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ORIGINAL RESEARCH

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Cognitive dissonance for weight stigma reduction: The development and effect of a counter-attitudinal advocacy intervention

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Summary

Weight stigmatization is persistent and pervasive, leading to numerous negative consequences. This study developed a weight stigma reduction intervention rooted in Cognitive Dissonance Theory aimed at reducing stigma towards individuals living in larger bodies. Undergraduate students ($N = 325$) were randomized to one of three conditions: Cognitive Dissonance (i.e., Written Advocacy or Written + Vocalized Advocacy) or Control. Participants in both Cognitive Dissonance conditions provided a written statement advocating for a proposal benefiting individuals living in larger bodies that would be somewhat costly to participants. Those in the Written + Vocalized Advocacy condition also vocalized their arguments to further enhance dissonance. It was hypothesized that compared to Controls, participants in both Cognitive Dissonance conditions would report reduced weight stigma and greater commitment to a prosocial action, with the strongest effects for the Written + Vocalized Advocacy condition. There was a significant reduction in weight stigma across all conditions, but minimal support for significant differences between conditions. Participants in the Cognitive Dissonance conditions did not commit significantly more hours towards the prosocial action compared to Controls. There was limited support that cognitive dissonance was induced. Future studies should pre-screen participants endorsing stronger weight stigma to help ensure they are advocating for a counter-attitudinal cause.

KEYWORDS

cognitive dissonance, compliance, counter-attitudinal advocacy, obesity, weight stigma reduction

What is already known about this subject

- Weight stigma is still prevalent and pervasive in society, but the literature on weight stigma reduction efforts and interventions is limited and mixed.
- Cognitive dissonance has been used to successfully reduce other forms of stigma and increase prosocial actions.

- Current use of cognitive dissonance in weight stigma reduction research has methodological limitations that warrant refinement based on dissonance theory.

What this study adds

- This study developed a weight stigma reduction intervention rooted in cognitive dissonance theory that was informed by social psychology research.
- This study's design differed from existing cognitive dissonance studies in the weight stigma literature because it used a counter-attitudinal advocacy method.
- Future suggestions for further optimizing the weight stigma reduction intervention are provided.

1 | INTRODUCTION

1.1 | Weight stigma: Definition, prevalence, persistence, and consequences

Explicit weight stigma can be defined as holding negative attitudes and beliefs about individuals perceived to have excess weight.[1] Weight stigma and discrimination have persisted over several decades,[2] with rates of experienced or perceived weight stigma reported as high as 57% in the United States.[3] Weight stigma is prevalent in the workplace,[4] educational,[5] and healthcare settings, as well as among healthcare professionals,[6,7] even specialists who work with individuals living in larger bodies.[8] Family members, romantic partners, and close friends of individuals living in larger bodies also hold weight stigmatizing attitudes.[9,10] Experiencing weight stigma has numerous harmful consequences to one's health and well-being, including disordered eating, sleep disturbances, depression, anxiety, body image dissatisfaction, and poorer self-esteem.[2,11,12]

1.2 | Weight stigma reduction efforts

Despite extensive examination of the prevalence and consequences of weight-based stigma, literature examining weight stigma reduction strategies is sparse and the results of these interventions are mixed or inconclusive.[5,13] Commonly tested interventions include causal explanations about the controllability of weight (i.e., biological factors; food addiction), empathy induction, and social consensus (i.e., comparison to peers or in-group's attitudes).[14] Given the mixed findings, novel weight stigma reduction strategies are needed.[14]

1.3 | Alternative attitude change strategy: Cognitive dissonance

Cognitive dissonance theory posits that people experience discomfort when their behaviours or cognitions are inconsistent with their other cognitions, and they become motivated to change their attitudes (or behaviours) to reduce this discomfort.[15,16] Cognitive dissonance reduction strategies are widely used to promote water conservation,[17] reduce adverse health behaviours such as smoking,[18] and reduce prejudice, stigma, and discrimination.[19] One of the most common strategies to induce cognitive dissonance is counter-attitudinal advocacy, whereby when individuals are asked to engage in attitude-discrepant behaviour by advocating for a topic they hold negative beliefs about or do not necessarily believe in (i.e., induced compliance), this impacts their self-concept and induces cognitive dissonance. This process motivates individuals to subsequently change their attitudes in the direction of their advocacy in order to reduce dissonance arousal.[20,21]

1.4 | Cognitive dissonance under specific conditions

Dissonance is theorized to work optimally when individuals feel that they have "free choice" in their counter-attitudinal advocacy, and their advocacy is threatening to their self.[20,22,23] This is exemplified by a study where German participants who were prejudiced towards Turkish people were tasked with generating a counter-attitudinal argument favouring integrated housing for Germans and Turks as if the position was their own. "Choice" to engage in the task and the participant's self-threat (i.e., imagining Turks living next door to them versus living in the Netherlands) were both manipulated.[22] Discomfort and prejudice towards Turks were lowest for participants with a high preference for consistency who had generated counter-attitudinal arguments under high choice and high self-threat. Other studies have successfully used similar counter-attitudinal advocacy methods for other racial groups.[21,24,25] For instance, White university students who advocated for a policy that supported a $2000 tuition increase (i.e., high cost) to benefit Black students via a written argument had less prejudice compared to White students supporting a $200 tuition increase (i.e., low cost), suggesting that greater attitude change occurred when the policy was more personally costly.[26]

Vocalizing one's counter-attitudinal arguments could further enhance dissonance arousal.[26,27] Self-Perception Theory[28] posits that one's attitudes are inferred from observing one's behaviour, and one way of observing behaviour is through one's speech.[29] Thus, when

engaging in more behaviours that conflict with one's attitudes, like refraining from smoking and vocalizing one's counter-attitudes to a peer, greater dissonance is enhanced.[30]

1.5 | Cognitive dissonance in weight stigma reduction interventions

Cognitive dissonance induction has been examined as a weight stigma reduction intervention[31,32]; however, studies are scarce and some limitations of the study designs warrant improvements to future experimental investigations. For instance, one study[31] tested the effectiveness of a cognitive dissonance intervention against a social consensus condition and control condition in a sample of undergraduate students ($N = 64$). Participants' self-concept as kind and caring was threatened within the manipulation, such that participants were provided false feedback that their high scores on a values questionnaire were incongruent with their reported negative attitudes towards individuals living in larger bodies. Results indicated that weight stigmatizing attitudes were significantly reduced in the dissonance condition compared to the social consensus and control groups from pre- to post-intervention. The study[31] was replicated and extended,[33] where similarly, a values measure was completed, and false feedback was provided about participants' values and weight stigma. The interventions utilizing cognitive dissonance resulted in significantly lower weight stigma compared to the control condition. Although these studies provide evidence that cognitive dissonance can incite attitude change towards individuals living in larger bodies, using false feedback limits the ecological validity and practicality of this approach.

The use of counter-attitudinal advocacy to induce cognitive dissonance may be a more practical and effective weight stigma reduction strategy. Given the limitations of previous research, testing a revised methodological design rooted in Cognitive Dissonance Theory[15] is warranted. Individuals must feel autonomous in their choice to comply with advocating for the specific topic in the writing task,[20,22] and a relatively high degree of costliness (i.e., self-threat) must be present in order to prompt participants to think about their counter-attitudinal support of the given topic.[22,26] Rather than inducing dissonance through false feedback, a more practical approach is to ask participants to write a counter-attitudinal advocacy statement, and to vocalize the statement to another person to further enhance dissonance. It is also important to code the written content of the advocacy statement to determine compliance with instructions.

1.6 | The present study

The aim of the present experimental study was to examine whether a cognitive dissonance intervention, specifically using counter-attitudinal advocacy, reduces weight-based stigmatizing attitudes among a sample of undergraduate students. Participants were asked to either only write or write and vocalize a counter-attitudinal statement to examine whether cognitive dissonance, and subsequently, attitude change, can be further enhanced by including a vocalized component.

We hypothesized that there would be a significant main effect of condition, such that in comparison to the Control condition, participants in both Cognitive Dissonance conditions (Written Advocacy; Written + Vocalized Advocacy) would report:

1. Significantly greater reduction in weight stigmatizing beliefs from pre- to post-advocacy exercise.
2. Significantly lower weight stigmatizing attitudes and beliefs and significantly more positive attitudes towards the proposal follow the advocacy exercise.
3. Significantly greater level of commitment to a prosocial action following the advocacy exercise.

Further, we hypothesized that participants in the Written + Vocalized Advocacy condition would report lower weight stigma and greater commitment to a prosocial action compared to those in the Written Advocacy condition.

2 | METHODS

2.1 | Participants

Undergraduate students ($N = 341$) were recruited from introductory psychology courses at a Canadian university. There were no exclusion criteria for participating in the study. Participants received a credit towards the research participation portion of their course for completing the study. The study obtained ethics approval from the university's Research Ethics Board (file # 2022-290). Participants provided informed consent before taking part in the study.

Sample size was determined a priori. Medium effect sizes (Cohen's $d = 0.5$; Cohen's $f = 0.25$) were used in the calculation due to previous research[33] finding small to medium effects (i.e., Cohen's $f^2 = 0.08$) for the use of Cognitive Dissonance interventions compared to controls to reduce weight stigma. With an alpha level set to .05, a sample size of 255 was determined. Additional participants were recruited to account for participant dropout, missing data, or not adhering to study instructions.

2.2 | Measures

The selection of several weight stigma measures post-intervention was intentional and based on methodological considerations. Although these measures assess overlapping constructs, each provides a unique perspective on weight stigma, including general attitudes, beliefs about controllability and blame, and specific stigmatizing

attributions or beliefs. This multidimensional approach ensures that the intervention's effects are comprehensively assessed across distinct yet related facets of weight stigma, as previous research has demonstrated the importance of capturing both general attitudes and more nuanced beliefs to evaluate the efficacy of stigma reduction interventions.[31,32,34]

2.2.1 | Universal Measure of Bias-Fat Scale

The Universal Measure of Bias-Fat Scale (UMB-FAT)[32] is a 20-item self-report measure of general attitudes towards individuals living in larger bodies (time 1 $\alpha = .90$; time 2 $\alpha = .92$). Items are rated on a 7-point Likert scale ranging from 1 ("Strongly Agree") to 7 ("Strongly Disagree"). The UMB-FAT includes four subscales: (1) Judgment (time 1 $\alpha = .79$; time 2 $\alpha = .89$), (2) Social Distance (time 1 $\alpha = .73$; time 2 $\alpha = .79$), (3) Attraction (time 1 $\alpha = .89$; time 2 $\alpha = .89$), and (4) Equal Rights (time 1 $\alpha = .86$; time 2 $\alpha = .88$).

2.2.2 | Degree of agreement with the proposal

A single item was adapted from a previous study[26] to assess the extent to which participants agreed that students must take a weight stigma reduction workshop on an 11-point scale (0 = Disagree; 10 = Agree). Another measure derived from a dissonance study[26] assessed agreement with the proposal, using seven 11-point "semantic differential scales" (i.e., bad-good, wise-unwise, beneficial-harmful, unfair-fair, unfavourable-favourable, moral-immoral, inhumane-humane), where higher scores indicate more positive evaluations of the advocated proposal ($\alpha = .91$).

2.2.3 | Anti-Fat Attitudes Test

The Anti-Fat Attitudes Test (AFAT)[35] is a 47-item self-report measure of anti-fat attitudes towards individuals living in larger bodies. Items are rated on a 5-point Likert scale, ranging from "Strongly Disagree" to "Strongly Agree" ($\alpha = .93$). The AFAT includes three subscales: (1) Weight Control/Blame ($\alpha = .86$), (2) Social/Character Disparagement subscale ($\alpha = .83$), and (3) Physical/Romantic Unattractiveness ($\alpha = .82$).

2.2.4 | Anti-Fat Attitudes Questionnaire

The Anti-Fat Attitudes Questionnaire (AFA-Q)[36] is a 13-item self-report measure of general attitudes towards individuals living in larger bodies. Items are rated on a 10-point Likert scale ranging from 0 ("Very Strongly Disagree") to 9 ("Very Strongly Agree"; $\alpha = .84$). The AFA-Q includes three subscales: (1) Dislike towards individuals living in larger bodies ($\alpha = .80$), (2) Fear of Fat ($\alpha = .84$), and (3) Willpower ($\alpha = .74$).

2.2.5 | Fat Phobia Scale-Short Form

The Fat Phobia Scale-Short Form (FPS)[37] is a self-report measure that assesses beliefs about individuals living in larger bodies using 14 pairs of antonymic adjectives (e.g., "attractive" versus "unattractive") on a 5-point scale ($\alpha = .91$).

2.2.6 | Attitudes Towards Obese People

The Attitudes Towards Obese People (ATOP)[38] is a 20-item self-report measure of attitudes towards individuals living in larger bodies. Items are rated on a 6-point Likert scale ranging from −3 ("Strongly Disagree") to 3 ("Strongly Agree"). Higher scores indicate more positive attitudes ($\alpha = .80$).

2.2.7 | Level of commitment towards prosocial action

To assess whether changes in self-reported stigmatizing attitudes extend to behaviour change intentions, participants were asked to volunteer their time at a stand on campus to advocate for improved campus accessibility and inclusivity for individuals living in larger bodies. Participants were asked how many hours in the day they would be willing to volunteer on a scale from 0 to 6 hours. This method was used in a previous study on cognitive dissonance induction.[39]

2.2.8 | Demographic questionnaire

Participants completed a demographic questionnaire that asked about their age, gender, and ethnicity. They also reported their height and weight, which were used to calculate their body mass index (BMI = kg/m^2).

2.2.9 | Compliance rating

The content of the Written Advocacy exercises was rated as highly compliant, semi-compliant, or non-compliant.

2.3 | Procedure

Participants were recruited from a university's undergraduate psychology participant pool and completed the study through Qualtrics in exchange for credit towards their course. The study was accessed remotely on a computer with Internet access. After providing informed consent, all participants completed the UMB-FAT[32] to assess baseline weight stigmatizing attitudes. To conceal the true purpose of the study, additional items from two stigma measures on HIV and addictions were included. Following completion of the UMB-FAT,

all participants were informed that the purpose of the study was to share their opinions about a policy that would benefit a particular group of people. Further, all participants were informed that there were several different policy topics that they would have an equal, random chance of being assigned to using an online random generator: Individuals living in larger bodies; Individuals with HIV; Individuals with addiction. However, all participants received the same topic (i.e., advocating for a weight stigma reduction workshop that would benefit individuals living in larger bodies). All participants then received brief, standardized background information about the societal harms caused by weight stigma, emphasizing its impact on physical and mental health, and a policy proposal by the university to hold a mandatory workshop for all students to learn about the harmful effects of weight stigma in our society (see Data S1, Supporting Information). All participants were told that this workshop would take place in the evening and a $20 tuition fee increase is recommended to offset the cost of developing the workshop and paying the speakers with lived experience living in larger bodies (i.e., high self-threat/personal relevance). The amount of the tuition fee increase was informed by prior cognitive dissonance research, which highlights that the perceived "costliness" to participants should be balanced to induce dissonance effectively, as costs that are too low or too high can undermine attitude change.[21,22,25] To determine the optimal level of costliness, a pilot test of 10 undergraduate and graduate students was conducted whereby these individuals reported that a $10 fee felt too low and easily manageable, whereas a $20 fee was perceived as a more thought-provoking commitment. Based on previous research and the findings from the pilot testing, a $20 fee was selected to ensure sufficient self-threat/personal relevance while maintaining feasibility for participants.

Subsequently, participants were randomized to one of three conditions: Written Advocacy, Written + Vocalized Advocacy, or Control. In both the experimental groups (i.e., Written Advocacy; Written + Vocalized Advocacy), participants were asked to write the strongest, most convincing argument taking the position that it would be beneficial for students to participate in this mandatory workshop. In line with previous studies,[21] participants were informed that they were being randomized to present arguments "for" or "against" the proposal, and they happened to be in the "for" group (in reality, all participants were asked to advocate in favour of the proposal). Participants were told to take this position and argue convincingly as if the position was their own.[40] To induce High Choice, participants were reminded that their participation was fully voluntary, and they could leave at any time without losing their credit.[22,40]

Participants in both experimental conditions were informed that they would have approximately 10 minutes to develop and write their arguments, and they should aim for about 250 words. Participants randomized to the Written + Vocalized Advocacy condition were also asked to recite their written argument to the experimenter after completing the written statement. Participants randomized to the Control condition were informed about the proposal for the workshop but were not asked to write the advocacy statement intended to induce cognitive dissonance. Rather, participants were asked to write their personal opinions about the proposal. All participants subsequently completed counterbalanced weight stigma questionnaires (i.e., order independently randomized), including the UMB-FAT again, their level of agreement with the proposal, and a demographic questionnaire. Upon study completion, the experimenter debriefed participants about the true purpose of the study and provided participants with a debriefing form.

2.4 | Data analytic plan

All hypotheses and the analytic plan were pre-specified before data collection. A series of repeated measures ANOVAs were conducted to evaluate whether there were group differences between the experimental conditions (i.e., Written Advocacy; Written + Vocalized Advocacy) and Control condition from pre- to post-experiment on the UMB-FAT total score and subscales (Hypothesis 1). A series of one-way ANOVAs were also conducted to evaluate whether there were group differences (i.e., less weight stigma) between the experimental conditions (i.e., Written Advocacy; Written + Vocalized Advocacy) and Control condition on the weight stigma measures (Hypothesis 2) and greater commitment to a prosocial action (Hypothesis 3). For all analyses, when there was a significant main effect of condition, post hoc tests were conducted.

3 | RESULTS

3.1 | Descriptive characteristics and mean stigma ratings

Participants in each of the three conditions did not significantly differ with respect to age, Welch's $F(2, 211.66) = 0.977$, $p = .378$, BMI, $F(2, 274) = 1.31$, $p = .32$, gender, X^2 (6) = 9.64, $p = .14$, or ethnicity, X^2 (20) = 22.68, $p = .31$. Demographic information is presented in Table 1. In general, participants in the current study did not report holding very stigmatizing attitudes towards individuals living in larger bodies.

3.2 | Hypothesis 1: Change in UMB-FAT scores pre- to post-experimental manipulation

Contrary to Hypothesis 1, the interaction between condition and time on the UMB-FAT Total score was not significant, $F(2, 315) = 0.555$, $p = .575$, $\eta_p^2 = .004$. The interaction between condition and time on the UMB-FAT subscales was also not significant, including Judgment, $F(2, 318) = 0.380$, $p = .684$, $\eta_p^2 = .002$, Social Distance, $F(2, 316) = .402$, $p = .669$, $\eta_p^2 = .003$, Attraction, $F(2, 319) = 0.346$, $p = .708$, $\eta_p^2 = .002$, or Equal Rights, $F(2, 316) = 1.068$, $p = .345$, $\eta_p^2 = .007$. However, there was a significant main effect of time on the

TABLE 1 Participant characteristics as a function of condition.

Variable	Written Advocacy	Written + Vocalized Advocacy	Control Condition	Total
Age (year)	(*N* = 106)	(*N* = 109)	(*N* = 110)	(*N* = 325)
	22.45 (±7.71)	21.17 (±6.02)	21.40 (±6.39)	21.67 (±6.71)
Gender	*N* (%)	*N* (%)	*N* (%)	*N* (%)
Woman	74 (69.81)	86 (78.90)	92 (83.64)	252 (77.54)
Man	25 (23.58)	19 (17.43)	14 (12.73)	58 (17.85)
Non-binary	6 (5.66)	4 (3.67)	4 (3.64)	14 (4.31)
Not specified	1 (0.94)	0 (0.00)	0 (0.00)	0 (0.00)
Ethnicity	*N* (%)	*N* (%)	*N* (%)	*N* (%)
European/White	28 (26.42)	23 (21.10)	27 (24.55)	78 (24.00)
South Asian	17 (16.04)	24 (22.02)	36 (32.73)	77 (23.69)
Caribbean/African	11 (10.38)	12 (11.01)	14 (12.73)	37 (11.38)
Middle Eastern	14 (13.21)	15 (13.76)	8 (7.27)	37 (11.38)
Southeast Asian	8 (7.55)	11 (10.09)	9 (8.18)	28 (8.62)
East Asian	11 (10.38)	6 (5.50)	7 (6.36)	24 (7.38)
Mixed heritage	6 (5.66)	9 (8.26)	7 (6.36)	22 (6.77)
Latin American	3 (2.83)	6 (5.50)	1 (0.91)	10 (3.08)
First Nations	0 (0.00)	1 (0.92)	0 (0.00)	1 (0.31)
Other	4 (3.77)	1 (0.92)	0 (0.00)	5 (1.54)
Not specified	4 (3.77)	1 (0.92)	1 (0.91)	6 (1.85)
BMI (kg/m^2)	(*N* = 92)	(*N* = 88)	(*N* = 97)	(*N* = 277)
	23.03 (±5.40)	23.28 (±4.59)	24.11 (±5.53)	23.47 (±5.17)

Note: Results are means (standard deviations) for continuous variables and *N* (%) for categorical variables.

TABLE 2 Means and standard deviations of change score variables on the UMB-FAT total and subscale scores.

	Pre-experimental manipulation, *M* (*SD*)			Post-experimental manipulation, *M* (*SD*)			Δ score, *M* (*SD*)		
	Written Advocacy	Written + Vocalized Advocacy	Control	Written Advocacy	Written + Vocalized Advocacy	Control	Written Advocacy	Written + Vocalized Advocacy	Control
Total	2.50 (0.96)	2.31 (0.82)	2.35 (0.77)	2.36 (1.02)	2.19 (0.90)	2.30 (0.86)	−0.15 (0.47)	−0.12 (0.46)	−0.05 (0.61)
Judgment	2.17 (1.13)	2.01 (0.95)	2.06 (0.92)	1.99 (1.25)	1.85 (1.05)	1.97 (1.13)	−0.17 (0.75)	−0.16 (0.70)	−0.08 (1.02)
Social Distance	1.98 (1.00)	1.79 (0.81)	1.93 (0.90)	1.91 (1.06)	1.77 (0.85)	1.95 (0.98)	−0.07 (0.55)	−0.02 (0.64)	0.01 (0.80)
Attraction	3.58 (1.31)	3.39 (1.27)	3.44 (1.27)	3.44 (1.38)	3.26 (1.36)	3.37 (1.27)	−0.14 (0.75)	−0.13 (0.68)	−0.07 (0.58)
Equal Rights	2.28 (1.29)	2.04 (1.22)	1.97 (0.99)	2.08 (1.27)	1.86 (1.21)	1.92 (1.12)	−0.20 (0.81)	−0.18 (0.73)	−0.06 (0.75)

Note: *N* = 322. Three cases were excluded from these analyses on the UMB-FAT.

UMB-FAT Total score indicating that scores decreased from pre-experiment ($M = 2.36$, $SE = .044$) to post-experiment ($M = 2.24$, $SE = .05$), $F(1, 315) = 17.11$, $p < .001$, $\eta_p^2 = .05$. Similarly, the main effect of time showed a statistically significant reduction in Judgment scores from pre- ($M = 2.07$, $SE = .054$) to post- ($M = 1.93$, $SE = .062$) experiment, $F(1, 318) = 9.06$, $p = .003$, $\eta_p^2 = .028$. Attraction scores decreased from pre- ($M = 3.47$, $SE = .072$) to post- ($M = 3.36$, $SE = .074$) experiment, $F(1, 319) = 9.377$, $p = .002$, $\eta_p^2 = .029$, and Equal Rights scores decreased from pre- ($M = 2.06$, $SE = .062$) to post- ($M = 1.92$, $SE = .064$) experiment, $F(1, 316) = 10.882$, $p = .001$, $\eta_p^2 = .033$, but not Social Distance scores, $F(1, 316) = .350$, $p = .555$, $\eta_p^2 = 001$ (Table 2).

TABLE 3 Mean scores on dependent variables as a function of condition.

Measures	Written Advocacy, *M* (*SD*)	Written + Vocalized Advocacy, *M* (*SD*)	Control, *M* (*SD*)
ΔUMB-FAT Total	−0.14 (0.47)	−0.12 (0.46)	−0.05 (0.61)
ΔJudgment	−0.17 (0.75)	−0.16 (0.70)	−0.08 (1.02)
ΔSocial Distance	−0.07 (0.55)	−0.02 (0.64)	0.01 (0.80)
ΔAttraction	−0.14 (0.75)	−0.13 (0.67)	−0.07 (0.58)
ΔEqual Rights	−0.20 (0.81)	−0.18 (0.73)	−0.06 (0.75)
UMB-FAT Total	2.36 (1.02)	2.19 (0.89)	2.30 (0.86)
Judgment	1.99 (1.25)	1.85 (1.05)	1.97 (1.13)
Social Distance	1.91 (1.06)	1.77 (0.85)	1.95 (0.98)
Attraction	3.44 (1.38)	3.26 (1.36)	3.37 (1.27)
Equal Rights	2.08 (1.27)	1.86 (1.21)	1.92 (1.12)
ATOP	3.51 (0.87)	3.61 (0.64)	3.43 (0.81)
AFAT Total	1.79 (0.48)	1.68 (0.36)	1.77 (0.38)
AFAT Social Character Disparagement	1.51 (0.46)	1.44 (0.31)	1.51 (0.35)
AFAT Physical-Romantic Attraction	2.15 (0.45)	1.98 (0.40)	2.07 (0.41)
AFAT Weight Control/Blame	1.88 (0.81)	1.75 (0.68)	1.89 (0.68)
AFA-Q Total	2.41 (1.58)	2.27 (1.33)	2.76 (1.21)
AFA-Q Dislike	1.25 (1.53)	1.02 (0.99)	1.38 (1.12)
AFA-Q Fear of Fat	4.59 (2.62)	4.65 (2.81)	5.21 (2.49)
AFA-Q Willpower	2.92 (2.30)	2.79 (2.16)	3.52 (2.04)
FPS	2.90 (0.76)	3.03 (0.62)	2.84 (0.65)
Hours Willing to Volunteer	1.49 (0.15)	1.63 (0.15)	1.63 (0.15)

Note: Ns range between 322 and 325 due to missing data.
Abbreviations: UMB-FAT, Universal Measure of Bias-Fat Scale-Total; ATOP, Attitudes Towards Obese People; AFAT, Anti-fat Attitudes Test; AFA-Q, Anti-fat Attitudes Questionnaire; FPS, Fat Phobia Scale.

3.3 | Hypothesis 2: Between-group differences on weight stigma

See Table 3 for the means and standard deviations of the dependent variables as a function of condition.

3.3.1 | Hypothesis 2: Significant findings

AFAT Physical/Romantic Attraction Subscale

In partial support of Hypothesis 2, condition was significantly related to beliefs about physical and romantic attractiveness of individuals living in larger bodies, $F(2, 322) = 4.13$, $p = .017$, $\eta_p^2 = .025$. Tukey post hoc analysis revealed that participants in the Written + Vocalized Advocacy condition reported significantly lower stigmatizing beliefs regarding the attractiveness of individuals living in larger bodies compared to participants in the Written Advocacy condition (0.16, 95% CI [0.03, 0.30], $p = .012$). However, neither the Written Advocacy ($p = .319$) nor Written + Vocalized Advocacy ($p = .319$) conditions significantly differed from the Control ($M = 2.06$, $SD = .41$) condition.

AFA-Q Total. In partial support of Hypothesis 2, there was a significant effect of condition on weight stigma, $F(2, 320) = 3.576$, $p = .029$, $\eta_p^2 = .022$. Tukey post hoc analysis revealed that the Written + Vocalized Advocacy condition reported significantly lower stigma relative to the Control condition (0.49, 95% CI [0.04, 0.93], $p = .027$). However, there was not a significant difference between the Written Advocacy condition and the Written + Vocalized Advocacy ($p = .738$) or Control ($p = .158$) conditions (Figure 1).

AFA-Q Dislike. Condition was significantly related to Dislike towards individuals living in larger bodies, Welch's $F(2, 206.863) = 3.140$, $p = .045$. Games-Howell post hoc analysis revealed that the Written + Vocalized Advocacy condition reported significantly lower Dislike relative to the Control condition (0.35, 95% CI [0.02, 0.69], $p = .038$). However, there was not a significant difference between the Written Advocacy condition and the Written + Vocalized Advocacy ($p = .395$) or Control ($p = .779$) conditions.

AFA-Q Willpower. In partial support of Hypothesis 2, condition was significantly related to Willpower beliefs, $F(2, 320) = 3.427$, $p = .034$, $\eta_p^2 = .021$. Tukey post hoc analysis revealed that the Written + Vocalized Advocacy condition reported significantly lower stigmatizing beliefs about the willpower of individuals living in larger bodies relative to the Control condition (−0.72, 95% CI [0.03, 1.41], $p = .039$). However, there was not a significant difference in these

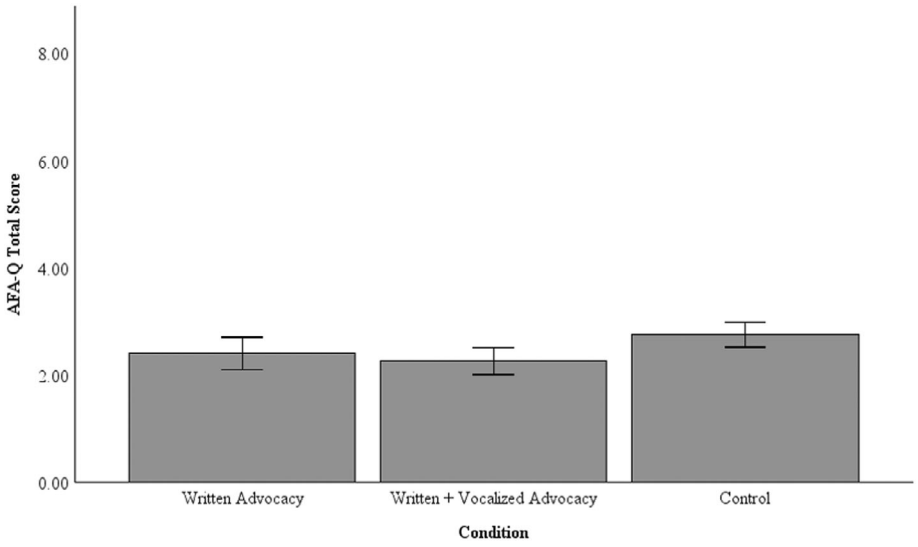

FIGURE 1 Mean scores on the Anti-Fat Attitudes Questionnaire total score as a function of condition. Participants in both experimental conditions held significantly lower stigmatizing beliefs relative to participants in the Control condition on the Anti-Fat Attitudes Questionnaire. Error bars represent the standard error of the mean.

weight stigmatizing beliefs between the Written Advocacy condition and the Written + Vocalized Advocacy ($p = .906$) or Control ($p = .110$) conditions.

3.3.2 | Hypothesis 2: Non-significant findings

Contrary to Hypothesis 2, condition was not significantly related to fat phobia, $F(2, 320) = 2.04$, $p = .131$, $\eta_p^2 = .013$, anti-fat attitudes overall (AFAT Total), $F(2, 322) = 2.13$, $p = .12$, $\eta_p^2 = .013$, social/character disparagement, $F(2, 322) = 1.08$, $p = .34$, $\eta_p^2 = .007$, weight controllability beliefs, $F(2, 322) = 1.08$, $p = .341$, $\eta_p^2 = .007$, Fear of Fat (AFA-Q), $F(2, 319) = 1.801$, $p = .167$, $\eta_p^2 = .011$, positive attitudes towards individuals living in larger bodies (ATOP), Welch's $F(2, 208.241) = 1.584$, $p = .208$, or attitudes towards implementing the weight stigma reduction workshop, $F(2, 318) = 2.332$, $p = .099$, $\eta_p^2 = .014$.

3.4 | Hypothesis 3: Level of commitment towards prosocial action

Contrary to Hypothesis 3, condition did not significantly influence willingness to volunteer time to the cause, $F(2, 322) = .304$, $p = .738$, $\eta_p^2 = .002$.

3.5 | Exploratory analyses

To explore whether pre-manipulation weight stigma influenced the intervention's effectiveness, we conducted additional analyses including Time 1 UMB-FAT scores as a covariate. The pattern of findings remained unchanged, suggesting that baseline weight stigma levels did not significantly impact the intervention's outcomes. This indicates the intervention effects were consistent across participants, regardless of initial stigma levels.

4 | DISCUSSION

The purpose of the present study was to investigate the effectiveness of a weight-stigmatization reduction strategy intended to induce cognitive dissonance among a sample of undergraduate students. Experimental condition was not significantly related to change in weight stigmatizing beliefs from pre- to post-experimental manipulation, but there was a reduction in weight stigmatizing beliefs from pre- to post-experiment across all conditions. Although the reduction in stigma was statistically significant, these findings should be interpreted with caution due to relatively small effect sizes. These findings also suggest that the experimental manipulation (counter-attitudinal advocacy) was not as effective in reducing weight stigmatization. There are several potential reasons why weight stigmatizing beliefs may have reduced from pre- to post-experiment across the entire sample. First, there may have been an increased awareness of weight stigma given that all participants read the same description of the adverse impact of weight stigma on individuals living in larger bodies, and the proposal for the university to implement a workshop to increase awareness of weight stigma. This description included educational elements which may have challenged participants' pre-existing beliefs about weight, contributing to a less stigmatizing perspective. In addition, most participants in the present sample reported low weight stigmatizing beliefs at the beginning of the study, and they decreased further following the writing tasks (including those in the control condition) because they agreed with the value or importance of the aims of the proposed workshop. A recent study using cognitive dissonance to reduce weight stigma reported that after statistically adjusting for social desirability and experiences with weight discrimination, there was not a significant condition by time interaction on explicit weight

stigmatizing attitudes from baseline to post-experimental manipulation.[41] Similar to the current study, both groups reported a decline in weight stigma from baseline to post-experimental manipulation.

There was partial support for Hypothesis 2, such that compared to the control condition, participants in both experimental conditions reported significantly less anti-fat attitudes and weight stigmatizing beliefs about the willpower of individuals living in larger bodies. Also, those in the Written + Vocalized Advocacy condition reported less dislike towards individuals living in larger bodies in comparison to those in the control condition. However, the three conditions did not significantly differ on most of the stigma measures following the experiment. Individuals did not significantly differ with respect to their attitudes towards the proposal or their commitment to the cause. The lack of significant findings on the Equal Rights subscale was surprising given that participants were asked to write a statement advocating for equal rights and accessibility. It was also surprising that participants mostly agreed with the proposal for the weight stigma reduction workshop, despite not evaluating the proposal positively. This finding differed from a previous study that found these two measures correlated when assessing attitudes towards and level of agreement with an anti-prejudice proposal that was advocated for.[26] This discrepancy might be explained by the differences in the measures used to assess this construct, in that agreement with the proposal was measured using a single item, whereas evaluation of the proposal was measured by summing ratings on seven positive–negative traits (e.g., beneficial versus harmful).

Collectively, these findings suggest that advocating for the weight stigma reduction workshop was not very effective in reducing weight stigmatizing attitudes or increasing behavioural willingness to support anti weight-stigma efforts, and that vocalizing the advocacy statement to another person did not further enhance cognitive dissonance. Considering the low levels of explicit weight stigma reported by the present sample at baseline, the experimental manipulation may not have been effective due to a potential floor effect.

4.1 | Explanations for low baseline weight stigma scores

Inducing cognitive dissonance via counter-attitudinal advocacy requires that participants hold weight stigmatizing attitudes and beliefs at baseline, and that was not the case in the current sample. One possible explanation is that undergraduate students may be less weight stigmatizing than they were in the past.[32] Some recent data supports this possibility[41]; however, evidence is mixed, as other studies have found that undergraduate students can be weight stigmatizing,[42] challenging this notion of a universal decrease. Another consideration is that undergraduate students want to appear non-stigmatizing, suggested by evidence that students report low explicit, but high implicit weight stigma.[43] Another possibility is that an undergraduate student's program of study impacts the degree of weight stigma reported. Undergraduate psychology students might exhibit lower explicit weight stigma due to the nature of their coursework emphasizing open-mindedness.[44] In contrast, students in health-related majors may express more pronounced weight biases.[45] These findings are concerning given that pre-health professionals may continue to hold weight stigmatizing attitudes in their practice, given the abundance of evidence that weight stigma is prevalent among health professionals,[10,46–48] and holding such attitudes negatively impacts the treatment of individuals living in larger bodies.[49] Given that undergraduate samples vary in their level of weight stigma, it would be informative for future studies to assess variables that might help account for the level of stigma within the sample, including social desirability, internalization of the thin/athletic body ideal, body shame, and self-compassion.

4.2 | Future directions

Although not statistically significant, there was a general trend that individuals who both wrote and vocalized their advocacy statements reported the most positive attitudes compared to those who only wrote their advocacy statements and those in the control condition who were simply asked to write their thoughts on the proposal. It would thus be useful to replicate this study with a pre-screened sample that holds more stigmatizing beliefs and attitudes at baseline because true induction of cognitive dissonance using this method requires individuals to advocate counter to their held attitudes.[20] Additionally, assessing both explicit and implicit weight stigmatizing attitudes in future studies could be useful to consider socially desirable reporting; however, implicit weight stigma may persist despite reductions in explicit weight stigma.[41]

Exploring individual differences in preference for consistency (PFC) could further elucidate the efficacy of counter-attitudinal advocacy. PFC as a personality trait encompasses a desire to maintain consistency with internal experiences (i.e., beliefs, attitudes), to appear consistent to others, and to prefer that others are consistent. In cognitive consistency paradigms, attitude change is stronger for those with greater PFC.[22,50] Understanding how PFC moderates the effects of counter-attitudinal advocacy can refine intervention strategies.

Alternative cognitive dissonance induction approaches, like hypocrisy induction, warrant consideration. In this approach, participants advocate for a cause or behaviour they support (e.g., smoking is bad; drinking and driving is harmful) but are then asked to recall instances when they engaged in these behaviours. One study[39] demonstrated its efficacy for reducing alcohol consumption, whereby teens reported high agreement (pro-attitudinal) that excessive alcohol consumption is dangerous for one's health. Since participants were less stigmatizing in the present study, an alternative approach could be to ask students to advocate in line with their explicit low stigmatizing beliefs, but then recall specific times when they have been weight stigmatizing (e.g., holding negative stereotypes about a person living in a larger body they view on television or see at the gym).

Additionally, assessing compliance with the task instructions (i.e., participants' advocacy statements favoured the policy) is crucial. A previous counter-attitudinal study[25] found that partial compliance

with the essay instructions did not lead to significant attitude change, whereas full compliance led to more positive attitudes. In the present study, compliance could not be adequately analysed due to the small number of low compliers in the present study and the highly unequal number of participants between the three compliance groups (high $n = 269$; semi- $n = 21$; low $n = 35$). The high degree of compliance across all conditions lends support that the present sample was low in weight stigma to begin with, and thus the task was not actually counter-attitudinal for many individuals. Future studies should examine whether the level of compliance with the counter-attitudinal argument writing task instructions impacts the degree of weight stigma.

4.3 | Study strengths and limitations

To our knowledge, the present study was the first to utilise counter-attitudinal advocacy to induce cognitive dissonance among undergraduate students for weight stigma reduction. The sample was large, compliance with the advocacy task was high, validated measures of weight stigma were used, and there was minimal missing data.

There are notable study limitations. First, participants reported fairly low explicit weight stigma, thus the proposal they were asked to advocate for may not have been counter-attitudinal. Future studies should screen and include participants reporting elevated weight stigma to assess the efficacy of counter-attitudinal advocacy. Second, the study included only self-report measures of explicit weight bias, and several of those measures include language that is highly weight stigmatizing, which can impact participant attitudes and behaviours towards individuals living in larger bodies.[51]

Despite these limitations, the present study was novel in that it examined a new way to induce cognitive dissonance without deceiving participants by providing bogus feedback regarding their value system and their level of weight stigma.

5 | CONCLUSIONS

There was limited support that cognitive dissonance was induced using a counter-attitudinal advocacy exercise. Participants held relatively low weight stigmatizing attitudes at baseline, with a slight reduction in weight stigma across all conditions, suggesting that simply learning about weight stigma and accessibility barriers, as well as reflecting on weight stigma in a written statement, might hold some value in increasing awareness and reducing weight stigma. Future studies should pre-screen participants to ensure that the sample is relatively weight stigmatizing to adequately test the counter-attitudinal advocacy exercise.

If future research indicates that having people advocate against their pre-existing beliefs can lead to attitude change, the counter-attitudinal advocacy exercise could be included within equity, diversity, and inclusion workshops, classroom experiential learning assignments, and institutional and employment settings, given that several workplaces provide inclusion and anti-discrimination training to employees. Other strategies like letter-writing campaigns and online petition platforms could also be tested for feasibility in various settings where weight stigma and discrimination awareness and reduction efforts are needed. This exemplifies the potential ease of integration of this task-based activity feasibly into real-world settings.

AUTHOR CONTRIBUTIONS

V.M. and S.E.C. conceived the idea. V.M. and L.F. carried out experiments. J.D. provided analysis support. V.M. analysed the data and led the writing of the manuscript. All authors were involved in reviewing and editing the manuscript and approving the final version prior to submission.

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CONFLICT OF INTEREST STATEMENT

No conflict of interest was declared.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The study received ethical approval from the Toronto Metropolitan University Research Ethics Board (REB File #2022-290). Participants provided informed consent before partaking in the study.

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REFERENCES

1. Pearl RL, Puhl RM. Weight bias internalization and health: a systematic review. *Obes Rev*. 2018;19(8):1141-1163. doi:10.1111/obr.12701
2. Puhl RM, Himmelstein MS, Pearl RL. Weight stigma as a psychosocial contributor to obesity. *Am Psychol*. 2020;75(2):274-289. doi:10.1037/amp0000538
3. Prunty A, Clark MK, Hahn A, Edmonds S, O'Shea A. Enacted weight stigma and weight self stigma prevalence among 3821 adults. *Obes Res Clin Pract*. 2020;14(5):421-427. doi:10.1016/j.orcp.2020.09.003
4. Roehling MV, Pichler S, Bruce TA. Moderators of the effect of weight on job-related outcomes: a meta-analysis of experimental studies. *J Appl Soc Psychol*. 2013;43(2):237-252. doi:10.1111/j.1559-1816.2012.00993.x
5. Nutter S, Ireland A, Alberga AS, et al. Weight bias in educational settings: a systematic review. *Curr Obes Rep*. 2019;8(2):185-200. doi:10.1007/s13679-019-00330-8
6. Ekeagwu OA. Weight stigma in healthcare settings in the United Kingdom: a review. *Glob J Health Sci*. 2017;9(10):155-164. doi:10.5539/gjhs.v9n10p155

7. Sabin JA, Marini M, Nosek BA. Implicit and explicit anti-fat bias among a large sample of medical doctors by BMI, race/ethnicity and gender. *PLoS One*. 2012;7(11):e48448. doi:10.1371/journal.pone.0048448
8. Tomiyama AJ, Finch LE, Belsky ACI, et al. Weight bias in 2001 versus 2013: contradictory attitudes among obesity researchers and health professionals. *Obesity*. 2015;23(1):46-53. doi:10.1002/oby.20910
9. Fee HR, Nusbaumer MR. Social distance and the formerly obese: Does the stigma of obesity linger? *Sociol Inq*. 2012;82(3):356-377. doi:10.1111/j.1475-682X.2012.00420.x
10. Puhl RM, Heuer CA. The stigma of obesity: a review and update. *Obesity*. 2009;17(5):941-964. doi:10.1038/oby.2008.636
11. Lee KM, Hunger JM, Tomiyama AJ. Weight stigma and health behaviors: evidence from the eating in America study. *Int J Obes (Lond)*. 2021;45(7):1499-1509. doi:10.1038/s41366-021-00814-5
12. Wu Y, Berry DC. Impact of weight stigma on physiological and psychological health outcomes for overweight and obese adults: a systematic review. *J Adv Nurs*. 2018;74(5):1030-1042. doi:10.1111/jan.13511
13. Ramos Salas X, Alberga AS, Cameron E, et al. Addressing weight bias and discrimination: moving beyond raising awareness to creating change. *Obes Rev*. 2017;18(11):1323-1335. doi:10.1111/obr.12592
14. Lee M, Ata RN, Brannick MT. Malleability of weight-biased attitudes and beliefs: a meta-analysis of weight bias reduction interventions. *Body Image*. 2014;11(3):251-259. doi:10.1016/j.bodyim.2014.03.003
15. Festinger L. *A Theory of Cognitive Dissonance*. Stanford University Press; 1957.
16. Festinger L. *Conflict, Decision, and Dissonance*. Stanford University Press; 1964.
17. Dickerson CA, Thibodeau R, Aronson E, Miller D. Using cognitive dissonance to encourage water conservation. *J Appl Soc Psychol*. 1992;22(11):841-854. doi:10.1111/j.1559-1816.1992.tb00928.x
18. Freijy T, Kothe EJ. Dissonance-based interventions for health behaviour change: a systematic review. *Br J Health Psychol*. 2013;18(2):310-337. doi:10.1111/bjhp.12035
19. Son Hing LS, Li W, Zanna MP. Inducing hypocrisy to reduce prejudicial responses among aversive racists. *J Exp Soc Psychol*. 2002;38(1):71-78. doi:10.1006/jesp.2001.1484
20. Cooper J, Fazio RH. A new look at dissonance theory. *Advances in Experimental Social Psychology*. Vol 17. Academic Press; 1984:229-266.
21. Eisenstadt D, Leippe MR. Dissonance and importance: attitude change effects of personal relevance and race of the beneficiary of a counterattitudinal advocacy. *J Soc Psychol*. 2005;145(4):447-468. doi:10.3200/SOCP.145.4.447-468
22. Heitland K, Bohner G. Reducing prejudice via cognitive dissonance: individual differences in preference for consistency moderate the effects of counter-attitudinal advocacy. *Soc Influence*. 2010;5(3):164-181. doi:10.1080/15534510903332261
23. Steele CM, Liu TJ. Dissonance processes as self-affirmation. *J Pers Soc Psychol*. 1983;45(1):5-19. doi:10.1037/0022-3514.45.1.5
24. Bruneau E, Kteily N, Falk E. Interventions highlighting hypocrisy reduce collective blame of Muslims for individual acts of violence and assuage anti-Muslim hostility. *Pers Soc Psychol Bull*. 2017;44(3):430-448. doi:10.1177/0146167217744197
25. Leippe MR, Eisenstadt D. Generalization of dissonance reduction: decreasing prejudice through induced compliance. *J Pers Soc Psychol*. 1994;67(3):395-413. doi:10.1037/0022-3514.67.3.395
26. Eisenstadt D, Leippe MR, Rivers JA, Stambush MA. Counterattitudinal advocacy on a matter of prejudice: effects of distraction, commitment, and personal importance. *J Appl Soc Psychol*. 2003;33(10):2123-2152. doi:10.1111/j.1559-1816.2003.tb01878.x
27. Fitterman-Harris HF, Vander Wal JS. Weight bias reduction among first-year medical students: a quasi-randomized, controlled trial. *Clin Obes*. 2021;11(6):1-11. doi:10.1111/cob.12479
28. Bem DJ. Self-perception theory. In: Berkowitz L, ed. *Advances in Experimental Social Psychology*. Vol 6. Academic Press; 1972:1-62.
29. Bricker J, Tollison S. Comparison of motivational interviewing with acceptance and commitment therapy: a conceptual and clinical review. *Behav Cogn Psychother*. 2011;39(5):541-559. doi:10.1017/S1352465810000901
30. Joule R. Double forced compliance: a new paradigm in cognitive dissonance theory. *J Soc Psychol*. 1991;131(6):839-845. doi:10.1080/00224545.1991.9924671
31. Ciao AC, Latner JD. Reducing obesity stigma: the effectiveness of cognitive dissonance and social consensus interventions. *Obesity*. 2011;19(9):1768-1774. doi:10.1038/oby.2011.106
32. 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 (Lond)*. 2008;32(7):1145-1152. doi:10.1038/ijo.2008.53
33. Meaney T, Rieger E. Integrating cognitive dissonance and social consensus to reduce weight stigma. *Body Image*. 2021;37:117-126. doi:10.1016/j.bodyim.2021.02.003
34. Gloor JL, Puhl RM. Empathy and perspective-taking: Examination and comparison of strategies to reduce weight stigma. *Stigma Health*. 2016;1(4):269-279.
35. Lewis RJ, Cash TF, Bubb-Lewis C. Prejudice toward fat people: the development and validation of the antifat attitudes test. *Obes Res*. 1997;5(4):297-307.
36. Crandall CS. Prejudice against fat people: ideology and self-interest. *J Pers Soc Psychol*. 1994;66(5):882-894.
37. Bacon JG, Scheltema KE, Robinson BE. Fat phobia scale revisited: the short form. *Int J Obes (Lond)*. 2001;25(2):252-257. doi:10.1038/sj.ijo.0801537
38. Allison DB, Basile VC, Yuker HE. The measurement of attitudes toward and beliefs about obese persons. *Int J Eat Disord*. 1991;10(5):599-607.
39. Sénémeaud C, Mange J, Fointiat V, Somat A. Being hypocritical disturbs some people more than others: how individual differences in preference for consistency moderate the behavioral effects of the induced-hypocrisy paradigm. *Soc Influence*. 2014;9(2):133-148. doi:10.1080/15534510.2013.791235
40. Cooper J, Zanna MP, Taves PA. Arousal as a necessary condition for attitude change following induced compliance. *J Pers Soc Psychol*. 1978;36(10):1101-1106. doi:10.1037/0022-3514.36.10.1101
41. Breithaupt L, Trojanowski P, Fischer S. Implicit and explicit anti-fat attitude change following brief cognitive dissonance intervention for weight stigma. *Obesity*. 2020;28(10):1853-1859. doi:10.1002/oby.22909
42. Webb JB, Fiery MF, Jafari N. "You better not leave me shaming!": conditional indirect effect analyses of anti-fat attitudes, body shame, and fat talk as a function of self-compassion in college women. *Body Image*. 2016;18:5-13.
43. Brewis AA, Wutich A. Explicit versus implicit fat-stigma. *Am J Hum Biol*. 2012;24(3):332-338. doi:10.1002/ajhb.22233
44. Brewis AA, Brennhofer S, van Woerden I, Bruening M. Weight stigma and eating behaviors on a college campus: are students immune to stigma's effects? *Prev Med Rep*. 2016;4:578-584. doi:10.1016/j.pmedr.2016.10.005
45. Langdon J, Rukavina P, Greenleaf C. Predictors of obesity bias among exercise science students. *Adv Physiol Educ*. 2016;40(2):157-164. doi:10.1152/advan.00185.2015
46. Alberga AS, Pickering BJ, Alix Hayden K, et al. Weight bias reduction in health professionals: a systematic review: weight bias reduction in health professionals. *Clin Obes*. 2016;6(3):175-188. doi:10.1111/cob.12147
47. Hales C, de Vries K, Coombs M. Managing social awkwardness when caring for morbidly obese patients in intensive care: a focused ethnography. *Int J Nurs Stud*. 2016;58:82-89.

48. Nicholls W, Pilsbury L, Blake M, Devonport TJ. The attitudes of student nurses towards obese patients: a questionnaire study exploring the association between perceived causal factors and advice giving. *Nurse Educ Today*. 2016;37:33-37.
49. Mold F, Forbes A. Patients' and professionals' experiences and perspectives of obesity in health-care settings: a synthesis of current research. *Health Expect*. 2013;16(2):119-142.
50. Cialdini RB, Trost MR, Newsom JT. Preference for consistency: the development of a valid measure and the discovery of surprising behavioral implications. *J Pers Soc Psychol*. 1995;69(2):318-328. doi: 10.1037/0022-3514.69.2.318
51. Carels RA, Rossi J, Taylor M, et al. Influencing weight bias: the impact of biased questionnaire anchors on stereotype beliefs and judgments. *Obes Res Clin Pract*. 2015;9(5):448-457.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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