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ORIGINAL ARTICLE The influence of a defendant's body weight on perceptions of guilt

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OBJECTIVE: To investigate the influence of a defendant's weight on simulated jurors' perceptions of guilt.

DESIGN AND METHODS: Participants were 471 lean and overweight adults (mean body mass index: 25.34 ± 5.91) who read a vignette describing a case of check fraud while viewing one of four images of the alleged defendant (a lean male, a lean female, an obese male or an obese female). Participants rated the defendant's culpability on a 5-point Likert scale and completed measures of anti-fat attitudes.

RESULTS: Male respondents endorsed greater overall weight bias than females (F (1470) = 23.815, P < 0.01, $\eta^2 = 0.048$). A three-way interaction was detected between participant sex, defendant sex and defendant weight on perceptions of guilt such that when the defendant was female, male participants were significantly more likely to find her guilty if she was obese than if she was lean (guilt ratings = 4.05 ± 0.83 ; 3.31 ± 1.03 , respectively; F(1467) = 5.935, P = 0.015, $R^2 = 0.060$). In addition, lean male participants were significantly more likely to believe that the obese female defendant met criteria for check fraud, and indicated greater belief she would be a repeat offender, compared with the lean female defendant (t(90) = 2.081, P = 0.040; t(90) = 2.395, P = 0.019, respectively). There were no differences in perceptions of guilt or responsibility between the obese male and the lean male defendants.

CONCLUSION: The results of this novel study indicate that both weight and gender of a defendant may affect juror perceptions of guilt and responsibility.

International Journal of Obesity advance online publication, 8 January 2013; doi:10.1038/ijo.2012.211

Keywords: weight bias; anti-fat attitudes; courtroom discrimination

INTRODUCTION

The prevalence of weight discrimination has increased by 66% since 1995,¹ and is now on par with rates of racial discrimination.¹ Obese individuals are vulnerable to negative societal attitudes, stigma and prejudice in multiple domains.² A substantial body of literature documents weight bias among healthcare professionals, teachers, potential employers and the romantic partners and family members of overweight individuals.^{2,3} Driving such discrimination and bias are stereotypes that depict overweight individuals as greedy, lazy, unmotivated and lacking in self discipline and will power.⁴

Although weight bias has been documented in myriad contexts,^{2,3} the impact of a defendant's body weight on the judgment of jurors has remained unexplored. Body weight influences judgment in employment, medical and interpersonal settings,^{2,3} hence it is important to investigate whether the body weight of a defendant on trial affects juror assessment of culpability. Although the majority of individuals surveyed in one study believed that only a defendant's character, prior history and details of the trial should influence a juror's assessment of guilt,⁵ there is reason to expect that jurors may be biased by defendant attributes irrelevant to the case, such as attractiveness, race and gender.^{5–10}

Prior research indicates that bias not only exists, but is prevalent in the courtroom. Studies in both simulated and actual courtroom settings have revealed that physically attractive defendants are judged more leniently than less attractive counterparts.^{5,6,11,12} More specifically, attractive defendants are considered more likable and less responsible for the crime; they are less likely to be convicted, and when convicted, are given less severe punishments than less attractive individuals. $^{\rm 5-9,11,12}$

Juror decision-making is also biased on the basis of sex. For instance, male defendants may receive harsher sentences than their female counterparts.⁸ In addition, when the victim of a crime is female, the defendant is more likely to be found guilty and ascribed a more severe punishment than when the victim is male.⁸

Studies have also found that the race and socioeconomic status of the defendant may have roles in juror decisionmaking and sentencing recommendations,^{7,10,13,14} although these relationships are not always clear, often involving interactions between defendant attributes and the type of crime committed.⁸ For comprehensive reviews of the topic, see Mazzella and Feingold⁸ and Sommers and Ellsworth.¹⁵

In-group favoritism, the observed phenomenon that group members tend to favor 'in-group' versus 'out-group' members,¹⁶ is also evident in juror decision making, known as the similarity–leniency relationship.¹⁷ Research indicates that jurors may be less punitive when the defendant is similar to them along a number of different attributes including gender,¹⁸ religion¹⁷ and race.^{8,17,19–21} As is evident from prior studies, bias in the courtroom is

As is evident from prior studies, bias in the courtroom is pervasive. Thus, the objective of the present study is to assess the influence of a simulated defendant's body weight on juror perceptions of guilt. To our knowledge, this is the first study to assess weight stigma in juror decision making. Given the widespread acceptability and prevalence of weight bias,^{1,22} the number of domains in which weight bias has been documented,^{2,3} and the fact that weight status is highly visible, it is reasonable to suspect that jurors may be biased based upon

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Received 2 October 2012; revised 10 November 2012; accepted 25 November 2012

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the body weight of a defendant. As obese females are subjected to greater weight bias than obese males,^{2,23} we hypothesized that the obese female defendant would be judged more harshly than the lean female defendant, but that there would be little difference in the assessment of the obese male defendant compared with the lean male defendant. In addition, as men are more likely to demonstrate weight bias than women,^{24–26} we suspected that bias in the assessment of the obese (versus lean) defendant would be especially pronounced among male participants, but that among the female participants, body weight of the defendant would not impact perceptions of guilt or culpability.

MATERIALS AND METHODS

Participants were 471 men and women. The present study was conducted via an online database hosted by the business school of a university located in the northeastern United States consisting of $\sim 20\,000$ participants. Participants joined the database by registering at the university's eLab website, where they are presented with available surveys and invited to participate at their discretion. The present study was listed as a 'juror simulation study', and all participants were given a 1/15 chance to win a \$20 Amazon gift card as compensation. The study was programmed and hosted though Qualtrics, a research-based web server with secure 128-bit data encryption (Qualtrics; http://www.qualtrics.com/). Data were collected between 8 February 2012 and 11 February 2012, and again between 28 March and 31 March 31 2012. Data were collected from 576 participants, but 105 participants were excluded due to incomplete or duplicate survey responses or failure to recall salient defendant characteristics (for example, sex or body weight). All participants were at least 18 years of age and participation was voluntary.

Procedures

Participants completed all self-report questionnaires online. Participants were required to confirm willingness to participate and to provide informed consent, before accessing the questionnaires. No personal identifying information was collected. This study received approval from the university's institutional review board.

Measures

Participants provided demographic information and completed a battery of self-report measures. The measures were administered in the order presented:

Case vignette. Participants were randomly assigned to view one of four mug shots (lean male defendant, lean female defendant, obese male defendant or obese female defendant). Digital alteration software was used to create obese versions of both the male and female defendants. The images were previously pilot tested to a separate sample of 212 participants to ensure that the defendant profiles were all perceived to be of similar age and ethnicity and that the altered images did not appear to be manipulated. In addition, pilot participants were queried as to the perceived weight status of the defendant. Participants who viewed obese defendants correctly estimated that the image was of an obese individual, and participants in the lean conditions indicated that they believed the individual to be of normal weight.

A case vignette describing an instance of check fraud was presented beneath the mug shot; all participants received the same case vignette and were instructed to read it carefully, as they would be asked follow-up questions. As this is the first study to our knowledge to investigate the impact of defendant weight on simulated jury decision making, a victimless crime was selected. This enabled the researchers to investigate solely attitudes towards the defendant without introducing complications from attributes of the victim. Check fraud was also selected as defendant motives are ambiguous and are subject to juror interpretation. The vignette, modeled after the Judicial Branch's Criminal Jury Instructions 10.2-1, detailed the extent of the crime and informed the simulated jurors of those elements that must be proven beyond a reasonable doubt in order to find the defendant guilty.

Vignette follow-up questions. Participants indicated their perception of the defendant's guilt on a 5-point Likert scale. Although guilt in the courtroom is dichotomous, the present study utilized a Likert scale as it is a more sensitive

measure of impressions of the defendant and is in accordance with prior studies of bias in the courtroom.²⁷ Participants also indicated whether they believed the defendant had prior knowledge of insufficient funds (one of the criteria needed to find an individual guilty of check fraud, a fact that was made known to all participants at the onset of the study), and how likely it was that the defendant would issue another bad check in the future.

Universal measure of Bias- FAT (UMB-FAT).²⁵ This measure is a component of the Universal Measure of Bias that includes 'fat people' as the target group. Participants are asked to indicate how much they agree (on a 7-point Likert scale) with various statements indicative of biased attitudes about overweight individuals (for example, fat people have bad hygiene, fat people are sloppy). Higher scores signify greater bias against overweight individuals. This measure demonstrated good internal consistency in the present sample ($\alpha = 0.889$). The UMB-FAT was included to assess for group differences in anti-fat attitudes.

Causes of obesity. This measure, adapted from a prior study,^{28,29} assesses beliefs about the causes of obesity (COB). Participants are provided with 11 factors (for example, genetic factors, lack of willpower, endocrine disorder) and are asked to assess on a 5-point Likert scale how important they are in causing obesity. The COB scale demonstrated adequate internal consistency in the present sample ($\alpha = 0.760$). This measure was included to assess group differences in beliefs about obesity and to help account for potential differences in participant assessment of defendant guilt.

Personal experiences with teasing and obesity. Participants were queried regarding any friends or family members who are obese. Participants were also asked if they had ever been teased, discriminated against or treated unfairly because of their weight.

Manipulation check. Participants were asked questions related to the case vignette to verify that they had attended to the primary content (for example, was the defendant male or female, how many fraudulent checks did the defendant reportedly issue). Participants were also asked to indicate the perceived weight status of the defendant they had viewed.

Demographic and weight information. Participants were asked questions regarding their age, gender, ethnicity, height and weight, and prior experience as a juror. Self-reported height and weight were used to determine body mass index of participants.

Statistical analysis

All analyses were conducted using SPSS for Windows version 19 (SPSS, Inc., Chicago, IL, USA). *P*-values were considered significant if they were <0.05 and all tests were two tailed.

To ensure the success of randomization, a one-way analysis of variance was used to compare the four conditions (lean male defendant, lean female defendant, obese male defendant, obese female defendant) along relevant baseline variables. Bivariate correlations were conducted on weight-related variables, including COB subscales and history of weight-related teasing. A multivariate analysis of variance was performed to detect interactions between participant sex and weight and defendant sex and weight on perceptions of guilt. Although a relationship of interest in the present study was a four-way interaction (participant sex, participant weight, defendant sex, defendant weight), because of the statistical limitations of conducting a fourway interaction,^{30–32} we split the sample into four subgroups: lean male participants, overweight male participants, lean female participants and overweight female participants to assess the impact of both participant sex and weight on perceptions of defendant guilt.

Orthogonal planned contrasts were conducted to test *a priori* hypotheses; more specifically, contrasts were used to compare perceptions of the obese male to the lean male defendant and the obese female to the lean female defendant among the four subgroups of participants.

RESULTS

Participant characteristics

The final sample consisted of 471 adults. The mean age of the present sample was 34.85 ± 13.82 years and the mean body mass index was 25.34 ± 5.91 kg/m² (range: 14.31–54.93). The sample was predominantly female (64.8%) and the racial/ethnic distribution was: 74.5% Caucasian, 15.3% Asian, 4.9% Hispanic, 3.6% Black



and 1.7% 'other' (see Table 1a for descriptive information and Table 2 for the bivariate correlation matrix).

To assess the underlying constructs of the 11-item COB Questionnaire, an exploratory factor analysis was performed using oblique rotation on the full scale. Factor loadings for each item, eigenvalues and visual analysis of the scree plot were used to determine the final factor structure, consisting of three underlying components that collectively accounted for 60% of the variance. Using terminology developed from a prior study, these three constructs accounted for: Medical Causation (for example, genetic factors, metabolic defect; $\alpha = 0.820$), motivational causation (for example, overeating, lack of willpower; $\alpha = 0.693$), and psychobehavioral causation (for example, poor nutritional knowledge, repeated dieting; $\alpha = 0.698$).³³ Female respondents were significantly more likely to attribute obesity to medical and psychobehavioral causes than male respondents (F(1, 468) = 6.620, P = 0.010, $\eta^2 = 0.014$; F(1, 468) = 23.507, P < 0.01, $\eta^2 = 0.048$, respectively). Total scores on the Universal Measure of Bias- Fat Scale²⁵ indicated that men endorsed significantly greater anti-fat attitudes than women (F(1470) = 23.815, $P < 0.01, \eta^2 = 0.048$).

To ensure the success of randomization and to detect any differences between the four conditions, a one-way analysis of variance was conducted on relevant variables. No group differences were found among the four conditions (lean male defendant (n = 116), lean female defendant (n = 124), obese male defendant (n = 112), obese female defendant (n = 119)) for age, body mass index, sex, race, anti-fat attitudes or prior experience as a juror.

Participants were also divided into four subgroups (lean male participants (n = 94), overweight male participants (n = 72), lean female participants (n = 182), overweight female participants (n = 123)) and a one-way analysis of variance was again conducted to assess group differences. The overweight males and overweight females had equivalent body mass indices, as did the lean male and lean female participants. Bonferroni Hochberg *post-hoc* tests revealed that the overweight female participants were significantly older than the other participant groups (P < 0.01). Overweight female participants had significantly lower scores on the UMB-Fat as compared with the three other participant groups (P < 0.01), whereas lean male participants had significantly higher UMB-Fat scores as compared with both lean

Table 1a. Baseline descriptive statistics by particular	articipant sex							
Measure	Female participants			Male participants			F	η^2
	М	s.d.	Ν	М	s.d.	Ν		
BMI	25.14	5.98	305	25.69	5.76	166	0.944	0.002
Age	36.34	14.17	305	32.09	12.75	165	10.31**	0.022
Universal measure of bias- FAT	3.15	0.93	305	3.59	0.92	166	23.82**	0.048
Causes of obesity questionnaire								
Medical causation	3.42	0.86	303	3.21	0.84	166	6.62*	0.014
Motivational causation	3.92	0.75	305	3.97	0.68	163	0.321	0.006
Psychobehavioral causation	3.27	0.77	303	2.92	0.74	166	23.51**	0.048
	% yes		Ν	% yes		Ν		
Obese family member or friend	78.7		305	74.7		166	0.972	0.002
Teased or treated unfairly due to weight	42.1		302	40.6		165	0.092	0.001
Served as Juror previously	16.1		305	18.1		166	0.309	0.006
Abbreviation: BMI, body mass index. *P<0.05 **	<i>P</i> <0.01.							

Table 1b. Baseline descriptive statistics by participant subgroup														
	Lean male		Overweight male		Lean female		Overweight female		nale	F	η^2			
	м	s.d.	Ν	м	s.d.	Ν	М	s.d.	Ν	М	s.d.	Ν		
BMI	21.92	1.96	94	30.61	5.37	72	21.42	2.13	182	30.64	5.61	123	205.99**	0.57
Age	30.05	12.08	93	34.72	13.17	72	33.17	13.15	182	41.02	14.36	123	13.87**	0.08
Universal measure of bias- fat	3.74	0.90	94	3.38	0.92	72	3.31	0.93	182	2.91	0.89	123	15.06**	0.09
Causes of obesity questionnal	ire													
Medical causation	3.19	0.93	94	3.22	0.72	72	3.39	0.87	181	3.47	0.86	122	2.39	0.02
Motivational causation	3.91	0.71	93	4.04	0.62	70	3.93	0.77	182	3.93	0.73	123	0.56	0.00
Psychobehavioral causation	2.90	0.75	94	2.93	0.73	72	3.18	0.75	181	3.39	0.78	122	9.88**	0.06
	% yes		Ν	% yes		Ν	% yes		Ν	% yes		Ν		
Obese family member or friend	69.1		94	81.9		72	73.6		182	86.2		123	3.85**	0.02
Teased or treated unfairly due to weight	28.7		94	56.3		71	33.7		181	54.5		121	9.01**	0.06
Served as juror	19.1		94	16.7		72	13.7		182	19.5		123	0.745	0.00
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Abbreviation: BMI, body mass index. *P-value <0.05, **P-value <0.01.

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	Age	BMI	Teasing	Obese family or friend	UMB-Fat	Medical	Motivation	Psychobehavior
Age	1							
\tilde{BMI} (kg m ⁻²)	0.177 ^a	1						
History of teasing due to weight	- 0.084	0.314 ^a	1					
Obese family or friends	0.095 ^b	0.204 ^a	0.156 ^a	1				
Total UMB-fat	- 0.227 ^a	-0.234^{a}	- 0.020	-0.263^{a}	1			
Causes of obesity questionnaire	2							
Medical	0.057	0.015	0.020	0.063	-0.247^{a}	1		
Motivational	0.085	0.032	- 0.061	0.034	0.122 ^a	0.040	1	
Psychobehavioral	0.138 ^a	0.051	0.036	0.132 ^a	- 0.169 ^a	0.431 ^a	0.313 ^a	1

Abbreviation: BMI, body mass index. ^aCorrelation is significant at the 0.001 level (two-tailed). ^bCorrelation is significant at the 0.05 level (two-tailed).

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Table 3a. Between-subjects factors in three-way interaction ofparticipant sex \times defendant sex \times defendant weight on guilt							
	Number of cases (n)						
Participant sex							
Female	303						
Male	164						
Defendant sex							
Female	241						
Male	226						
Defendant weight							
Lean	238						
Overweight	229						

Table 3b. guilt	Number	of cases	per	condition in	three-w	ay inte	raction	on
			Fé	emale narticir	ants	Male n	articina	nts

	(n)	(n)
Lean female defendant	80	44
Lean male defendant	74	40
Overweight female defendant	78	39
Overweight male defendant	71	41

and overweight female respondents (P's < 0.01) (see Table 1b for descriptive information).

Perceptions of defendant

A multivariate analysis of variance was used to determine the effects of participant sex and defendant body weight (collapsed across sex) on perceptions of guilt. There was a significant main effect of participant sex (F(1, 467) = 9.009, P = 0.003, $\eta^2 = 0.019$), but not of defendant body weight on ratings of guilt (P > 0.05). Importantly, however, an interaction between participant sex and defendant body weight was detected such that when male, a participant was significantly more likely to find the defendant guilty if he or she was overweight than if he or she was lean (F(1467) = 4.193, P = 0.041, $\eta^2 = 0.009$, $R^2 = 0.028$).

To further tease apart the relationships between participant and defendant attributes on perceptions of guilt, a multivariate



p < 0.05

Figure 1. Perceptions of guilt among male participants.

analysis of variance was performed to detect an interaction between participant sex, defendant sex and defendant body weight (see Table 3). Results indicated a main effect of participant sex on perceptions of guilt (F(1, 467) = 8.419, P = 0.004, $\eta^2 = 0.017$), but no main effects of defendant sex or weight (P's > 0.05) on assessment of guilt. A three-way interaction was, however, detected between participant sex, defendant sex and defendant weight on perceptions of guilt such that when the defendant was female, male participants were significantly more likely to find her guilty if she was obese than if she was lean (F(1467) = 5.935, P = 0.015, $\eta^2 = 0.039$, $R^2 = 0.060$) (see Figure 1).

As four-way interactions are difficult to interpret and may lack statistical utility,^{30–32} we opted not to conduct the relevant interaction between juror sex, juror weight, defendant sex and defendant weight; instead, the four subgroups of participants were analyzed separately for additional variables of interest. Orthogonal planned contrasts were used to compare perceptions of the obese male to the lean male defendant and the obese female with the lean female defendant among the four subgroups of participants. Although we ran multiple models, we did not conduct *post hoc* adjustments, and instead, opted for the standard *P*<0.05 convention. Statisticians have argued that adjustments do not, in fact, correctly identify the findings that do and do not occur by chance.³⁴ Furthermore, these adjustments can yield inconsistent conclusions from results of different studies detecting the same effect size.³⁵





Perceptions of female defendants

Guilt. Planned contrasts assessing differences in perceptions of guilt revealed that among both overweight and lean male respondents, the obese female defendant was rated as significantly more guilty as compared with the lean female defendant (t(88) = 2.170, P = 0.033; t(68) = 2.885, P = 0.005, respectively. See Figure 2). Among female respondents (both lean and overweight), there was no relationship between the female defendant's body weight and perception of guilt.

Prior knowledge of insufficient funds. When queried as to whether they believed the defendant had prior knowledge of lack of sufficient funds (a criterion needed to find an individual guilty of check fraud), lean male jurors were significantly more likely to believe that the obese female defendant had prior knowledge of insufficient funds compared with the lean female defendant (t(90) = 2.081, P = 0.040). In other words, among lean male jurors, the obese female defendant was significantly more likely to meet the criterion needed to ascribe guilt than the lean female defendant. No differences between the obese female defendant and lean female defendant were found for any of the other three subgroups of participants (overweight male, lean female or overweight female respondents).

Likelihood of issuing another bad check. Similarly, among the lean male participants, the obese female defendant was judged to be significantly more likely to issue another bad check in the future when compared with the lean female defendant (t(90) = 2.395 P = 0.019). There were no differences in ratings of the obese female defendant compared with the lean female defendant among the other three subgroups (overweight male, lean female, or overweight female respondents).

Perceptions of male defendants

Guilt. Planned contrasts among all subgroups of participants revealed no differences in assessment of guilt between the obese male defendant and the lean male defendant (P's > 0.05). Thus,



when the defendant was male, there was no impact of weight status on perception of guilt.

Prior knowledge of insufficient funds. Similarly, the planned contrasts testing whether participants believed the male defendant had prior knowledge of lack of sufficient funds revealed that there was no difference in assessment of the obese male defendant as compared with the lean male defendant among any of the four subgroups of participants (P's > 0.05).

Likelihood of issuing another bad check. The planned contrast assessing whether participants believed the male defendant would be a repeat offender revealed that there was no difference in assessment of the obese male defendant as compared with the lean male defendant among any of the four subgroups of participants (P's > 0.05). In other words, the obese male and lean male defendants were judged equivalently by all participant subgroups.

DISCUSSION

The present study is the first, to our knowledge, to examine the impact of a defendant's body weight on perceptions of guilt and culpability among simulated jurors. Male participants judged the obese female defendant as significantly guiltier than the lean female defendant. Additionally, the lean male participants believed the obese female defendant was more aware of insufficient funds (a criterion needed to find a defendant guilty of check fraud) as compared with the lean female defendant. They also viewed her as more likely to issue another fraudulent check in the future as compared with the lean female defendant. Differences between ratings of the obese female defendant and the lean female defendant were only observed among male participants; female respondents judged the two female defendants equally regardless of body weight. Thus, among female participants, the body weight of the female defendant did not bias perceptions of guilt or responsibility. There were no differences in assessment of guilt or culpability between the obese male and the lean male defendant among any of the participants. Thus, when the defendant was male, there was no impact of his weight status on perceptions of guilt or responsibility.

In corroboration with previous research,^{24–26} male respondents endorsed greater anti-fat bias than female respondents. In addition, female participants were more likely than male participants to attribute obesity to biological and environmental causes as opposed to personal shortcomings or deficits. Research indicates that external or environmental attributions for obesity may attenuate anti-fat bias,²⁴ thus this may be a mechanism accounting for the sex differences in weight bias observed in the present study.

The results of the present study indicate that body weight and sex of a defendant have an interactive effect on juror perceptions of guilt and responsibility. Importantly, obese female defendants were judged significantly more harshly than lean female defendants among the male participants, whereas weight incurred no penalty for the male defendants. This finding is consistent with previous research, indicating that obese females suffer more weight-related stigmatization than obese males.² The finding that weight bias may extend to the courtroom is concerning and signals the need for greater awareness and prevention of weight-based discrimination in legal settings. Although participants were not gueried regarding the reason for their ratings of guilt, it is notable that only female defendants were penalized for excess body weight. If in fact obese individuals are subject to discrimination while on trial, actions are needed to educate jurors about this form of bias and potentially eliminate biased jurors when the defendant is visibly obese.

This study is limited by its reliance on online questionnaire assessments, which may not reflect actual behavior in a courtroom setting. In addition, the present study relied upon self-reported height and weight, which may be unreliable or biased, although research has shown that self-reported BMI is an adequate proxy for measured BMI, even among overweight and obese groups.^{36–38} All mug shots depicted a Caucasian defendant, thereby limiting the generalizability off the current study. It will be critical to investigate whether the present findings are replicated for defendants of racial and ethnic minority status. The inclusion of only one type of crime (check fraud) is an additional limitation of the study.

Another limitation of the present study is the absence of data assessing juror perception of the defendant's socioeconomic status (SES). As the negative SES gradient in body mass index is particularly pronounced among women, irrespective of race and ethnicity,³⁹ it is plausible that the overweight female defendant was perceived by jurors as less financially solvent than the overweight male defendant. Therefore, it is conceivable that if the overweight female defendant was perceived as belonging to a lower SES than the overweight male defendant, that jurors may have believed her to be more likely to pass fraudulent checks, a crime associated with financial instability. More research exploring perceived SES as a potential mediator in the relationship between BMI and the judgment of culpability is warranted.

Strengths of the present study include the use of a large, relatively diverse sample of adults, and its novelty in assessing weight bias in the courtroom, a currently unexplored area of research. As this is the first study to assess weight bias among simulated jurors, there is more research to be done. Given the rampant stereotypes of obese individuals as greedy, lazy and lacking self control,⁴ further investigation of whether jurors are more likely to ascribe guilt to an obese defendant versus a lean defendant is warranted, especially for those crimes that may be perceived as in accordance with existing stereotypes. It will also be useful to ascertain how different types of crime influence assessment of an obese defendant. Similarly, as check fraud is a victimless crime, the impact of the body weight of a victim will be another area of research to explore. Weight bias in jury selection will also be an important area to examine. Finally, archival studies will be informative to assess both the frequency of obese individuals found guilty of various crimes and subsequent sentencing decisions.

Results of the present study indicate that weight bias may be salient in the legal setting, especially among obese female defendants; hence methods to reduce weight bias in the courtroom merit further investigation. For instance, it will be important to assess weight stigma during voir dire, and in the case of an obese defendant, it may be critical to remove a biased juror in either a strike for cause or peremptory challenge. It may also be beneficial to include assessments of anti-fat attitudes in juror screening questionnaires and in judicial training. Methods that have proven successful in reducing racial bias in the courtroom, for instance, judicial instruction,⁴⁰ may be adapted to combat the effects of weight bias.

With considerable evidence documenting weight stigmatization toward obese individuals in many domains of living,² the present study identifies yet another setting in which obese persons are vulnerable to bias and discrimination. As a result, it will be crucial to raise awareness that the body weight of a defendant may critically impact perceptions of guilt and responsibility among members of the jury. These findings highlight the importance of extending weight bias reduction efforts to the legal setting.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGEMENTS

Research and project support were provided by the Rudd Center for Food Policy & Obesity.

REFERENCES

- Andreyeva T, Puhl R, Brownell K. Changes in perceived weight discrimination among Americans: 1995-1996 through 2004–2006. *Obesity* 2008; 16: 1129–1134.
- 2 Puhl R, Heuer C. The stigma of obesity: a review and update. *Obesity* 2009; 17: 941–964.
- 3 Puhl R, Bias BrownellK. Discrimination, and Obesity. Obesity 2001; 9: 788-805.
- 4 Brownell K, Puhl R, Schwartz M, Rudd L. Weight Bias: Nature, Consequences, and Remedies. The Guilford Press: New York, 2005.
- 5 Efran MG. The effect of physical appearance on the judgment of guilt, interpersonal attraction, and severity of recommended punishment in a simulated jury task. *J Res Pers* 1974; **8**: 45–54.
- 6 Darby BW, Jeffers D. The effects of defendant and juror attractiveness on simulated courtroom trial decisions. *Soc Behav Pers: Int J* 1988; **16**: 39–50.
- 7 Sommers SR, Ellsworth PC. Race in the courtroom: perceptions of guilt and dispositional attributions. *Pers Soc Psychol Bull* 2000; **26**: 1367–1379.
- 8 Mazzella R, Feingold A. The effects of physical attractiveness, race, socioeconomic status, and gender of defendants and victims on judgments of mock jury: a metaanalysis1. J Appl Soc Psychol 1994; 24: 1315–1338.
- 9 Sigall H, Ostrove N. Beautiful but dangerous: Effects of offender attractiveness and nature of the crime on juridic judgment. [Article] J Pers Soc Psychol 1975; 31: 410–414.
- 10 Eberhardt JL, Davies PG, Purdie-Vaughns VJ, Johnson SL. Looking deathworthy. Psychol Sci 2006; 17: 383–386.
- 11 Hoffman E. Social class correlates of perceived offender typicality. *Psychol Rep* 1981; **49**: 347–350.
- 12 Landy D, Aronson E. The influence of the character of the criminal and his victim on the decisions of simulated jurors. J Exp Soc Psychol 1969; 5: 141–152.
- 13 Sweeney LT, Haney C. The influence of race on sentencing: a meta-analytic review of experimental studies. *Behav Sci Law* 1992; **10**: 179–195.
- 14 Gordon RA, Bindrim TA, McNicholas ML, Walden TL. Perceptions of blue-collar and white-collar crime: the effect of defendant race on simulated juror decisions. J Soc Psychol 1988; 128: 191–197.
- 15 Sommers SR, Ellsworth PC. How much do we really know about race and juries a review of social science theory and research. *Chi-Kent L Rev* 2003; **78**: 997–1031.
- 16 Brewer MB. In-group bias in the minimal intergroup situation: A cognitivemotivational analysis. *Psychol Bull* 1979; 86: 307–324.
- 17 Kerr NL, Hymes RW, Anderson AB, Weathers JE. Defendant-juror similarity and mock juror judgments. *Law Hum Behav* 1995; 19: 545–567.
- 18 Stephan CW. Sex prejudice in jury simulation. J Psychol 1974; 88: 305-312.
- 19 Burke DM, Ames MA, Etherington R, Pietsch J. Effects of victim's and defendant's physical attractiveness on the perception of responsibility in an ambiguous domestic violence case. *J Fam Violence* 1990; **5**: 199–207.
- 20 Bernard JL. Interaction between the race of the defendant and that of the jurors in determining verdicts. *Law Psychol Rev* 1979; **5**: 103–111.
- 21 Feild H. Rape trials and jurors' decisions. Law Hum Behav 1979; 3: 261-284.
- 22 Puhl R, Andreyeva T, Brownell K. Perceptions of weight discrimination: prevalence and comparison to race and gender discrimination in America. *Int J Obes* 2008; 32: 992–1000.
- 23 Pingitore R, Dugoni BL, Tindale RS, Spring B. Bias against overweight job applicants in a simulated employment interview. J Appl Psychol 1994; 79: 909–917.
- 24 Crandall CS. Prejudice against fat people: ideology and self-interest. J Pers Soc Psychol 1994; 66: 882-894.
- 25 Latner JD, O'Brien KS, Durso LE, Brinkman LA, MacDonald T. Weighing obesity stigma: the relative strength of different forms of bias. *Int J Obes* 2008; **32**: 1145–1152.
- 26 Latner JD, Stunkard AJ, Wilson GT. Stigmatized students: age, sex, and ethnicity effects in the stigmatization of obesity. *Obesity* 2005; 13: 1226–1231.
- 27 Abwender DA, Hough K. Interactive effects of characteristics of defendant and mock juror on US participants' judgment and sentencing recommendations. J Soc Psychol 2001; 141: 603–615.
- 28 Foster GD, Wadden TA, Makris AP, Davidson D, Sanderson RS, Allison DB et al. Primary Care physicians' attitudes about obesity and its treatment. Obesity 2003; 11: 1168–1177.
- 29 Bray GA, York B, DeLany GA. Survey of the opinions of obesity experts on the causes and treatment of obesity. *Am J Clin Nutr* 1992; **55**: 151–154.
- 30 Keppel G. Design and Analysis: A Researcher's Handbook. 3rd edn.xiii. Prentice-Hall, Inc: Englewood Cliffs, NJ, US, 1991, pp 594.
- 31 Aiken L, West S. Multiple Regression: Testing and Interpreting Interactions. SAGE Publications, Inc: Thousand Oaks, 1991.



- 32 Halford GS, Baker R, McCredden JE, Bain JD. How Many Variables Can Humans Process? *Psychological Science (Wiley-Blackwell)* 2005; **16**: 70–76.
- 33 Epling JW, Morley CP, Ploutz-Snyder R. Family physician attitudes in managing obesity: a cross-sectional survey study. BMC Res Notes 2011; 4: 473.
- 34 Cohen J. Things I have learned (so far). Am Psychol 1990; 45: 1304–1312.
- 35 Saville DJ. Multiple comparison procedures: the practical solution. *Am Stat* 1990; **44**: 174–180.
- 36 White MA, Masheb RM, Grilo CM. Accuracy of self-reported weight and height in binge eating disorder: misreport is not related to psychological factors. *Obesity* 2010; **18**: 1266–1269.
- 37 White MA, Masheb RM, Burke-Martindale C, Rothschild B, Grilo CM. Accuracy of Self-reported weight among bariatric surgery candidates: the influence of race and weight cycling. *Obesity* 2007; **15**: 2761–2768.
- 38 Stunkard AJ. The accuracy of self-reported weights. *Am J Clin Nutr* 1981; **34**: 1593.
- 39 Sánchez-Vaznaugh EV, Kawachi I, Subramanian SV, Sánchez BN, Acevedo-Garcia D. Do socioeconomic gradients in body mass index vary by race/ethnicity, gender, and birthplace? Am J Epidemiol 2009; 169: 1102–1112.
- 40 Pfeifer JE. Ogloff JRP. Ambiguity and Guilt Determinations: A Modern Racism Perspective 1. J Appl Soc Psychol 1991; **21**: 1713–1725.