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# Decreasing Obesity and Obesity Stigma: Socio-Demographic Differences in Beliefs about Causes of and Responsibility for Obesity

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**Abstract:** Obesity is a stigmatized condition, and research has shown that obesity stigma varies based on the perceived cause of obesity. It is important that public health professionals develop policy and campaigns that resonate with specific populations while avoiding an increase in harmful stigma. This study identifies socio-demographic differences in causal attributions of obesity and beliefs about responsibility for obesity. Using data from a survey of 923 people in the United States conducted by ABC New/Time Magazine, attributions of cause and responsibility are analyzed using Ordinary Least Squares regression. Beliefs about cause and responsibility fall on a continuum from primarily individual cause and personal responsibility to primarily societal cause and social responsibility. In general, women and minority racial groups are found to be more likely to identify causes over which individuals have little control and place responsibility on societal factors than men and Whites. People in higher income categories are found to be more likely to identify individual responsibility for obesity. Findings from this study can be used to shape information and public health policy to address obesity in ways that will not exacerbate obesity stigma as well as to create programs that will be customized for specific communities based on their existing beliefs.

**Keywords:** obesity; stigma; public health

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## 1. Introduction

As obesity rates in the U.S. have increased initiatives have sprung up to address the issue. While seeking to reduce obesity, public health programs risk increasing stigma against obese people as they vilify the disease. Beliefs about cause and responsibility have been shown to affect attitudes about obesity and the amount of prejudice displayed towards obese persons [1–4]. This study seeks to identify differences in causal attributions of obesity and beliefs about responsibility for obesity. Attributions of cause and responsibility fall on a continuum ranging from primarily individual causes and personal responsibility to primarily social causes and societal responsibility. Examining the ways in which populations differ in obesity perspectives will allow for more targeted public health programs that are careful not to increase harmful stigma.

## 2. Background

In the last decade, obesity rates rose significantly before leveling off with more than one-third of Americans as obese [5]. These changes have significant consequences. Obesity is associated with many negative health outcomes such as coronary heart disease, type 2 diabetes, some cancers, high blood pressure, high cholesterol, stroke, liver and gallbladder disease, sleep apnea and respiratory problems, osteoarthritis, and gynecological problems [5,6], though not all obese persons will experience health problems [7–10]. Obesity related conditions can have a significant impact on health care

costs for individuals and the government [11]. With the implementation of the Affordable Care Act, more people have access to healthcare and may receive obesity diagnoses and treatment plans for the first time. This could impact health care costs related to obesity as the number of people seeking treatment increases and cause individuals to develop a negative self-concept as they receive discouraging diagnoses.

In addition to medical consequences, being overweight or obese has social repercussions. Based on Goffman's definition of stigma as a bodily condition that reveals negative moral traits, obesity [12] can be regarded as a stigmatized condition as a result of the way many people perceive obesity as a personal failing. The social stigma associated with obesity can make it difficult for obese individuals to find work, form relationships, or to have a positive self-image [1,13–16].

*Variable experiences:* Some groups are affected more than others and in different ways culturally, socially, and medically by obesity. For instance, risk for obesity varies by race and sex with African American women at highest risk, followed by White women, African American men, and White men, even when controlling for socioeconomic status [17].

Culturally, women experience significantly more pressure to monitor their weight than men [18]. In general, males have more negative attitudes toward overweight persons than females [1]. More discrepancies are found in attitudes about weight in the workplace. Obese women of all races earn less than average weight women [13,14,19] and may be regarded poorly compared to normal weight job candidates [20]. Obese Hispanic men experience a wage differential but men of other races do not [19]. Further, research has shown that over time obese men may be able to overcome a wage gap with normal weight men, but the same is not true for obese women [21].

Medically, some studies have shown that all obese individuals experience greater risk of all-cause mortality and cardiovascular mortality compared to people who have a normal weight, and women's risk is higher than men's [22,23]. The effect of Body Mass Index (BMI) on conditions like hypertension and diabetes has been found to vary by race, as well [17]. Other studies demonstrate that among those that are physically active or fit, there is not an increased health risk associated with obesity [7,8], and that overweight and obese patients may be more likely to survive heart incidents or heart procedures [9,10]. These examples demonstrate that the social and medical experience of being obese varies by socio-demographic group, and establish a need for a more intersectional approach to understanding obesity that account for many dimensions of identity including but not limited to body size.

### 3. Cause and Responsibility

A major obstacle in ameliorating obesity is the lack of an easily identifiable cause. For the purposes of this study, a cause is defined as any factor that contributes to an individual becoming obese. Causes are categorized as high agency, choices made by the individual, and low agency, societal factors. Examples of high agency causes include making poor food choices, and not getting enough exercise; examples of low agency causes include food advertising, and an economy that favors two-earner households leaving little time for food preparation.

There is also disagreement about who is responsible for obesity rates. For the purposes of this study, a responsible party is defined as one that impacts weight related actions. Responsibility is divided into two categories: individual and societal. Individual responsibility is defined as a person's uninfluenced choice, while societal responsibility is defined as social forces acting on the individual. Individual responsibility is usually approached as "will-power" while societal responsibility looks at larger public issues like public policy that influences food availability. For example, zoning laws that restrict where a grocery can be built, or agricultural subsidies that encourage the growth of certain crops. A better understanding of perceptions of both cause and responsibility is key in developing effective anti-obesity programming to reduce negative health and societal outcomes.

*Cause:* Puhl and Brownell emphasize that obesity stigma arises from a belief that obesity is caused by personal behaviors, and that obesity is treated more like deviant behaviors (e.g., stealing and child

abuse) rather than medical conditions (e.g., cancer and allergies) [24]. This causal belief persists in spite of scientific data that support a variety of genetic predispositions and gene-environment interactions to a having a body of a certain shape and weight [3,25]. Further, a belief in personal controllability of weight persists in spite millions of consistently failed diet programs, which counter-indicate weight as controllable [3,26]. Obesity results in a societal “moralistic diagnosis” in which weight is treated more like poor hygiene, an individual problem one should privately resolve through better habits [4,26].

Belief in controllability is an important contributor to negative attitudes toward the obese [2], and studies have shown that adjusting beliefs about controllability by introducing alternative causes, like a thyroid condition, can improve perceptions of obese individuals [2]. This willingness to accept alternate explanations suggests that beliefs about obesity are malleable, and that drawing attention to obesity does not necessarily result in increasing obesity stigma.

*Responsibility:* Brownell *et al.* demonstrate several ways in which obesity is also strongly impacted by public policies and other social factors that influence the choices available to individuals including taxes on certain foods or regulating unhealthy ingredients [2]. Environmental factors, like the availability of healthy food in neighborhoods, and nutrition education in schools, will have an impact on the health of a population [27]. In addition, marketers and manufacturers also bear responsibility for shaping the food environment through the information included on packaging, the portions in which food is packaged, and the demographic groups to whom products are marketed [28]. These are just a few examples of the many ways in which the food environment becomes a factor in weight.

There is ample data to support multiple causes and responsible parties in the obesity crisis [2,3,27,28]. Emphasizing that obesity is a complicated problem with both individual and societal components is an important step in developing solutions that do not stigmatize obese individuals.

### 3.1. Research Questions

The above research suggests that social norms regarding rates of obesity, obesity stigma, and public health consequences vary systematically along socio-demographic lines. It follows that socio-demographic divisions would exist in causal attribution and attribution of responsibility. However, there is little discussion around the role of socio-demographic factors in public attitudes about obesity. The following investigation seeks to discover these divisions and to understand how public health interventions may have distinct impacts on different socio-demographic groups. The following questions will be addressed:

- (1) Are there variations in attribution of cause for obesity by race, sex, BMI category, and income regarding how much of the obesity problem is related to high agency or low agency factors?
- (2) Are there variations in attribution of responsibility for obesity in terms of individual responsibility *vs.* societal responsibility by race, sex, BMI category and income?

### 3.2. Sample

The data for this study were collected for an ABC News/Time Magazine poll designed to assess public opinion in the United States regarding obesity related topics [29]. TNS Intersearch was utilized by ABC News/Time Magazine to conduct Random Digit Dialing telephone interviews with a sample of adults age 18 and over.

Data were weighted using U.S. Census data so that results can be used to make inferences about the general population. After removing non-responses and other missing data, 923 of the original 1202 respondents were included in this analysis. Bivariate statistics reveal no significant differences between missing and non-missing data based on sex, BMI category, race, or income.

### 3.3. Measures

Respondents were asked to rank each item below on a Likert scale for its importance as a cause of obesity. For each question, topics were presented in a random order to avoid ordering effects.

The “don’t know/no opinion” responses were dropped using listwise deletion. Responses were grouped as high agency, indicating an individual has primary control of weight, or low agency, indicating an individual has little control of weight. This was done by using the “rowtotal” command in STATA to create a scale indicative of how strongly each response type is supported within each category. These categories serve as dependent variables.

#### High Agency

- Poor eating habits
- Watching too much television
- Not getting enough physical exercise

#### Low Agency

- Restaurant portions that are too large
- Genetics, or a family history
- Lack of information on good eating habits
- Lack of information about food content
- The marketing of sweets and other high calorie foods to children
- The cost of buying healthy foods

To address the second research question, survey respondents used a Likert scale to rank the items below in terms of how much responsibility each group bears for the nation’s obesity rate. The responses were grouped into categories using the “rowtotal” syntax described above for individual responsibility and societal responsibility and used as dependent variables.

#### Individual Responsibility

- Individual Americans in their choice of diet and lack of exercise

#### Societal Responsibility

- Manufacturers of high-calorie packaged or processed foods
- Marketers and advertisers of high-calorie packaged and processed foods
- Fast-food restaurants
- Government policies and laws on food content and marketing
- Schools that allow high-calorie snacks and sweets

Independent variables include sex as a binary variable with female = 1 male = 0; race coded into a set of three dummy variables for African American, Hispanic, and “other races”, with White being the omitted category. BMI category is also a set of dummy variables based on the World Health Organization scale of a BMI less than 18.5 as underweight, 18.5–24.9 as normal, 25–29.9 as overweight and 30+ as obese, with normal weight as the omitted category [30]. Household income was collected in unequal categories of less than \$20,000, \$20,000–\$35,000, \$35,000–\$50,000, \$50,000–\$75,000, \$75,000–\$100,000, and greater than \$100,000. Categories are coded to the midpoint. Age is included as a continuous variable.

### 3.4. Analysis

The effects of socio-demographic variables on causal attributions (high agency *versus* low agency), attribution of responsibility (individual and societal) were examined using OLS regression. Variance inflation factors did not reveal problems with multicollinearity. Interaction terms were initially included to explore potential moderating relationships, but these were non-significant and were excluded from final models.

### 3.5. Results

Table 1 provides descriptive statistic for the data. Slightly more males than females participated in this study, 52.55% and 47.45%, respectively. By BMI category, 2.71% self-reported as underweight, 43.99% as normal weight, 36.18% as overweight, and 17.33% as obese. The majority of survey participants were White (80.72%), followed by African Americans (8.02%), Hispanics (4.77%), and those who identified as “other” (6.5%). Income distribution includes 12.32% earning less than \$20,000 per year, 17.19% earning \$20,000–\$35,000 per year, 17.65% earning \$35,000 to \$50,000 annually, 18.66% earning \$50,000–\$75,000 annually, 13.14% earning \$75,000 to \$100,000 per year, and 15.99% earning greater than \$100,000 per year.

**Table 1.** Descriptive Statistics (ABC News/Time Magazine 2004 N = 923) [31].

	Percentage	Mean	Standard Deviation	Range
<i>Sex</i>				
Female	47.45	-	-	-
Male	52.55	-	-	-
<i>BMI Category</i>				
Underweight	2.71	-	-	-
Normal	43.99	-	-	-
Overweight	36.18	-	-	-
Obese	17.33	-	-	-
<i>Race</i>				
White	80.72	-	-	-
African American	8.02	-	-	-
Hispanic	4.77	-	-	-
Other	6.50	-	-	-
<i>Income in Thousands</i>				
<20	12.32	-	-	-
20–35	17.19	-	-	-
35–50	17.65	-	-	-
50–75	18.66	-	-	-
75–100	13.14	-	-	-
100+	15.99	-	-	-
<i>Age</i>		44.72	15.35	18–85
<i>Cause</i>				
High Agency	-	8.73	1.54	3–12
Low Agency	-	11.74	2.78	5–20
<i>Responsibility</i>				
Individual	-	3.57	0.78	1–5
Societal	-	14.26	4.11	5–25

Analyses reveal that beliefs about cause and responsibility for obesity vary by socio-demographic category. In particular, sex, race, income, and age are correlated with differing beliefs. Table 2 shows that females report higher levels of agreement with both high agency ( $b = 0.28, p < 0.01$ ) and low agency causes ( $b = 1.00, p < 0.001$ ) when compared to men. They are also more likely than men to attribute responsibility to social factors rather than individual responsibility ( $b = 0.74, p < 0.01$ ). African Americans are less likely than Whites to believe obesity is attributable to high agency causes ( $b = -0.69, p < 0.001$ ) but more likely to believe that it is due to low agency causes ( $b = 1.27, p < 0.001$ ). This is consistent with findings that African Americans are more likely than Whites to place responsibility for obesity on society rather than individuals ( $b = 1.82, p < 0.01$ ). Hispanics are also more likely than Whites to believe that low agency causes are primary contributors to obesity ( $b = 1.45, p < 0.01$ ). People of other races are more likely than Whites to endorse low agency causes ( $b = 1.22, p < 0.01$ ), and,

consistent with that belief, assign responsibility to societal factors more often than Whites ( $b = 1.46$ ,  $p < 0.01$ ).

**Table 2.** OLS Regression of Beliefs about Causation and Responsibility for Obesity in the U.S. (N = 923).

	Causation		Responsibility	
	High Agency	Low Agency	Individual	Societal
Female <sup>1</sup>	0.28 (0.10) **	1.00 (0.18) ***	0.05 (0.05)	0.74 (0.28) **
BMI Category <sup>2</sup>				
Underweight	−0.43 (0.31)	0.30 (0.55)	−0.20 (0.16)	−0.46 (0.83)
Overweight	−0.18 (0.12)	−0.12 (0.20)	−0.03 (0.06)	−0.21 (0.31)
Obese	−0.15 (0.14)	0.09 (0.25)	−0.09 (0.07)	0.13 (0.38)
Race <sup>3</sup>				
Black	−0.69 (0.19) ***	1.27 (0.33) ***	−0.07 (0.10)	1.82 (0.50) ***
Hispanic	0.23 (0.24)	1.45 (0.42) **	−0.15 (0.12)	1.24 (0.64)
Other	−0.17 (0.21)	1.22 (0.36) **	−0.12 (0.10)	1.46 (0.55) **
Income	0.00 (0.00)	−0.01 (0.00) **	0.003 (0.01) ***	−0.00 (0.0)
Age	0.00 (0.00)	0.02 (0.01) **	0.00 (0.00)	0.03 (0.00) **
F	3.90 ***	9.60 ***	2.86 **	3.50 ***
R <sup>2</sup>	0.04	0.09	0.02	0.03

Standard Errors in Parenthesis; <sup>1</sup> Omitted category is male; <sup>2</sup> Omitted category is normal weight; <sup>3</sup> Omitted category is White; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

Income category is also correlated with opinions about obesity. Higher income is associated with decreased belief that low agency causes play an important role in obesity ( $b = -0.01$ ,  $p < 0.01$ ). Higher income also increases the predicted likelihood of assigning responsibility to an individual for his/her obesity ( $b = 0.003$ ,  $p < 0.001$ ). In addition, for each one-year increase in age, individuals are more likely to recognize low-agency causes of obesity ( $b = 0.02$ ,  $p < 0.01$ ). Likewise, getting older increases likelihood of recognizing societal responsibility for obesity ( $b = 0.03$ ,  $p < 0.01$ ).

#### 4. Discussion

Attributions of cause and responsibility fall on a continuum ranging from primarily individual causes and personal responsibility to primarily social causes and societal responsibility. This study demonstrates socio-demographic variation in where one's beliefs about obesity fall on the continuum. Overall, relative to men, women are more likely to support a variety of causes and responsible parties indicating that women may be more likely to have a complex understanding of the multiple factors contributing to obesity. This may be related to more experience attempting to control one's weight [18]. Women are more likely than men to feel pressure to make their bodies conform to a societal standard of beauty, which in modern Western culture is often a thin figure [18]. Moreover, women have been found to be more sympathetic and understanding to those who are obese [31]. The pursuit of the ideal body type may lead women to more carefully observe the effects that behavior changes, societal pressures, and personal choices have on their bodies.

African Americans are less likely than White people to feel that the causes of obesity are within an individual's control, and are more likely to identify social factors contributing to obesity. African Americans are more tolerant of larger bodies, and less likely to stigmatize an individual for his or her weight [32]. A decreased emphasis on weight may lead African Americans to show less concern about obesity in general, and consequently reject weight as a personal problem.

People with higher incomes are less likely to recognize the effect of low agency causes of obesity, and more likely to identify individual responsibility. The financial freedom enjoyed by those with higher incomes may make them less likely to feel social pressure in a variety of arenas, and may make healthy foods more accessible to them because of larger food budgets.

Notably, there are no significant effects by BMI category when comparing those who are overweight or obese to those in a normal BMI category. Though organized groups for obese individuals like Health and Every Size and other bodily acceptance groups have increased in popularity, most obese individuals do not see obesity as a part of their identity but rather see it as something that could change, like getting a new hairstyle, and do not present unified beliefs about obesity [3,33].

#### *4.1. Attributions, Stigma, and Interventions*

Overweight and obese people are often viewed as deviant for straying from bodily norms. As discussed above, holding individuals responsible for obesity is directly linked to increased stigmatization. If obesity is considered deviant and obesity is a personal responsibility, obese persons may be seen as willfully deviant and consequently assigned a negative stigma. As a result, overweight and obese individuals experience myriad social barriers [3,14–16,34,35]. Sometimes this stigma is direct, like a personal insult, but it may also be environmental, like a bus seat that is too small [34]. Overweight and obese individuals do not just expect stigma from strangers, but also fear it will come from their family and close friends [36]. According to Puhl and Heuer, “stigmatization of obese individuals poses serious risks to their psychological and physical health, generates health disparities, and interferes with implementation of effective obesity prevention efforts” [16]. Stigma has also been shown to result in avoidance of health care environments while at the same time worsening obesity by inducing fear of going out, fear of being mocked while exercising, inducing emotional eating, and increasing stress which can contribute to depression, heart disease, hypertension and strokes [16].

The above research confirms that certain groups, specifically those with higher income levels and people who are White, are more likely to believe that obesity is a personal responsibility. Because White people and people of higher incomes have more social power, it is not surprising that weight stigma is widespread. Puhl and Heuer observed a 66% increase in the prevalence of weight discrimination over the past decade that has put rates of weight discrimination on par with rates of racial discrimination in the U.S., yet stigma has not been fully addressed as a serious issue in the increasing prevalence of obesity, or in efforts to reverse obesity rates [16].

The above research suggests that groups that attribute obesity to society alone or to society and individuals together, like African Americans and other minorities, are those groups that are less prejudicial towards overweight people and more accepting of larger body types. Thus the removal of personal responsibility for perceived deviance as described by stigma theory allows for a broader perspective and a more understanding approach to obesity that does not result in stigma.

#### *4.2. Limitations*

One limitation of this study is reliance on self-reporting of height and weight for calculation of BMI. Most people tend to underreport their weight, which could cause a bias in BMI data and may have contributed to the lack of significant results by BMI category [37]; however, studies have shown self-report accurately reflects overweight/obese status and is a suitable proxy for clinically measured data [38]. In addition, the sample contained fewer obese individuals than the national average, which may have affected outcomes for that group. A final limitation relates to the double-barreled nature of the measures used here. For example, “individual Americans in their choice of diet and lack of exercise” with diet and exercise considered together. However, since each is considered an individual factor, they would both be part of the same categorical dependent variable even if they were separate. Each of these limitations should be addressed by future research.

## **5. Conclusions**

The challenge for public health anti-obesity initiatives is to promote best practices in our individual behaviors and our shared environments without reinforcing stigma. Both obesity and obesity stigma are experienced differently by different groups, and increasing knowledge of obesity attributions by sex, race, income, and BMI category provides valuable tools for designing public health programs.

Since attributions of cause and responsibility contribute to the amount of stigma assigned to the obese it is imperative that public health interventions emphasize multiple and complex causes of obesity without relying stigmatizing individuals and their behavior. Moreover, since not all obese individuals experience negative health outcomes, promoting behaviors for good health and healthy environments should be the focus of public health campaigns rather than weight management.

Interventions that effectively target both individual and social factors could be very well received in populations who already understand obesity to result from low-agency factors and recognize multiple responsible parties. Groups who understand obesity as an individual responsibility, like Whites and higher income groups, may benefit from a better understanding of the effects of weight on health, and education campaigns elucidating the many factors that contribute to obesity before societal level or even individual level behavioral interventions resonate within these groups. Ultimately, a deeper understanding of obesity would also contribute to dispelling the pervasive stigma associated with obesity in addition to making community members more receptive to obesity interventions.

Whatever interventions are most effective, Americans would doubtless benefit from a reframing of the obesity issue. First Lady Michelle Obama's focus on fun activity and healthy eating rather than weight or physical appearance is an example of how this movement has already begun. A more accurate and more nuanced understanding of the causes of obesity and the variety of parties that bear responsibility will lead to interventions that maximize good health for all body types and minimize stigma against larger bodies. While reducing obesity and eliminating stigma are both challenging goals that require multi-faceted approaches, this research reveals in-roads that are already in place to facilitate progress, and provides direction for new paths to ultimately achieve those goals.

**Conflicts of Interest:** The author declares no conflict of interest.

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