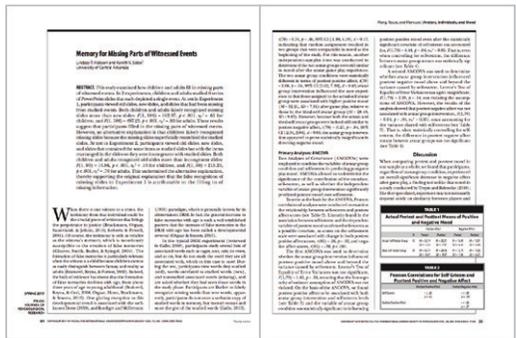
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