Do Antifat Attitudes Predict Antifat Behaviors?

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Objective: The aim of this study was to investigate discrimination against obese job candidates, and to examine whether widely used measures of implicit and explicit antifat attitudes are related to or predict antifat discrimination.
Methods and Procedures: One hundred university students made job candidate suitability ratings of resumes submitted for a bogus managerial position. Photos attached to each resume portrayed the job candidate as either obese or normal weight, by using pre- and postprocedure photos of individuals who had undergone bariatric surgery. To assess discrimination, job candidates' ratings were compared between obese and normal-weight targets. Implicit and explicit antifat attitudes were also assessed.
Results: Participants rated obese job candidates as having less leadership potential, as less likely to succeed, and as less likely to be employed than normal-weight candidates. Obese candidates were also given a lower starting salary and ranked as less qualified overall than candidates portrayed as normal weight. Neither implicit nor explicit antifat attitude measures were significantly related to antifat discrimination.
Discussion: This study found strong evidence of employment-related discrimination against obese individuals. Commonly used measures of antifat attitudes do not appear to be adequate predictors of antifat discrimination. Improved questionnaire measures may be needed to better predict actual prejudiced behavior.

A burgeoning literature consistently shows that explicit and implicit antifat attitudes are rife (1,2), and pervade numerous core life settings including employment (3), health care (4,5), and education (6,7). Furthermore, bias against overweight and obese people has been shown to be increasing, with evidence that children are more biased now than in the past (8).

Although research on self reported antifat attitudes, beliefs, and biases is growing in both volume and sophistication, there is relatively little work on antifat discrimination. Discrimination is defined as the unfair treatment of a person based on underlying negative attitudes or biases. Research on antifat discrimination is important as discrimination is the posited behavioral outcome of the antifat attitudes. Self-reported experiences of weight-based discrimination are common and associated with problems such as depression, psychiatric symptoms, low self-esteem, and poor body image (5).

Although there have been a limited number of studies on the occurrence of antifat discrimination across various life domains (1), most of the work has been in employment settings (3). Experimental research on employment discrimination has typically involved presenting participants with resumes of job candidates on which researchers manipulate the candidate's weight by providing written, verbal, or pictorial (photograph or video footage) representations that clearly identify whether the candidate is overweight/obese or not. This research shows that overweight/obese people are less likely to be employed (9), are assigned less desirable tasks (10), and receive lower salaries (11) than normal-weight job candidates and colleagues.

Antifat attitudes are most commonly assessed using questionnaire methods. These questionnaires may present respondents with figures they are to rate or evaluate, or with statements with which respondents indicate their level of agreement. Such measures may be referred to as explicit assessments of attitudes, as participants need to be consciously aware of their attitudes in order to report them, and it is possible for respondents to guess these measures' purpose. Therefore, although these measures can yield rich information on multiple stereotypes and attitudes, their scores may be confounded with the desire to appear unprejudiced.

Implicit measures, such as the implicit attitudes test (12), attempt to overcome this issue. These measures are designed to access associations in memory, such as "fat" with "bad" or "thin" with "good." Participants do not need to endorse or articulate prejudiced views in order to reveal biases on these measures. They also are designed to conceal the purpose of the questionnaire from participants, or if participants do guess the purpose, it is difficult to manipulate results on these tests.

The third type of measure is the assessment of actual antifat discrimination. Self-reported experiences of weight-based

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discrimination are common among obese individuals and associated with problems such as depression, psychiatric symptoms, low self-esteem, and poor body image (5). Discrimination can be examined experimentally by assessing participants' reactions to obese vs. nonobese target individuals in recreated or imagined real-world settings. Participants, typically, are not aware of the purpose of such measures and do not need to verbally endorse any prejudiced views. Therefore, such research yields the best available analogue data for actual discrimination. Although relatively little work has used measures of antifat discrimination, such research is important as discrimination is the posited behavioral outcome of the antifat attitudes.

Despite the wide use of antifat attitude measures to infer a general antipathy toward overweight and obese people, we are aware of only one study that has directly tested whether explicit and/or implicit antifat attitude measures predict antifat discrimination (13). Bessenoff and Sherman (13) found only a small relationship ($r = 0.19$) between an implicit antifat measure (a lexical decision task) and a measure of subtle discrimination (seating distance from a hypothetical obese person). However, they found no relationship between Crandall's (14) explicit antifat attitudes measure and seating distance. These results in isolation provide little support for the predictive validity of currently available antifat attitude measures.

It could be argued, however, that seating distance from a hypothetical obese person is too subtle a measure of discrimination, particularly when trying to establish a relationship with explicit antifat measures, and may not in itself be a satisfactory measure of real-world discrimination in general. On the other hand, in laboratory settings it is difficult to obtain a clear measure of discrimination alongside prejudice measures without making this goal obvious to the participant. Social norms for behavior typically inhibit participants from displaying prejudice, let alone discrimination, when they know they are being observed. Additionally, the lexical decision task used by Bessenoff and Sherman (13) is methodologically distinct from the Implicit Association Test (IAT; 12), more commonly used in weight bias research (7,15). Therefore, there is a clear need for research that examines the relationship between antifat attitude measures and antifat discrimination.

Furthermore, the need to establish a meaningful link between attitude measures and behavior is not restricted to weight bias research. There is currently a vigorous debate in psychology over the continued use of what are termed "arbitrary metrics" (16), measures that have not been shown to represent meaningful behaviors or constructs in the environment. The solution is research that establishes a clear link between psychological measures and meaningful real-world events (17).

Clearly, if we wish to continue to make inferences of antifat discrimination based on measures of antifat attitudes, then research needs to be conducted to establish the relationship between the two. This study used a novel research methodology to explore the relationship between common implicit and explicit antifat attitude measures and antifat discrimination in a job selection task.

METHODS AND PROCEDURES

Participants

One hundred and four students from the University of Otago (82 females and 22 males) with a mean age of 20.35 (±5.04 years) took part in the study as part of a course requirement. Mean BMI (kg/m^2; 23.0 ± 4.0) was calculated from self-reported heights and weights. Of the total participants 83 were European, 11 were Asian, and the remaining 10 were Maori or Pacific Islander.

Materials

Along with an introductory PowerPoint presentation, the study used three separate sets of questionnaire booklets. The first questionnaire booklet collected demographic information (i.e., age, gender, ethnicity, weight, and height) and had 45 distracter questions designed to boost the belief in the bogus cover story for the study (*Cognitive Styles in Personnel Selection*). The majority of the distracter questions came from the rational-experiential inventory (18) which assesses whether people perceive themselves to be intuitive-experiential or analytical-rational thinkers. Additional distracter items were randomly selected from authoritarian, socially desirable responding, and self-esteem scales.

Candidate resume and personnel selection booklet. A second questionnaire package contained six two-page booklets. Each booklet contained a job candidate resume (first page) and personnel suitability rating scale (second page). The bogus resumes were constructed so as to be equivalent in terms of job candidate age, gender and ethnicity (all were white females), degree qualifications, work history (career experience and area of expertise), and self described personal qualities. Each of the resumes was formatted differently, with different font and/or typesetting. For added authenticity, the bogus names and contact details of the job candidates were crossed out with a black marker pen to make it appear we were protecting the anonymity of the job candidate. After experimenter agreement was reached on the content of the resumes, we pretested the resumes for equivalence by asking 18 people (nonparticipants in the study) to individually rate each resume on the basis of qualifications, experience, and candidate self-identified personal and professional qualities using a 7-point Likert scale. We then pooled scores for each resume and conducted a simple ANOVA across all resumes. No significant differences were found between resume ratings ($P > 0.05$).

Candidate resume photos. Each of the resumes had a $4 \times 4\,cm^2$ passport-style photograph of a bogus job candidate (shown from the midsection up) attached to the top right-hand corner of the page. To control for facial appearance, before (presurgery) and after (postsurgery) photos of bariatric surgery patients were used (We initially sought photos of obese and nonobese females that might be matched in terms of attractiveness, dress standard, age, and ethnicity. However, because obesity is seen as unattractive by society in general, our initial attempts to find average weight target photos of matching attractiveness (ratings) to obese target photos was problematic. Similarly, attempts

at computer morphing techniques to create average weight figures from obese target photos and vice versa, to control for basic facial appearance, appeared fake and indeed morphed. This problem has been noted elsewhere (19), and we thought it a potential confound worth avoiding here. Hence the use of pre–post bariatric surgery targets.). This allowed us to create two corresponding versions of each resume: one containing a picture of a target in their presurgery "obese" state, and another containing the same target's postsurgery "normal-weight" photo. Thus, we could compare candidate job suitability ratings for the same target, but at different weight states (obese vs. normal weight), and in doing so overcome difficulties in matching different targets. From 132 sets of female before and after bariatric surgery photos found on the internet, we selected 30 sets that were of similar age, race (European), clothing style, and BMI. From these 30 sets, we removed those that differed greatly between pre-/postsurgery pairs in hair or clothing styles. Targets were selected who had not had dramatic transformations in facial appearance or attractiveness from pre- to postsurgery. Six sets of pre- and postsurgery target photos (12 different photos) were finally selected and rated (by 18 people) for equivalence in clothing, facial expression, body size, age, and attractiveness. No differences were found between ratings of the six targets pre- or postsurgery photos. The maximum time elapsed between the pre- and postsurgery photos was 24 months. Targets' BMI's, as reported on their internet sites, ranged from 37.8 to 41.1 presurgery and 22.4 to 24.4 postsurgery. Age of the targets presurgery ranged from 29 to 32 years. All photo targets were contacted and gave permission for their photographs to be used in this study.

Two final complementary sets of six resumes were constructed. The two sets of resumes were identical with the exception of the target photos placed on them. On two of the resumes in each set, we placed a presurgery (obese) target's photo. Photos of these same targets postsurgery (at normal weight) were placed in the other set of resumes. The remaining two resumes in each set of six had 2 normal-weight postsurgery targets. Thus, in each of the final sets of resumes there were two obese target photos and four normal-weight postsurgery target photos, all depicting different individuals. Assignment of photographs to resumes was counterbalanced.

Discrimination measures. The second page of the candidate resume and personnel selection booklet contained five questions with Likert scales (candidate suitability ratings) designed to assess antifat discriminatory behavior. The first question asked participants to rank the job candidates in order from 1 to 6 (1 = best, 6 = worst). The remaining four questions asked the participant's to rate the job candidate on their leadership potential ("Is this someone people in the company will follow? Rate what you think their leadership potential is from 1 to 6, 1 = low leadership potential, 6 = high leadership potential"); predicted success ("What do you predict the long-term career success of this candidate will be, 1 = very unsuccessful, 6 = very successful"); likely to select ("Although you would not make the final decision in a personnel selection, how likely would you be to select this candidate for this position, 1 = very unlikely, 6 = very likely"); and salary recommendation in New Zealand dollars ("What would you recommend as a starting salary offer for this candidate if they were to be employed; 1 = $70,000, 2 = $75,000, 3 = $80,000, 4 = $85,000, 5 = $90,000, 6 = $95,000"). Participants were given 2 min to scan all six resumes, and 2 min to complete the five suitability ratings for the six candidates.

Explicit antifat measures. Booklet three contained the explicit and implicit measures of antifat attitudes. Crandall's 13-item antifat attitudes questionnaire was used to assess explicit antifat attitudes (13). This measure is comprised of three subscales, Dislike, Fear of Fat, and Willpower. The Dislike subscale assesses an individual's antipathy toward fat people (e.g., "I don't like fat people much"). The Willpower subscale assesses the belief that being overweight is a matter of personal control or lack thereof (e.g., "Fat people tend to be fat pretty much through their own fault"). Items were scored on a 10-point Likert scale (0 = very strongly disagree, 9 = very strongly agree). The Fear of Fat scale was not relevant to the current study and not used. In the present sample, Cronbach's α's for the Dislike and Willpower subscales were 0.84 and 0.83, respectively.

Implicit antifat measures. The IAT measures the time it takes respondents to correctly categorize positive or negative attributes when paired with a specific category or target (fat vs. thin targets). Studies examining intergroup prejudice and bias typically find that participants respond more quickly when positive attributes (e.g., good and excellent) are paired with in-group identifiers (e.g., us or we) and when negative attributes (e.g., bad or terrible) are associated with out-group identifiers (e.g., they or them). Conversely, reaction times are slower when negative attributes (e.g., bad or nasty) are paired with in-group identifiers and when positive attributes are paired with out-group identifiers. Thus, responses are faster when they are congruent and slower when incongruent with associations held in memory. The antifat IAT uses "fat people" and "thin people" as target categories that are then paired with attribute categories of interest (15). The two attribute categories of interest within this study were chosen to specifically assess the attitudes toward ("good" vs. "bad") and beliefs about ("motivated" vs. "lazy") fat vs. thin people. To score the IAT, the number of words correctly categorized when positive and negative attributes are paired with fat and thin identifiers, respectively, are subtracted from the number of correct categorization when negative and positive attributes are paired with fat and thin identifiers, respectively. Higher scores on the IAT indicate greater antifat bias.

Procedure

We advertised the study as *Cognitive Styles in Personnel Selection* and told prospective participants that we were examining whether intuitive vs. analytical decision makers are better at making real decisions in a time pressured personnel selection task. Upon arrival participants were seated at individual tables ~2 m apart. The experimenter described the *bogus* nature of the study to participants via a PowerPoint presentation. Within this presentation, the experimenter introduced the typical role of a

human resource personnel selection specialist (job recruiter). Participants were then told that, "We are going to present you with 6 resumes of job applicants which you are going to have to evaluate and make employment recommendations on, according to five personnel selection criteria. These were actual job candidates provided to us by a well known online recruitment company (e.g., monster.com©). And we know which candidate actually got the job."

Following the study introduction, questionnaire booklet one was handed out and completed. Participants where then shown via a PowerPoint presentation the job advertisement (a modified version of a real job advertisement) for which candidates were supposedly applying. The position was for a mid-level managerial position in a large department store chain. After outlining a number of stereotypical qualities required for the managerial role, the job advertisement asked candidates to submit a cover letter outlining why they are suitable for the position, and a one-page resume with academic qualifications, personal qualities, and career experience. Two references from previous employers and a small passport sized photo were also requested by the job advertisement.

After going over the details of the job advertisement, we told participants that we had removed the cover letter and two references from the applications as these were biased sources of information with the candidate and referees tending to overinflate the candidates qualities. We then told participants that in order to simulate the time pressured role of a recruiter, they would only be given 2 min to preview all six resumes, after which they would be given another 2 min in which to evaluate and rate all six job candidates on the five candidate suitability scales. The five rating criteria were explained in detail to participants. During the candidate rating task, participants were alerted to the time in 20-s intervals to ensure they were not spending a disproportionate amount of time evaluating any one candidate. The second questionnaire booklet (resume package) was then handed out. The assignment of resume package to participant was in effect double blind, as packages were premade and sealed in large nondescript brown envelopes, and distributed randomly.

Following completion of the candidate suitability rating task and collection of the resume packages, participants were asked to write down what they thought the study was about. Participants were then given the final questionnaire booklet to complete and were administered the IAT. This study was approved by the University of Otago Ethics Committee.

Statistical analyses

As we were interested in the differences between targets (job candidates) when they were presented as either obese or normal weight, we restricted our analysis to the participant ratings of these targets. Thus, the participants' candidate ratings are of the four targets presented as both obese and normal weight. Based on statistical methods used in previous work (15), individual participant IATs containing >35% errors were excluded from analyses. Similarly, participant IATs with fewer than eight categorized words on a given IAT page were excluded from analyses. There was no difference between resume groups in the number of IATs incorrectly completed with exclusion rates for each similar to previous work (good/bad 4%; motivated/lazy 3%). There was no significant difference between resume groups in overall number of words correctly categorized for the IATs.

To increase reliability of the discrimination measure, we created a summary variable (*total rating score*) comprised of the mean of the four comparable rating scales (i.e., *leadership potential*, *predicted long-term success*, *likely to select*, *salary*; Cronbach's $\alpha = 0.88$). One-way ANOVAs were conducted to assess differences between resume groups on demographics and prejudice measures. Paired samples *t*-tests were used to examine differences in candidate suitability ratings for obese vs. normal targets (mean ± s.d.). Pearson's correlations coefficients were used to examine the relationships between candidate ratings and explicit and implicit antifat measures.

In order to form an overall scale of explicit antifat attitudes and an overall scale of implicit antifat attitudes for use as independent variables in regression analyses (and thus avoid potential colinearity problems), the two explicit subscales of Crandall's measure were combined to create an overall explicit score, and the two implicit subscales of the IAT were combined to create an overall implicit score. These two resulting scales had good internal consistency ($\alpha = 0.86$ and $\alpha = 0.77$, respectively). A factor analysis using promax rotation. yielded two factors corresponding to the two overall measures of explicit and implicit antifat attitudes described above. Multiple linear regression analyses were conducted to examine whether explicit and/or implicit antifat attitudes predicted antifat discrimination.

RESULTS

Preliminary screening found that four participants reported that they thought the study was about "fat people," and these participants' data were not analyzed. The results reported here are from the remaining participants ($n = 100$). There was a relatively similar proportion of males in the two resume groups (18.75% vs. 21.5%). No resume group differences were found for age, BMI, explicit (Dislike $M = 2.72 \pm 1.63$ and Willpower $M = 5.21 \pm 2.01$), or implicit (good/bad $M = 10.81 \pm 5.61$, and Lazy/Motivated $M = 9.18 \pm 5.62$) antifat attitudes. A gender difference was found for explicit antifat attitudes, with males reporting more Dislike of fat people (3.42 ± 1.67) than females (2.53 ± 1.59; $F(1,98) = 5.943$, $P = .017$). No significant differences were found on the participants' job candidate suitability ratings across obese targets or across normal-weight targets. Thus, data were collapsed within target weight categories and differences in mean participant ratings were examined for targets when presented as obese vs. normal weight on each of the five candidate suitability rating criteria.

Significant differences for target weight status (obese vs. normal weight) were found for all candidate suitability rating criteria. Obese targets were rated lower than normal-weight targets across all suitability criteria (**Table 1**). Obese targets received more negative responses on leadership potential,

predicted success, likelihood of being selected, starting salary, overall total rating, and rank order of preference relative to other job candidates.

To examine relationships between antifat attitude measures and the measures of antifat discrimination (candidate suitability ratings) a difference score was created for each of the rating scales (ratings of normal-weight targets minus obese targets) and for the sum of the rating scores. Pearson's correlation coefficients for the attitude and discrimination measures are displayed in **Table 2**. Although there were significant relationships between the explicit and implicit antifat attitude measures, none of the attitudinal measures were significantly related to any of the measures of antifat discrimination.

Additionally, regression models were used to examine whether implicit and explicit measures of attitudes predict discrimination, by entering these scores simultaneously as independent variables to predict each of the six job-related discrimination measures. These analyses failed to reach significance.

Table 1 Mean (±s.d.) participant ratings for normal-weight vs. obese targets on each of the job candidate suitability criteria

Rating criteria	Normal-weight target	Obese target	*t* value (*df* = 97)	*P* value
Leadership potential[a]	4.09 (0.57)	3.72 (0.76)	4.365	0.0005
Predicted success[a]	4.03 (0.61)	3.71 (0.85)	3.441	0.001
Likely to be selected[a]	3.81 (0.57)	3.32 (0.94)	4.518	0.0005
Starting salary[a]	2.76 (0.89)	2.38 (1.01)	3.931	0.001
Total rating[a]	3.67 (0.49)	3.28 (0.75)	4.741	0.0005
Ranking[b]	3.26 (0.57)	4.02 (1.07)	4.896	0.0001

[a]Higher scores denote more positive ratings. [b]A higher score denotes a worse ranking.

Table 2 Pearson's product moment correlations between explicit antifat attitudes, implicit antifat attitudes, and normal vs. obese target difference scores for candidate suitability ratings

Variable	Dislike	Willpower	Good/bad IAT	Motivated/ Lazy IAT
Dislike	—			
Willpower	0.50**	—		
Good/bad IAT	0.22*	0.13	—	
Motivated/lazy IAT	0.29**	0.25*	0.52**	—
Leadership potential	0.13	–0.17	–0.07	0.01
Career success	0.17	–0.11	–0.05	0.04
Likely to select	0.12	–0.05	–0.03	0.13
Salary	0.20	–0.12	–0.04	–0.01
Mean total rating score differences	0.18	–0.13	–0.05	0.05
Overall ranking	–0.09	0.13	0.03	–0.10

*$P < 0.05$, **$P < 0.01$.

DISCUSSION

The aim of this study was to address a gap in the literature by examining the relationship between antifat discrimination and widely used measures of implicit and explicit antifat attitudes, using a novel and uniquely valid manipulation of weight status. Clear antifat discrimination was found across all the measures used in this study. Similar to previous studies on antifat discrimination in employment settings (3,10,11,19), obese job applicants were rated as less qualified and assigned lower salaries. Although there were significant relationships between the implicit and explicit antifat attitude measures, their relationship with the job selection variables only approached significance. None of the regression models for predicting discrimination reached significance. One might argue that discrimination against overweight and obesity is so "ingrained" that even nonprejudiced people display it without awareness or intent (14). Similarly, given the good relationships between the explicit and implicit antifat measures, it is possible that the reduced relationship of these with the job selection task is due to some as yet unidentified moderating variable.

The present results are somewhat consistent with the one previous study that examined the relationship between antifat attitudes and discrimination. Bessenoff and Sherman (13) found no relationship between Crandall's antifat attitude measures and a subtle measure of discrimination (seating distance from a hypothetical overweight person). In the current study, however, Dislike was marginally positively associated with three of the antifat discrimination measures (predicted long-term career success, $P = 0.088$; starting salary, $P = 0.054$; and total rating score, $P = 0.078$). Thus, higher Dislike of fat people tended to be associated with greater discrimination.

Compared to Bessenoff and Sherman (12), a slightly weaker relationship between the implicit antifat attitude measures and job selection variables was observed. However, this may have been due to a slightly lower sensitivity in the antifat attitude measures used here, and the more explicit nature the job selection task. Several differences between Bessenoff and Sherman (12) study and the present one may account for the differing results. First, Bessenoff and Sherman's (12) study only found a relationship with one of the implicit measures taken, and while significant, that relationship was small ($r = 0.19$). Second, the lexical decision task that was used to measure implicit antifat attitudes is methodologically dissimilar to the more commonly used antifat IATs employed here. Additionally, the measure of antifat discrimination used in this study was designed to better replicate the type of discrimination reported in real world settings (3). Finally, to control for general job-rating response patterns, this study provided a comparison target for discrimination (normal-weight vs. obese target) whereas Bessenoff and Sherman's (12) study did not. In real-world settings, such as employment and educational selection committees, comparisons are typically made *between* overweight and nonoverweight people. Indeed, research in employment settings consistently shows that normal-weight people are favored over overweight people in numerous ways (3), suggesting that discrimination takes place on a comparative basis, and thus should be assessed

this way when establishing the predictive qualities of antifat attitude measures.

It is also unlikely that the results are due to a lack of variance in attitude scores. The present mean scores and s.d. were similar to other studies using these measures, if not slightly higher (7,13,15). The relationship for explicit and implicit antifat measures is considerably lower than those reported for other target domains (e.g., Jews vs. Muslims $r \approx 0.55$), but mirror those reported by Nosek (20). In short, the antifat attitudes assessed in the present sample were consistent with other work.

The present results must be viewed with a degree of caution, of course. This study is only the second to examine the relationship between antifat attitudes and antifat discrimination, and more work needs to be conducted using different measures of discrimination before firm conclusions about measures can be established. Similarly, both this study and previous research (13) have used as participants university psychology students, who typically have liberal attitudes, and more diverse and more representative populations need to be assessed. Furthermore, we only used female targets to study discrimination. We chose female targets because research consistently shows that discrimination based on weight occurs most frequently to females. It may be important in the future to examine whether obese male targets would sufferer similarly within the paradigm used here. Any future study might benefit from an even larger sample than used in the present study. While large enough to detect moderate correlations, the present sample size may have been too small to detect smaller correlations (e.g., *r*'s of 0.1–0.2) as those reported in Bessenoff and Sherman's (13) study, though the practical significance of such relationships is questionable.

On the other hand, it may be that new measures of antifat attitudes need to be developed for the field. Indeed, in comparison to other fields in psychology, there is a relative dearth of weight bias measures. However, consistent with calls for research that establishes the "real world" validity of psychological measures (16), new measures should be assessed alongside the behaviors they are purported to represent, and not alongside those that have not yet been shown to predict real-world behavior.

DISCLOSURE
The authors declared no conflict of interest.

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