



Culture, health, and bigotry: How exposure to cultural accounts of fatness shape attitudes about health risk, health policies, and weight-based prejudice



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ARTICLE INFO

Article history:

Received 26 June 2015

Received in revised form

11 December 2015

Accepted 21 December 2015

Available online 23 December 2015

Keywords:

Culture

Health

Health policy

Anti-fat attitudes

Obesity

ABSTRACT

Rationale: We conducted three experiments to examine how cultural frames shape attitudes about health, focusing on obesity, which is considered a public health crisis and is imbued with symbolic meaning.

Methods: College students ($N_s = 99, 114, \text{ and } 293$) read news articles that presented high body weight according to one or more of the following frames: 1) public health crisis; 2) personal responsibility; 3) health at every size (HAES); or 4) fat rights.

Results: Compared to people who read the HAES and Fat Rights articles, those who read the Public Health Crisis and Personal Responsibility articles expressed more belief in the health risks of being fat ($d_s = 1.28$ to 1.79), belief that fat people should pay more for insurance ($d_s = 0.53$ to 0.71), anti-fat prejudice ($d_s = 0.61$ to 0.69), willingness to discriminate against fat people ($d_s = 0.41$ to 0.59), and less willingness to celebrate body-size diversity ($d_s = 0.77$ to 1.07). They were less willing to say women at the lower end of the obese range could be healthy. Exposure to these articles increased support for price-raising policies to curb obesity but not support for redistributive or compensatory policies. In Experiment 3, in comparison to a control condition, exposure to HAES or Fat Rights frames significantly reduced beliefs in the risks of obesity and support for charging fat people more for insurance. However, only people exposed to the Fat Rights frame expressed fewer anti-fat attitudes and more willingness to celebrate body-size diversity.

Conclusions: Our findings suggest that simply disseminating information that people can be both fat and healthy will not suffice to reduce prejudice. Given that anti-fat stigma is a health risk and barrier to collective solidarity, fat rights viewpoints can buffer against the negative consequences of anti-fat stigma and promote a culture of health by fostering empathy and social justice.

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In this paper, we examine how exposure to different cultural representations, or frames, of a health issue shape people's expressed attitudes about health risk, health policies, and prejudice. We focus on the case of obesity, which is commonly viewed as a public health crisis and imbued with extensive symbolic meaning.

Public health authorities have identified increasing obesity rates

as a leading public health crisis. For example, First Lady Michelle Obama has made combatting childhood obesity her signature issue (Ferran, 2010). Most public health campaigns and news media discussions of obesity emphasize individual-level contributors to weight gain, urging people to make better food and exercise choices (Saguy, 2013). Yet, the actual health risks of obesity are hotly contested (Campos et al., 2006), with some arguing that it is possible to be “fat and fit” or “healthy at every size” (Bacon, 2010; Gaesser, 1996) and others drawing attention to the harm inflicted by widespread anti-fat prejudice (Cooper, 1998; Puhl and Heuer, 2009, 2010; Wann, 1999). These different “fat frames” represent distinct cultural orientations toward the meaning of fatness in the

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contemporary U.S. society.

We report on a series of three experiments that systematically measured how exposure to fat frames affected the expression of several attitudes that impact a culture of health, including those related to weight-related health risk, support for obesity policies, and anti-fat stigma and discrimination. Perceptions of health risk and support for obesity policies affect a culture of health by shaping health practices and health policy, respectively. Stigma and prejudice – including specifically weight-based stigma – create stress and ill health and constitute barriers to health care (Lamont, 2009; Puhl and Heuer, 2009). Stigma further undermines a culture of health by eroding a sense of collective solidarity, or the idea that those with and without the stigma are all in this together and should, for instance, pool resources to protect the most vulnerable from the financial cost of ill health. In contrast, cultivating pride in a collective identity that is widely stigmatized may buffer against the negative health consequences associated with stigma and discrimination (Hall and Lamont, 2009).

1. Fat frames

Sociologist Erving Goffman first used the “frame” concept to describe how people define a situation to organize their experiences and guide their actions (Goffman, 1974). Later, social movement scholars used this term to examine how social movements define issues in particular ways to “mobilize potential adherents and constituents, to garner bystander support, and demobilize antagonists” (Snow and Benford, 1988, p. 198; Snow and Lessor, 2010). Further, communication scholars used the concept to show how news media reports construct particular accounts of social problems, affecting which solutions appear feasible and legitimate (Entman, 1993). Rather than asking how or why people, social movements, or the mass media produce various frames, we investigate how exposure to such frames shapes attitudes.

To do this, we focus on four fat frames, which speak to what kind of problem, if any, fatness is and who is to blame. Previous work has identified these frames as differently affecting weight-related attitudes and behavior (Frederick, Saguy, Sandhu, & Mann, in press; Saguy, 2013; Saguy et al., 2014).

1.1. Public Health Crisis frame

When former U.S. Surgeon General Richard Carmona called obesity the “terror within” and claimed that the “magnitude of the dilemma will dwarf 9–11 or any other terrorist attempt” (Pace, 2006), he invoked a public health crisis frame. This frame, which presents obesity as a public health crisis warranting government intervention, has become more common since the late 1990s (Kersh, 2009).

1.2. Personal Responsibility frame

According to the personal responsibility frame, bad food and exercise choices – as opposed to genetics or social factors – make people fat (Saguy, 2013; Saguy and Gruys, 2010; Saguy et al., 2010).

1.3. Health at Every Size frame

The extent to which fatness contributes to increased risk of mortality remains contested among scientists, making timely the question of how news reporting on such debates shape attitudes. Some researchers, clinicians, and activists adopt a *Health at Every Size* (HAES) frame, according to which people of all sizes can be healthy (Bacon et al., 2001). They point to evidence that weight-loss diets do not typically lead to sustained weight loss or improved

health (Mann et al., 2007). They assert that, even at the highest levels of Body Mass Index (BMI), which are associated with higher mortality, it is not clear that high BMI causes elevated mortality. Instead, third factors, such as poor nutrition, sedentary lifestyle, poverty, or weight-based stigma, could cause both higher BMI and higher mortality (Campos et al., 2006). Some public health officials have expressed concern that news dissemination of a HAES perspective could erode support for anti-obesity policies (Dodge, 2005; Marchione, 2005).

1.4. Fat Rights frame

Offering a more radical perspective, the *fat rights* movement rejects the medical terms “overweight” and “obesity,” reclaiming “fat” and “fatness” as value-neutral terms (Cooper, 1998; Harding and Kirby, 2009; Rothblum and Solovay, 2009; Wann, 1999). We employ the term “fat” here in this spirit. Fat rights books, blogs and organizations such as the National Association to Advance Fat Acceptance present fatness as a form of diversity and condemn weight-based discrimination. Fat rights activists argue that news media reporting on the “obesity epidemic” increases weight-based prejudice; in the words of one activist: “Who’s going to hire me if they think it’s so expensive to have me on their health plan? [...] A direct result of [such reporting] is an increase in the discrimination that we suffer” (Saguy and Riley, 2005: 883).

2. Framing effects on attitudes about health risk, policies, and prejudice

Views regarding whether elevated weight is evidence of sinful behavior, biological disability, or a toxic food environment affect support for various obesity policies (Barry et al., 2009). Moreover, exposure to differing messages about weight can alter support for different public policies (Gollust et al., 2013; Saguy et al., 2014). A previous study used a between-subject experimental approach to examine the effects of exposure to news reporting on two rival studies estimating the death toll associated with overweight and obesity, but only examined support for three specific obesity policies and showed mixed results (Saguy et al., 2014). The present study examines how news media exposure to these different frames shapes people’s support for 16 different obesity policies across different categories, including price raising, redistributive, and compensatory.

Consistent with the Justification-Suppression model of prejudice, previous work suggests that believing that a trait is negative and under personal control makes it more likely that people will express prejudice against those with such traits (Crandall and Eshleman, 2003). Moreover, media exposure to negative stereotypes can increase expression of prejudice, while media exposure to counter-stereotypical depictions can decrease it (Ramasubramanian, 2011). However, a 2010 review of experimental studies attempting to manipulate anti-fat attitudes revealed mixed results (Danielsdóttira et al., 2010). Of the studies reviewed, 13 out of 16 included only one experiment, a major limitation that raises questions regarding replication. A recent meta-analysis of 30 studies examining the effects of a diverse set of interventions (Lee et al., 2014) found that, overall, weight-bias interventions produced small decreases in weight bias (Hedges’s $g = -0.33$).

A multi-experiment study (Saguy et al., 2014) found that in 4 out of 5 experiments, reading an article framing fatness as a public health crisis increased expressions of anti-fat attitudes. In contrast, reading an article that adopted a fat rights frame had no effect on anti-fat attitudes in 4 out of 5 experiments (Saguy et al., 2014). The small effect sizes produced across most experimental weight-bias studies suggest that deeply-held negative cultural associations

with fatness (Vartanian, 2010) may be difficult to change as a result of brief exposures to differing frames.

3. Current research and hypotheses

To systematically investigate the effect of exposure to specific frames, this article reports on multiple experiments that replicated and extended upon each other using different samples and dependent variables. Following Saguy et al. (2014), it assesses how exposure to real news articles—rather than crafted vignettes—impacts attitudes, thus enhancing the external validity of the study. It goes beyond Saguy et al. (2014) and other work, however, by assessing the effect of the news stimuli on a wide array of policy attitudes and by examining the differential effects of exposure to multiple frames versus to a single frame. Finally, whereas previous work, including Saguy et al. (2014), relies primarily on between-subjects experimental designs, in which the researchers do not assess baseline attitudes but instead compare how *different groups* of people respond to attitudinal questions after having read different news articles, this study employs both between-subjects and mixed-design experiments. The latter compare how the same person responds differently to attitudinal questions before and after reading a specific news article. All of the participants were Southern California university students, meaning that they grew up at a time in which the public health crisis frame was dominant and were residing in a region where pressures to be thin are especially intense. As such, they offer a strong test of whether it is possible to shift their views with exposure to a new frame.

We hypothesized that people exposed to Public Health Crisis and Personal Responsibility frames would report stronger beliefs that fat is unhealthy, more support for punitive obesity-reducing public policies, and greater anti-fat attitudes than people exposed to Health at Every Size or Fat Rights frames (henceforth referred to as *Crisis*, *Responsibility*, *HAES*, and *Fat Rights* frames, respectively).

4. Experiment 1

In Experiment 1, we examined whether exposure to the Crisis and Responsibility frames vs. the HAES and Fat Rights frames shifted beliefs that being fat is unhealthy, beliefs that fat people can be healthy at their weights, support for charging fat people more for health insurance, and anti-fat attitudes.

4.1. Method

4.1.1. Participants

University students completed surveys in exchange for extra

credit in their social science courses at UCLA in 2010 (Table 1 presents sample size and demographics).

4.1.2. Procedure

Students were randomly assigned to one of two conditions: Crisis-Responsibility (reading both Crisis and Responsibility articles), or HAES-Fat Rights (reading both HAES and Fat Rights articles). After reading the news articles, they completed measures of their attitudes. Appendix A provides the full set of attitude measures. Since internal consistency of the items was high for all measures (Cronbach's $\alpha > 0.70$), we averaged the items for each measure.

Research in this area generally asks people about their attitudes toward “obesity” or “the obese” which does not allow researchers to know precisely which body type people have in mind. To better control this factor, we presented computer-generated images of men and women from the Body Matrices (Gray and Frederick, 2012) that roughly correspond to the Obese I (BMI 30–34.9) and Obese II (BMI 35–39.9) categories, and asked people to keep these body sizes in mind when reporting their attitudes (see Appendix A).

4.1.3. Stimuli

We selected real news articles that represented each frame. All news articles described findings of a recent research study. The Crisis articles (Associated Press, 2003; Hellmich, 2002, 2009) described the dangers of obesity (e.g., “Weighing too much may take as much as a decade off your life”), but did not discuss whether weight is under personal control. The Responsibility articles (Cosgrove-Mather, 2004; Daily Mail Reporter, 2009; Gardner, 2010) made brief mentions of the dangers of obesity, but primarily focused on weight being under personal control (e.g., “The rise in obesity in the United States since the 1970s was virtually all due to increased food intake”). The HAES articles (Brody, 2000; Kolata, 2007) stressed that fat is not inherently unhealthy and that fitness level matters more to health than weight (e.g., “Not only is it possible for those who are overweight or obese to be physically fit, but when the obese become fit, their death rates are about the same as lean people who are not fit”). The Fat Rights articles (Henig, 2008; Saulny, 2009) also challenged the idea that fat is under personal control and embraced the HAES message that fat is not inherently unhealthy; in addition, they condemned anti-fat prejudice and discrimination (e.g., “The only thing anyone can accurately diagnose by looking at a fat person is their own level of stereotype and prejudice about fat,” said [a weight diversity speaker and author]).

The HAES and Fat Rights articles were longer than the Crisis and Responsibility articles because they had to first present and challenge the dominant view and then present the alternative view. We dealt with this discrepancy in length by holding constant total stimuli length across the conditions: Students read 8 pages in both conditions (3 articles from each perspective in Crisis-Responsibility Frame and 2 articles from each perspective in the HAES-Fat Rights condition). The articles ranged from 1.0 to 2.0 pages long. To standardize the presentation format of all articles, we printed them on the same white background with fake website links at the top, indicating that they were taken from the Health Section of *The New York Times* website (see Appendix C for additional details on stimuli).

4.1.4. Health risk measures

We presented 8 computer-generated images of women varying in body size, from the Body Matrices (Gray and Frederick, 2012). To avoid respondent fatigue, we chose to keep the survey fairly brief; we decided to first explore attitudes towards women's bodies rather than men's bodies in the current research because women

Table 1
Sample characteristics.

	Experiment		
	1	2	3
Sample size			
Total	99	114	293
Women	74	83	222
Men	25	31	71
Age			
Mean	20.2	19.9	17.9
Standard deviation	2.8	2.9	5
Ethnicity (%)			
White	37	37	37
Asian	32	47	25
Hispanic	13	16	18
Black	6	0	4
Other	12	10	16

are more subjected than men to weight-based stigma discrimination (Puhl et al., 2008). Students indicated Yes/No if they believed a woman could be healthy at each of these weights (Appendix B). To match each image with a BMI category, using Mechanical Turk, we asked 1155 women to report their height and weight and to choose the image that best represented to their body size. Based on their reports, the images correspond with the following BMIs: Image 5 (26, or Overweight), Image 6 (31, or Obese I), Image 7 (39, or Obese II), Image 8 (45, or Obese III).

Across five items, we assessed beliefs that fat is unhealthy, and responses were recorded on a continuous bipolar adjective scale (1 = Strongly Disagree; 9 = Strongly Agree; Cronbach's $\alpha = 0.91$). This scale was also used for the measures described below.

4.1.5. Policy attitudes

We assessed people's beliefs that "fat people" should pay more for insurance (1 item).

4.1.5.1. Anti-fat stigma. We assessed anti-fat attitudes (5 items; Morrison and O'Connor, 1999) and willingness to celebrate body size diversity (3 items; $\alpha = 0.73$). In contrast to the other measures, higher scores on the body-size-diversity measure represent more positive attitudes toward fat. A third measure (workplace prejudice and discrimination, 3 items) is not presented for this and subsequent studies because of low internal reliability.

4.2. Results

We conducted a series of one-way between subjects ANOVAs with Article Type (Crisis-Responsibility vs. HAES-Fat Rights) as the independent variable and the continuous measures as the dependent variables. We report whether comparisons were significant at the $p < 0.05$, 0.01, or 0.001 levels, and report Cohen's d for all mean comparisons, which describes the magnitude of the difference between the two groups. A commonly used guide to interpreting Cohen's d is: close to zero ($d \leq 0.10$) small (0.11–0.35), medium (0.36–0.65), and large (0.66–1.00), or very large (>1.00) (Hyde, 2005). When comparing proportions for perceptions of whether women could be healthy at different sizes, we conducted Fisher Exact Tests and reported Phi coefficients.

4.2.1. Health risk

As shown in Table 2 and consistent with our hypothesis, Crisis-Responsibility participants expressed stronger support for the idea that fat is unhealthy than did HAES-Fat Rights participants, and the effect size was very large ($d = 1.60$). Also consistent with our

hypothesis, Crisis-Responsibility participants were significantly less likely than HAES-Fat Rights participants to believe an image of a woman in the Obesity I category (image 6) could be healthy at her weight (27% vs. 65%). However, contrary to our hypothesis, there were no statistically significant group differences in views about whether the bodies depicted by images 5, 7, or 8 could be healthy at their size (Fig. 1).

4.2.2. Policy attitudes and anti-fat stigma

Consistent with our hypothesis, Crisis-Responsibility participants expressed stronger support for charging fat people more for insurance, more agreement with anti-fat attitudes, and less celebration of body size diversity. The effect sizes were medium to large (Table 2).

5. Experiment 2

In the second experiment we used a mixed design, assessing baseline attitudes before reading one of the two sets of articles and again after reading the articles. We also added measures of support for Compensatory policies, aimed at helping or protecting citizens (e.g., prohibiting advertisers from advertising sugary foods during children's shows), Price-Raising policies, which punish people financially for being obese or for unhealthy behaviors that can lead to obesity (e.g., tax on junk food), and Redistributive policies, which require taxes to implement (e.g., government creating fitness summer camps for kids) (Barry et al., 2009).

5.1. Method

5.1.1. Participants, procedure, and stimuli

On the first day of their Introductory Psychology class in 2011 at UCLA, in exchange for course credit, university students completed a survey on a variety of topics, including measures assessing attitudes toward fatness. Some of these students ($N = 114$) signed up for a study on "attitudes about issues in the news," conducted 1–2 weeks later, in exchange for extra credit (see Table 1). The procedure and stimuli was the same as in Study 1.

5.1.2. Health risk and anti-fat stigma measures

These measures were the same as in Study 1; Cronbach's α s for each measure at baseline and post-exposure were: health risk ($\alpha = 0.79$; 0.92), anti-fat attitudes ($\alpha = 0.74$; 0.80), celebrate size diversity ($\alpha = 0.68$; 0.77).

Table 2
Framing effects on weight-related attitudes, Experiments 1–3.

	Experiment 1			Experiment 2			Experiment 3		
	Personal responsibility and crisis	HAES and fat rights	Vs.	Personal responsibility and crisis	HAES and fat rights	Vs.	Personal responsibility or crisis	HAES or fat rights	Vs.
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>d</i>	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>d</i>	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>d</i>
Fat is unhealthy	7.9 (1.2)	5.9 (1.3)	1.60***	7.8 (1.3)	6.0 (1.5)	1.28***	7.9 (0.9)	6.1 (1.1)	1.79***
Fat should pay more insurance	4.4 (2.5)	2.8 (2.0)	0.71***	4.8 (2.3)	3.4 (2.0)	0.65***	3.5 (2.4)	2.4 (1.7)	0.53***
Anti-fat attitudes	5.7 (1.1)	5.0 (1.2)	0.61**	5.6 (1.4)	4.7 (1.5)	0.62***	5.7 (1.5)	4.7 (1.4)	0.69***
We should celebrate body size diversity	4.2 (1.6)	5.4 (1.5)	−0.77***	4.1 (1.5)	5.7 (1.5)	−1.07***	4.1 (1.5)	5.6 (1.9)	−0.89***

Note. In this and subsequent tables, positive effect sizes (Cohen's d) in the "Vs." column indicate that the mean for the first condition was higher than the mean for the second condition. For example, in Experiment 1, people who read the Personal Responsibility and Public Health Crisis articles reported more prejudice than people who read the Safe and Fat Activist articles ($d = 0.61$), and this effect was moderate to large in size. Negative effect sizes indicate that the mean for the first condition was lower than the mean for the second condition (e.g., $d = -0.77$). In Experiment 2, the wording for the insurance item was taken from Barry et al. (2009).

** $p < 0.01$. *** $p < 0.001$.

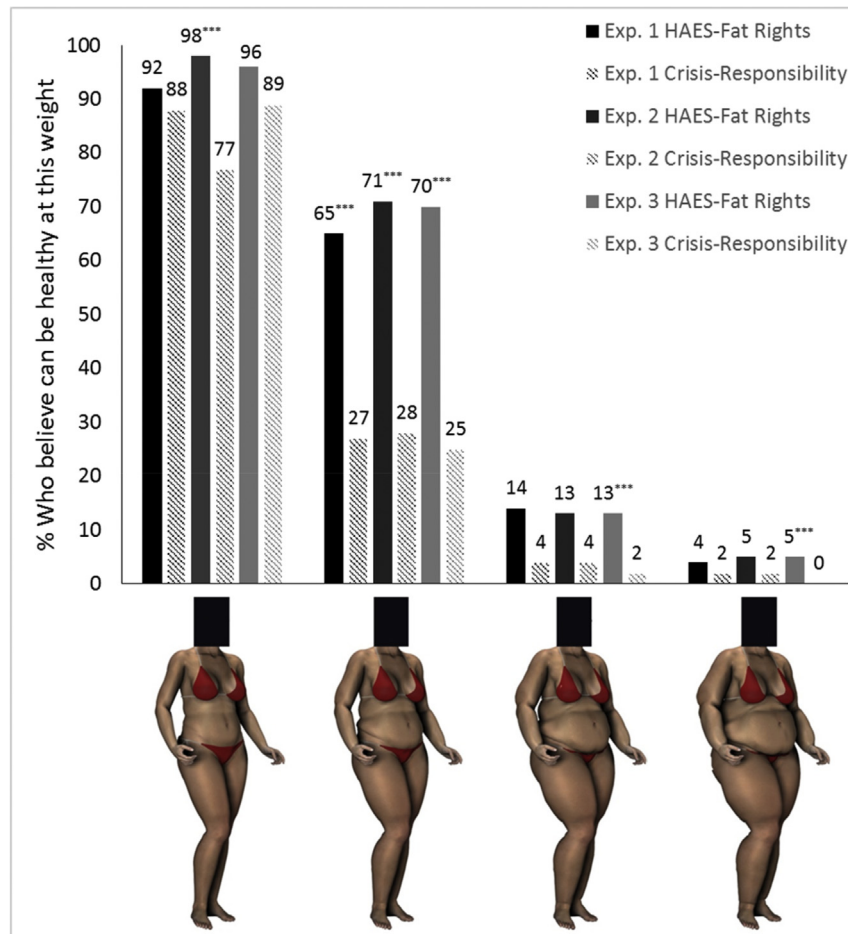


Fig. 1. Beliefs that women can be healthy at different weights, Experiments 1–3.

5.1.3. Policy items

We assessed support for all 16 of the policies suggested by Barry et al. (2009). These policies can be grouped into three categories. The first is Compensatory policies, which are aimed at helping or protecting citizens (Items 1–6; e.g., “Foods with high sugar or fat content should be required to display mandatory warning labels indicating these foods may be addictive;” $\alpha = 0.72; 0.80$). The second is Price-Raising policies, which tend to be more punitive by punishing people financially for being obese or for unhealthy behaviors that can lead to obesity (Items 7–9; “Health insurers should be required to charge higher premiums for policyholders who are obese, allowing them to reduce premiums for everyone else;” α s: 0.55; 0.70; 0.74). We also analyzed the health insurance items separately from the other items, replacing the health insurance item from Experiment 1. Third, Redistributive policies require taxes to implement (Items 10–16; “Government funds should be used to establish a national network of obesity treatment programs modeled on treatment for other addictions” α s: 0.80; 0.86). In addition to examining each subscale, we also examined attitudes towards each specific policy.

5.2. Results

5.2.1. Replicating and extending results of Experiment 1

As a first step, we examined the effect of Article type on attitudes using a series of one-way between-subjects ANOVAs, thereby replicating the analyses from Experiment 1. Consistent with

Experiment 1 and our hypothesis, all comparisons were statistically significant and in the predicted direction, with Crisis-Responsibility participants less likely than HAES-Fat Rights participants to believe an image of a woman (image 6) in the lower range of obesity could be healthy at her weight (28% vs. 71%, Fig. 1).

As a second step, to test whether participants changed their attitudes after readings the articles, we conducted a series of Mixed ANOVAs, with Article Type as the between-subjects independent variable and attitudes at Baseline vs. attitudes at Post-Exposure as the within-subjects independent variable. We tested if, from baseline to post-exposure, attitudes would become more negative for Crisis-Responsibility participants and more positive for HAES-Fat Rights participants.

Consistent with our hypothesis, all interactions were significant (all p s < 0.005). As shown in Fig. 2, the changes were in the direction of Crisis-Responsibility participants expressing more negative attitudes and HAES-Fat Rights participants expressing less negative attitudes, with the exception of beliefs that being fat was unhealthy.

5.2.2. Policy attitudes

In the between-subjects ANOVAs, exposure to different news articles had no effect on support for the set of Compensatory policies ($d = -0.12$) or Redistributive policies ($d = 0.06$). Consistent with our hypothesis, Crisis-Responsibility participants were more likely than HAES-Fat Rights participants to express support for Price Raising policies ($d = 0.41, p < 0.001$). There were significant

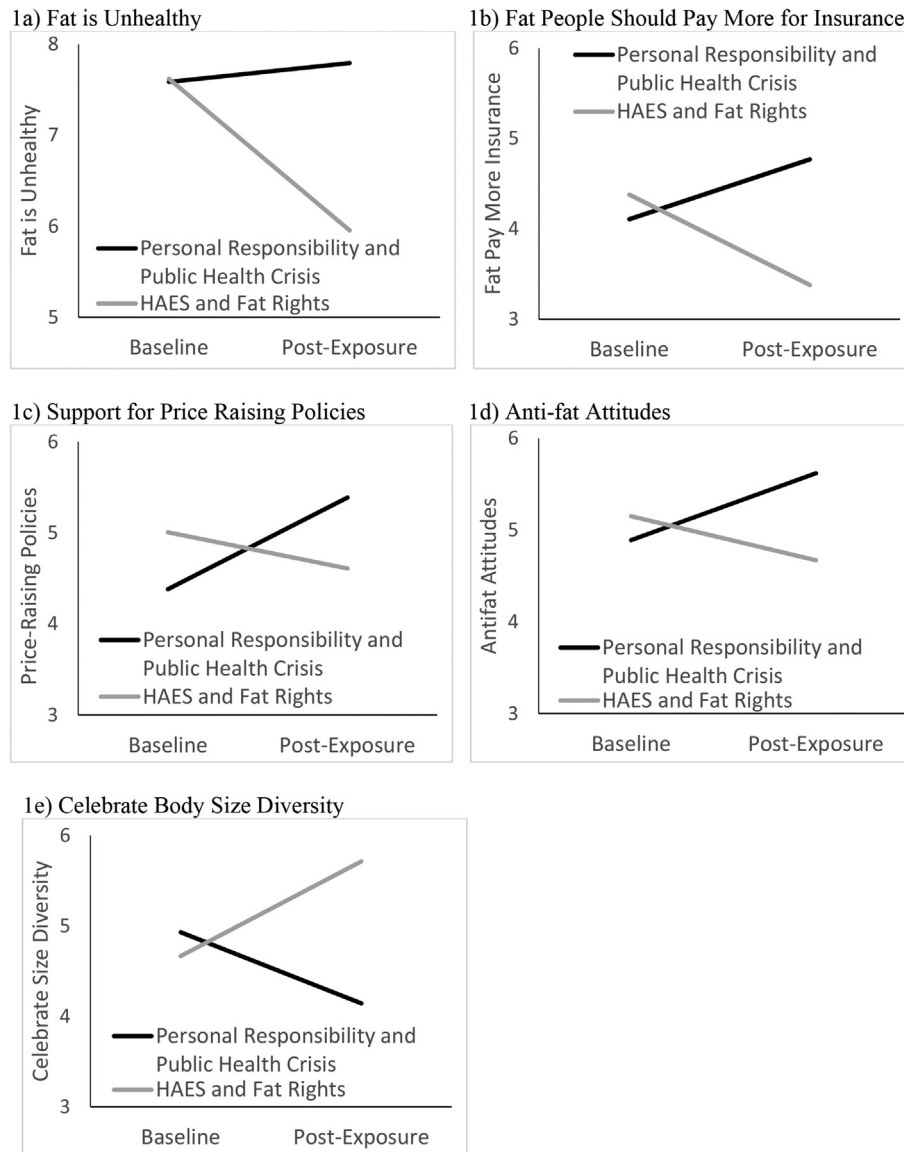


Fig. 2. Framing effects on post-exposure attitudes compared to baseline, Experiment 2.

effects on three of the sixteen policies. Crisis-Responsibility participants expressed greater support for one Redistributive policy (“Government funds should be used to establish a national network of obesity treatment programs modeled on treatment for other addictions,” $d = 0.49$, $p < 0.01$), greater support for one price-raising policy (“Health insurers should be required to charge higher premiums for policyholders who are obese, allowing them to reduce premiums for everyone else,” $d = 0.65$, $p < 0.001$), and less support for one Compensatory policy (“Obese individuals should receive the same legal protections and benefits offered to people with other physical disabilities,” $d = -0.38$, $p < 0.05$).

Mixed ANOVAs revealed no statistically significant interactions between Article Type and Change in Attitudes from Baseline for Compensatory or Redistributive policies. Consistent with our hypothesis, however, there was a statistically significant interaction for the Price-Raising policies ($p = 0.003$). Crisis-Responsibility participants reported more and HAES-Fat Rights participants reported less support for these policies compared to their baseline scores. Compared to baseline scores, Crisis-Responsibility articles had a stronger impact on support ($d = 0.47$) than HAES-Fat Rights

articles ($d = -0.16$).

6. Experiment 3

The first two experiments suggested it is possible to shift a variety of attitudes through exposure to differing fat frames. In this final experiment, we added a control condition in which participants read articles on a health issue (Cancer) that did not mention obesity. Comparing the effect of each of the four frames to the control allowed us to determine the specific frames driving the observed media effects.

6.1. Method

6.1.1. Participants, procedure, and measures

Students in an interdisciplinary class received extra credit for completing the experiment in 2011 at UCLA (see Table 1). The procedure was similar to Study 1, but we separated participants into 5 conditions: Crisis, Responsibility, HAES, Fat Rights, or Control. The experiment included measures of health risk ($\alpha = 0.82$), anti-

fat attitudes ($\alpha = 0.77$), celebrating size diversity ($\alpha = 0.78$), and the attitudes towards insurance policy item from Experiment 1.

6.2. Results

6.2.1. Replicating and extending results from Experiment 1

First, to partially replicate the analyses from Experiment 1, we collapsed the Crisis and Responsibility participants into one group and the HAES and Fat Rights participants into a second group to create one independent variable with two levels. Consistent with the results and pattern of effect sizes from Experiment 1 and with our hypothesis, all comparisons were statistically significant and in the predicted direction (Table 2). Also consistent with Experiments 1 and 2, Crisis-Responsibility participants were less likely than HAES-Fat Rights participants to believe that women falling into the Obesity I category (image 6) could be healthy at their size (25% vs. 70%). In this experiment, they were also less likely to believe women in the Obesity II and III categories (images 7 and 8, respectively) could be healthy at their sizes (Fig. 1).

6.2.2. Comparisons of individual frames to controls

We conducted one-way Between Subjects ANOVAs to examine whether there was an overall effect of specific Article Type (Crisis vs. Responsibility vs. HAES vs. Fat Rights vs. Control) on the dependent variables. We found a significant main effect of Article Type for all dependent variables ($ps < 0.001$). We tested the specific differences between each condition with post-hoc LSD tests. Fig. 3 shows the mean attitudes for each condition. Table 3 provides comparisons of each condition to each other, represented by Cohen's *d*. Fisher's Exact Tests also revealed there was a significant effect of Article Type on beliefs about perceived health of images of women in the Obesity I, II, and III categories (images 6–8).

Consistent with the previous experiments and our hypothesis, compared to Control participants, both Crisis and Responsibility participants reported more beliefs in the health risks of being fat and more anti-fat attitudes. Compared to Control participants, neither Crisis nor Responsibility participants differed in attitudes about charging fat people more for insurance (see Columns 1–2 in Table 3). Compared to Control participants, Responsibility and Crisis participants were both less likely to report that an image of a woman in the Obesity I category (image 6) – but not in the Obesity

II or III categories (images 7–8) – could be healthy ($ps < 0.05$).

Consistent with our hypothesis, both HAES and Fat Rights participants reported less agreement that being fat is unhealthy and that fat people should pay more for insurance. Also consistent with our hypothesis, compared to Control participants, Fat Rights participants reported lower agreement with anti-fat attitudes and more willingness to celebrate body size diversity. However, contrary to Hypothesis 1, the same did not hold true for the HAES participants. Consistent with our hypothesis, Fat Rights – but not HAES – participants were more likely to agree that images of women in the Obese I ($p < 0.005$), Obese II (marginally significant; $p = 0.054$), and Obese III ($p < 0.05$) categories (images 6–8) could be healthy.

7. General discussion

7.1. Key findings

Consistent with our hypothesis, across all three experiments, exposure to competing frames consistently affected beliefs regarding whether it is unhealthy to be fat. Crisis and Responsibility frames increased perceived health risk (except compared to baseline in Experiment 2, possibly due to the fact that baseline attitudes were near maximum agreement to start). In contrast, HAES and Fat Rights frames reduced perceived risk.

Compared to those exposed to the HAES-Fat Rights Frame, people exposed to the Crisis and Responsibility frames expressed more support for charging fat people more for health insurance, but these frames had no impact on support for compensatory or redistributive policies. These findings point to the potential difficulty of shifting non-punitive policy attitudes.

The finding that – compared to the Control, HAES, and/or Fat Rights participants – Crisis and/or Responsibility participants expressed more support for *punitive* obesity policies is consistent with this group's greater willingness to express anti-fat attitudes and decreased willingness to celebrate body size diversity. It also suggests that dominant news portrayals of obesity may be undermining the solidarity – and, by extension, willingness to pool financial responsibility for health risk – that people of “normal” weight feel with those categorized as overweight or obese. The general conclusion from these experiments is that the most

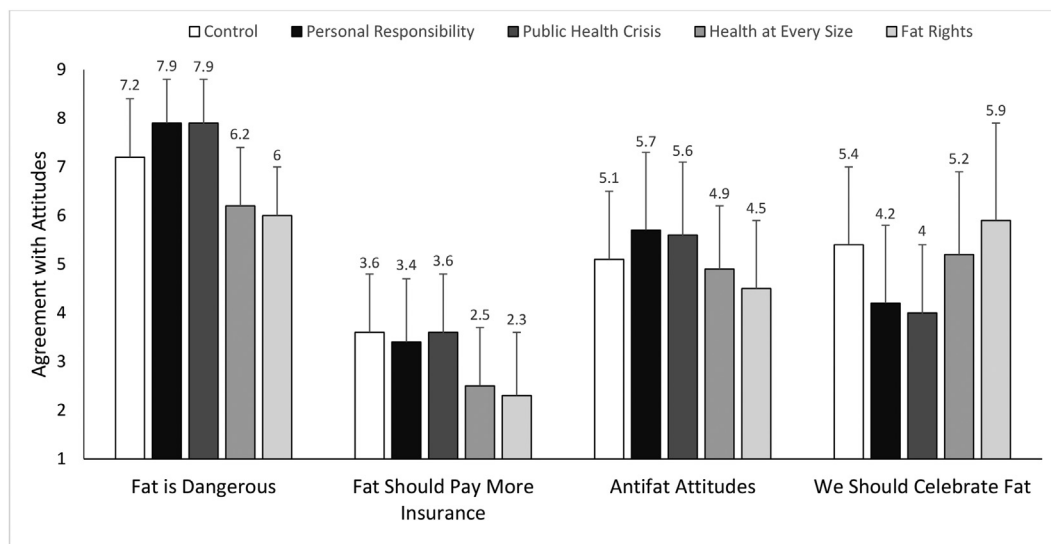


Fig. 3. News media effects on attitudes towards fat men and women, Experiment 3. Note. Error bars represent standard deviations. Main effects for the independent variable News Article Type on all of the DVs were significant ($ps < 0.001$). Comparisons between specific conditions (e.g., personal responsibility for anti-fat attitudes vs. control) appear in Table 3.

Table 3
Framing effect sizes (Cohen's *d*s) for attitudes towards fat men and women, Experiment 3.

	Responsibility vs. control <i>d</i>	Crisis vs. control <i>d</i>	HAES vs. control <i>d</i>	Fat rights vs. control <i>d</i>	Responsibility vs. crisis <i>d</i>	Responsibility vs. HAES <i>d</i>	Responsibility vs. fat rights <i>d</i>	Crisis vs. HAES <i>d</i>	Crisis vs. fat rights <i>d</i>	HAES vs. fat rights <i>d</i>
Fat is unhealthy	0.70***	0.63***	−0.84***	−1.06***	0.08	1.65***	1.95***	1.56***	1.85***	0.17
Fat should pay more insurance	0.08	0.00	−0.51**	−0.62**	−0.08	0.43*	0.54**	0.53**	0.64***	0.10
Anti-fat attitudes	0.36**	0.34*	−0.18	−0.43**	0.03	0.54**	0.77***	0.53***	0.77***	0.26
We should celebrate body size diversity	−0.74***	−0.90***	−0.08	0.31*	0.12	−0.64***	−0.10***	−0.79***	−1.10***	−0.37**

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

common fat frames in the news media increase prejudice and support for punitive health policies, while failing to change support for non-punitive health policies.

Exposure to articles presenting a HAES frame was not sufficient to change these attitudes. This extends previous research that found that exposure to a *weak* HAES frame, embedded within an article about the number of annual excess deaths associated with overweight and obesity, was insufficient to reduce expression of anti-fat prejudice (Saguy et al., 2014) by showing that the same pattern holds for stronger HAES frames. In contrast with Saguy et al. (2014), we found that exposure to the more radical Fat Rights frame *did* reduce expressed prejudice and increased willingness to celebrate body size diversity. This may be due to the fact that the participants in the current study were exposed to two—compared to only one—articles presenting a Fat Rights frame or because the real articles we used were especially compelling. More surprising, only exposure to a Fat Rights frame shifted attitudes about whether images 6–8, of women in the Obesity I, II, and III categories, could be healthy at their sizes, whereas exposure to the HAES frame alone did *not* produce this shift in attitudes.

7.2. Strengths, limitations, and avenues for future research

We undertook these studies as an initial look at whether it is possible to change people's attitudes through exposure to distinct cultural accounts embedded in real news articles. Compared to previous research (Daniélsdóttira et al., 2010; Lee et al., 2014; Saguy et al., 2014), exposure to the Fat Rights frame had a stronger and more consistent effect on diminishing the expression of anti-fat prejudice and discrimination. This finding may be due to the fact that previous research in this area has generally relied upon brief articles or vignettes to present differing frames, whereas we exposed people to several news articles. This use of more immersive and real-world stimuli may partially explain the discrepancy. Still, it would be useful to show that vignettes can shift the attitudes assessed in the current study.

One notable limitation of these experiments was the use of university students as research subjects. College students, however, are a large and relevant population to study, and are often a target of weight-based interventions. Furthermore, previous studies obtained similar findings using a broader sample of adults (Frederick et al., *in press*; Saguy et al., 2014). Also, our sample size does not permit us to examine whether the effects of exposure to competing frames have different effects depending on gender, race, or socio-economic status. Given previous research in cultural sociology showing how the reception of media – or other – texts is shaped by preexisting worldviews that vary by social factors like race (Hunt, 1999), future work should replicate this research with large community samples that permit a robust comparison by race. The issue of weight is not only racialized (Thompson, 1994) but profoundly gendered and classed as well (Fikkan and Rothblum, 2011; Saguy, 2012; Saguy and Gruys, 2010), which further suggests that it

would be valuable to replicate these results in a sample that allows for a comparisons by ethnicity, socio-economic status, and gender of both the people participating in the study as well as those depicted in the study. The current research examined how exposure to competing frames impacted beliefs about women's body types. Past research has found, however, that men also face anti-fat stigma in popular media (Fouts and Vaughn, 2002; Greenberg et al., 2003; Himes and Thompson, 2007) and report experiencing anti-fat stigma (Puhl and Brownell, 2006), which may contributed to documented concerns that many men have with their weight (Frederick et al., 2007a; Frederick et al., 2007b; Frederick et al., 2006; Frederick & Essayli, *in press*). Future research should examine how competing frames in the news media impact attitudes towards fat men.

8. Conclusion

Using an experimental paradigm, this research examined how exposure to specific fat frames shapes attitudes about health, support for health policy, and may inadvertently worsen prejudice and discrimination. As such, it responds to calls for research into the unintended effects of public health messages (Gollust et al., 2013; Hoyt et al., 2014). Our finding that news reporting on obesity as a public health crisis brought on by bad personal choices may worsen anti-fat prejudice is worrisome, given the ubiquitous nature of such media messages (Saguy, 2013) and evidence that weight-based stigma negatively affects health (Muennig and Bench, 2008; Puhl and Latner, 2007), equal access to employment, earnings, education, and medical care (Puhl and Heuer, 2009).

In the contemporary U.S., a visceral dislike of fatness makes anti-fat attitudes persist even after people learn that one can be fat and healthy. Only a more radical fat rights approach, in which weight discrimination is framed as a civil rights issue, was able to mitigate anti-fat prejudice and promote a celebration of body size diversity. Given that discrimination and prejudice are both independent health risks and also barriers to collective solidarity, whereas fat pride may buffer against the negative health consequences of anti-fat stigma (Hall and Lamont, 2009), disseminating health information will not be sufficient to promote a culture of health; we must also foster empathy and social justice.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.socscimed.2015.12.031>.

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