

# Changes in Perceived Weight Discrimination Among Americans, 1995–1996 Through 2004–2006

Tatiana Andreyeva<sup>1</sup>, Rebecca M. Puhl<sup>1</sup> and Kelly D. Brownell<sup>1</sup>

**Objective:** Little is known about the prevalence and patterns of weight discrimination in the United States. This study examined the trends in perceived weight/height discrimination among a nationally representative sample of adults aged 35–74 years, comparing experiences of discrimination based on race, age, and gender.

**Methods and Procedures:** Data were from the two waves of the National Survey of Midlife Development in the United States (MIDUS), a survey of community-based English-speaking adults initially in 1995–1996 and a follow-up in 2004–2006. Reported experiences of weight/height discrimination included a variety of settings in major lifetime events and interpersonal relationships.

**Results:** The prevalence of weight/height discrimination increased from 7% in 1995–1996 to 12% in 2004–2006, affecting all population groups but the elderly. This growth is unlikely to be explained by changes in obesity rates.

**Discussion:** Weight/height discrimination is highly prevalent in American society and increasing at disturbing rates. Its prevalence is relatively close to reported rates of race and age discrimination, but virtually no legal or social sanctions against weight discrimination exist.

*Obesity* (2008) **16**, 1129–1134. doi:10.1038/oby.2008.35

Overweight and obese individuals are vulnerable to negative societal attitudes, stigma, and prejudice (1,2). Weight bias has been documented in multiple settings including places of employment (3,4), health-care facilities (4–6), educational institutions (7–9), and close interpersonal relationships with friends and family members (4). The consequences of weight bias are significant for overweight children and adults, with both immediate and potentially long-term adverse outcomes for emotional and physical health (5,10–14).

Despite the accumulation of evidence on this topic, little is known about the specific prevalence and patterns of weight discrimination in the United States. Discrimination is distinct from prejudice and negative attitudes in that it refers to unequal treatment of people because of their membership to a particular group (15). To date, little work has documented the prevalence of discriminatory experiences perceived by obese individuals, and whether this has changed over time. One exception is the study examining the frequency of institutional and interpersonal discrimination in a nationally representative random sample of 3,437 adults from the 1995–1996 National Survey of Midlife Development in the United States (MIDUS) (16). Its findings showed that compared to normal weight peers, obese persons reported significantly more frequent daily discrimination,

work- and health-related discrimination. Individuals in the highest obese categories were 40–50% more likely to report discrimination than normal-weight persons.

To our knowledge, no other published work has documented prevalence patterns of weight discrimination in the United States, and important questions remain. First, no longitudinal investigations have been conducted to determine whether rates of weight discrimination have changed over time. Second, it is informative to understand the prevalence of weight discrimination compared to other forms such as race and gender discrimination to place it in a social context for discussions of bias-prevention programs, possible legal remedies, and more. In contrast to more widely recognized social stigmas such as gender or race that have legal sanctions in place to protect individuals from discrimination, there are no federal laws to prohibit weight discrimination, and it is unknown how weight discrimination compares in strength or prevalence to discrimination based on these attributes. Examining the vulnerability of individuals to discrimination based on weight vs. other attributes will be important to determine the scope of intervention and legal remedies potentially needed to address this societal issue. Comparing trends in perceptions of discrimination due to weight vs. characteristics such as gender or race can

<sup>1</sup>Rudd Center for Food Policy and Obesity, Yale University, New Haven, Connecticut, USA. Correspondence: Tatiana Andreyeva ([tatiana.andreyeva@yale.edu](mailto:tatiana.andreyeva@yale.edu))

Received 14 June 2007; accepted 27 August 2007; published online 28 February 2008. doi:10.1038/oby.2008.35

help further our understanding of changes across stigmatized groups over time (e.g., whether certain stigmas are worsening or stabilizing) and outline important research questions concerning the reasons for potential shifts over time and interventions that may be warranted to help prevent further stigma.

This study evaluates the trends in perceived weight discrimination in the United States over 10 years and compares the prevalence of weight discrimination to rates of discrimination for race, gender, and age. Data were drawn from a nationally representative random sample of American adults in the MIDUS core sample, comparing the first wave of data (from 1995 to 1996) to the second wave of data collected in 2004–2006.

## METHODS AND PROCEDURES

### Sample

The MIDUS is an interdisciplinary study of behavioral, psychological, and social factors involved in midlife health and well-being. The baseline data were collected in 1995–1996 (MIDUS I) and a follow-up of the original sample (MIDUS II) was conducted in 2004–2006, with data collection in MIDUS II largely repeating baseline assessments. Respondents (aged 25–74 years) in 1995 were drawn from a nationally representative multistage probability sample of community-based English-speaking adults in the coterminous United States. In the first stage, participating households were selected from working telephone banks via random digit dialing. In the second stage, individual respondents were selected using disproportionate stratified sampling. Elderly individuals (ages 65–74) and men were oversampled along with oversampling in five metropolitan areas (Atlanta, Boston, Chicago, Phoenix, and San Francisco). Those quarried in the survey participated in an initial telephone interview and completed a self-administered mail questionnaire. The response rate for the telephone interview in MIDUS I was 70%; among the telephone respondents, 86.8% completed the mail questionnaire, so that the overall survey response rate was 60.8% (17).

Our study uses data from the random core sample of the MIDUS in both waves (the Main Data) (MIDUS I is from the 2006 Release (2006/03/30). The most recent version of the MIDUS I data was released on 2007/04/16. MIDUS II is from the original and most recent release on 2007/03/22). The baseline 1995–1996 MIDUS study included data from three subsample data sets: the Main Data ( $N = 4,242$  with 3,485 national random core sample participants and 757 metropolitan oversamples), the Twins Data ( $N = 1,996$  twins), and the Siblings Data ( $N = 1,614$  pairs with 951 participants drawn from the Main Data). Among the original 7,190 MIDUS I participants, 842 participants refused to participate in a 2004–2006 follow-up, and 1,334 could not be successfully contacted (including 421 confirmed deceased). Thus, 70% of the original MIDUS sample participated in the second wave of 2004–2006 (ages 35–86). The survey assessed physical and psychological health throughout the respondent's adult life, substance abuse, well-being, personal beliefs, socioeconomic status, social support, and various forms of perceived discrimination. Further details on the MIDUS data and methodology are available elsewhere (17,18).

Our study uses data from the MIDUS national random sample of the participants who completed at least the telephone survey. We limited our analyses to adults aged 35–74 in both waves to make data comparable across waves. We therefore excluded respondents who were 25–34 years old in the first MIDUS wave (1995–1996) and who were 75 years and older in the second wave (2004–2006). Further exclusion criteria included individuals with incomplete or inconsistent data on discrimination-related questions (e.g., reporting a cause for discrimination but no discriminatory experiences, citing experiences of discrimination but giving no reason for discrimination). As a result of all exclusions, our analytic sample for the 1995–1996 wave included 1,826 individuals, and the 2004–2006 sample included 1,136 respondents.

Our study objectives aimed to (i) determine how the prevalence of weight/height discrimination among US adults changed between the two time periods of 1995–1996 and 2004–2006 (while also examining contributors to the observed trends in weight/height discrimination), and (ii) compare changes over time across different forms of discrimination. We treated the data from the two MIDUS waves as two cross-sections. We did not examine discrimination exposure among the same respondents 10 years apart, because our aim was to capture patterns of discrimination over time for an average representative American adult. Limiting the trend analysis to participants who experienced discrimination in the first wave of data collection and tracking their discriminatory experiences over a decade would provide only a partial snapshot of trends in weight discrimination for adults in the United States.

### Measure of discrimination

The MIDUS survey evaluates self-perceived discriminatory experiences by asking participants to report occurrences of discrimination over their lifetime and on a day-to-day basis. The survey asks about the primary reason for discrimination allowing participants to report multiple reasons if applicable. Specifically, the survey asks “*What was the main reason for the discrimination you experienced? If more than one reason, circle all that apply*” with response choices including “*Your Age, Gender, Race, Height or weight, Ethnicity or nationality, Physical disability, Some aspect of appearance other than weight or height, Sexual orientation, Religion, and Other reason.*”

The key variable in our study is perceived discrimination due to the respondent's weight or height. Because the survey used one category for body size discrimination combining height and weight, we refer to this variable as weight/height discrimination throughout the paper. We compared average body weight, height, and BMI (defined as weight in kilogram relative to height in meters squared) between the participants reporting weight/height discrimination and the rest of the sample to test whether weight was more likely to be a source of discrimination than height. On average, body weight and BMI were significantly higher among people reporting weight/height discrimination relative to other participants in both samples (e.g., BMI of 34 vs. 26,  $P < 0.01$  in 1995–1996, and BMI of 35 vs. 28 in 2004–2006,  $P < 0.01$ ). At the same time, there was no difference in both samples in the average height of women by weight/height discrimination, so that a short body stature was unlikely to be a source of weight/height discrimination. Body height among men was on average slightly higher in the group reporting weight/height discrimination ( $P < 0.10$ ), so that a short stature is an unlikely cause of weight/height discrimination among men. We therefore have reasonable evidence to believe that the reported experiences of discrimination due to weight or height are reflective of higher body weight and obesity rather than height.

We examined lifetime experiences of discrimination in major settings such as employment, medical care, and education as well as interpersonal discrimination on a day-to-day basis. Lifetime experiences were self-reported in the question: “*How many times in your life have you been discriminated against in each of the following ways because of such things as your race, ethnicity, gender, age, religion, physical appearance, sexual orientation, or other characteristics? (If the experience happened to you, but for some reason other than discrimination, enter “0”).*” Eleven ways of lifetime discrimination were evaluated, including: “*discouraged by a teacher or advisor from seeking higher education,*” “*denied a scholarship,*” “*not hired for a job,*” “*not given a job promotion,*” “*fired,*” “*prevented from renting or buying a home in the neighborhood you wanted,*” “*prevented from remaining in a neighborhood because neighbors made life uncomfortable,*” “*hassled by the police,*” “*denied a bank loan,*” “*denied or provided inferior medical care,*” and “*denied or provided inferior service by a plumber, car mechanic, or another service provider.*” Discrimination in interpersonal experiences on a day-to-day basis was evaluated with the question: “*How often on a day-to-day basis do you experience each of the following types of discrimination?*” with nine response items including: “*you are treated with less courtesy than other people,*” “*you are treated with less respect than other people,*” “*you receive poorer service than other people at restaurants*

or stores,” “people act as if they are afraid of you,” “people act as if they think you are dishonest,” “people act as if they think you are not as good as they are,” “you are called names or insulted,” and “you are threatened or harassed.” Participants indicated how often they had experienced these situations using these categories: “Often,” “Sometimes,” “Rarely,” “Never.”

In both survey waves, we constructed a dichotomous variable of perceived discrimination indicating whether an individual reported occurrences of any types of discrimination (e.g., work-related discrimination, personal insults). Multiple and single occurrences of discrimination were weighted equally so that a person reporting a single occurrence of discrimination (e.g., in the form of “denied or provided inferior medical care”) would be treated equally in our discrimination measure as someone who reported several discriminatory experiences (e.g., by “not given a job promotion”). We coded responses “Often” or “Sometimes” in the question about daily discrimination as an indicator of discrimination. We also constructed measures of lifetime discrimination exposure and daily interpersonal discrimination indicating any occurrences of lifetime discrimination or discrimination in personal relationships, respectively.

**Statistical analysis**

We conducted comparative analyses of the prevalence of different forms of discrimination and forms of discrimination across population groups in both waves of data. Stratifying by age, race, education, marital status, weight status, and occupation, we performed a *t*-test for each characteristic to evaluate the hypothesis that rates of discrimination in the group remained unchanged between the two waves (reporting *P* values). Similarly, we used a *t*-test to compare rates of discrimination between men and women across groups in each survey wave. We also compared sociodemographic characteristics and weight distribution of the samples in both waves and tested for differences in these attributes between the samples. To account for the complex sampling design and to obtain nationally representative estimates, we used individual sample weights in presenting sample statistics.

**RESULTS**

The prevalence of weight/height discrimination in US adults went up from 7.3% in 1995–1996 to 12.2% in 2004–2006, demonstrating a significant increase of 66% (*P* < 0.01). Growth in weight/height discrimination rates affected virtually all population groups except the elderly. On average, 15.5% of women reported discriminatory experiences due to weight/height in 2004–2006 vs. 10% in 1995–1996 (*P* < 0.01), whereas the prevalence for men increased from 4.1 to 8.1% (*P* < 0.05). Rates of growth in weight/height discrimination among blacks, individuals who did not complete high school, older people, and people in certain professions, (clerks/sales and those in service occupations) were not significantly different between the two survey waves (Table 1).

Exposure to weight/height discrimination in interpersonal relationships on a daily basis became increasingly important over the past decade. Reports of discrimination due to weight/height in 2004–2006 more often applied to interpersonal relationships rather than institutional settings such as employment. The average number of lifetime discriminatory experiences due to weight/height increased during 1995–2006 from 4.6 to 4.9 experiences (after excluding outliers with values above the 95% range). This suggests that not only more people experiencing weight/height discrimination in 2004–2006 compared to the mid-1990s, but also that the intensity of discriminatory experiences increased in both interpersonal and institutional settings.

**Table 1 Rates of perceived weight/height discrimination across sociodemographic groups between 1995–1996 and 2004–2006**

	1995–1996 N = 1,826	2004–2006 N = 1,136
Gender		
Male	4.1	8.1**
Female	10.0	15.5*
Age		
35–44	9.9	19.4*
45–54	6.9	13.2*
55–64	5.3	8.6
65–74	4.0	3.9
Race		
White	6.7	11.6*
Black	16.6	18.3
Other race/multiracial	7.7	16.0
Education		
Less than high school	8.1	10.2
High school	6.8	13.1*
Some college	8.9	14.2**
College and above	6.1	10.4**
Marital status		
Married	6.5	11.8*
Single/divorced/widowed	9.5	13.3
Weight status		
Normal weight	1.1	3.9**
Overweight	4.7	6.9
Moderate obesity	12.5	14.2
Severe obesity	38.7	42.5
Occupation		
Managerial and professional	6.4	10.7**
Sales/clerk	11.2	11.6
Service	6.2	10.1
Worker/operator	5.7	12.8**
No occupation	6.3	14.4*
Total	7.3	12.2*

The reported estimates are weighted.  
Rates of perceived weight/height discrimination significantly different between 1995–1996 and 2004–2006 at \**P* < 0.01; \*\**P* < 0.05.

The rising trend in perceived discrimination was observed in all forms of discrimination except race, which declined slightly over the past decade (see Figure 1). Gender remained the most prevalent source of perceived discrimination increasing from 15.8% in 1995–1996 to 18.7% in 2004–2006 (*P* < 0.10). Age discrimination replaced race as the second most common cause of perceived discriminatory experiences, increasing from 10 to 14% (*P* < 0.01). Whereas higher rates of age discrimination may reflect a somewhat older sample in the second MIDUS wave (mean age of 52 in 2004–2006 vs. 50 in 1995–1996,



$P < 0.01$ ), changes in body weight and obesity of the participants in two samples do not seem to explain the increasing trend in weight/height discrimination. Also, we found no significant increase in rates of weight/height discrimination between 1995–1996 and 2004–2006 for overweight and obese respondents (see Table 1).

Table 2 links trends in obesity and weight/height discrimination by providing data from the two assessments on the proportion of specific BMI ranges, mean BMI, and the prevalence of weight/height discrimination in each BMI range. Similar to national data presented elsewhere (19–22), obesity prevalence among the MIDUS participants increased notably since the mid 1990s. For instance, 60% of the respondents aged 35–74 were overweight or obese ( $BMI \geq 25$ ) in 1995–1996, but their share increased to 70% 10 years later ( $P < 0.01$ ). As documented elsewhere (23,24), growth rates were particularly high among the more extreme BMI categories, increasing by 15% for individuals with BMI of 30–35, by 70% for people with  $BMI \geq 35$ , and more than tripling for those with  $BMI \geq 45$ .

We tested the hypothesis that the observed growth in weight/height discrimination was driven by the increased spread of obesity comparing rates of weight/height discrimination in narrowly defined BMI groups. Between BMI of 27 and 40, the rate of weight/height discrimination increased notably

for people with similar BMI levels with a single exception of the BMI range of 29–31. Although the average BMI in each BMI range remained stable (except for the extreme category of  $BMI \geq 45$ ), the prevalence of weight/height discrimination increased over the past 10 years in each BMI range for people with BMI of 27–29 and BMI of 31–40. Only among respondents at the most extreme right tail of the BMI distribution did the rates of discrimination go down despite an increase in the group average BMI. However, the small sample size for the highest BMI range (especially in the MIDUS II data set) makes it difficult to interpret the findings, and these estimates should be read with caution.

We also ruled out the hypothesis that the aging of the sample and weight gain with age may explain increased rates of weight/height discrimination. Discrimination rates due to weight/height went up in all age groups but ages 65–74, with a particular increase among people aged 35–40. Given that much of weight/height discrimination occurs in younger population groups, it is unlikely that aging can explain much of the rising trend in weight-related discriminatory experiences.

Among 11 forms of discrimination that we examined, a significant increase in the rates of discrimination in 2004–2006 was reported for gender discrimination (women only), any reason for discrimination (men), some aspect of appearance other than weight or height (women), age discrimination, and other causes of discrimination.

DISCUSSION

This is the first study to investigate the prevalence of weight/height discrimination longitudinally in a national sample of American adults. Findings showed that weight/height discrimination has significantly increased between 1995–1996 and 2004–2006, from 7 to 12%. During this time, perceived race discrimination remained stable, whereas the prevalence of weight/height discrimination increased to levels comparable with those reported for race and age discrimination. Overall, there was not a significant or consistent increase across all other forms of

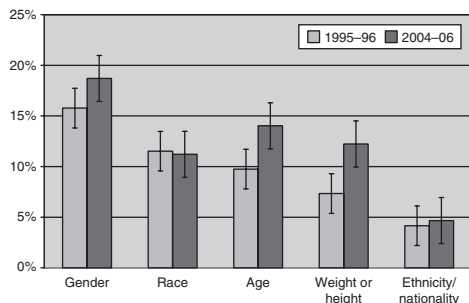


Figure 1 Trends in rates of perceived discrimination among Americans aged 35–74 between 1995–1996 and 2004–2006.

Table 2 Trends in obesity and perceived weight/height discrimination among Americans aged 35–74 between 1995–1996 and 2004–2006

Group	1995–1996			2004–2006		
	Group proportion (%)	Mean BMI in group	Perceived weight/height discrimination (%)	Group proportion (%)	Mean BMI in group	Perceived weight/height discrimination (%)
BMI 25–27	16.8	26.0	3.5	15.2	25.9	0.9
BMI 27–29	14.2	28.0	4.3	16.8	28.0	10.3
BMI 29–31	9.3	30.0	9.6	10.9	29.9	9.1
BMI 31–33	7.7	32.0	11.4	8.6	32.0	14.3
BMI 33–35	4.5	33.9	16.9	5.7	34.0	22.4
BMI 35–37	1.9	36.2	19.2	3.1	35.9	26.4
BMI 37–40	2.8	38.3	36.7	4.8	38.2	43.0
BMI 40–45	2.4	41.3	42.6	3.0	42.2	41.5
BMI $\geq 45$	0.8	48.1	80.6	2.4	50.8	62.9

Estimates are weighted.

discrimination between 1995–1996 and 2004–2006, suggesting that the observed increasing trend in weight/height discrimination cannot be attributed to a study-specific artifact.

Several interpretations are possible for the increased rates of perceived weight/height discrimination observed in this study. One hypothesis is that rates of obesity escalated during the same time period of rising trends in weight/height discrimination. We addressed this hypothesis by examining changes in discrimination within BMI categories over the past decade and revealing increases in weight-attributed discrimination at approximately the same levels of weight. A second possible explanation is that perceived weight discrimination could reflect experiences that have resulted from worsening societal attitudes and weight stigma. In this regard, our findings support experimental research assessing stigmatizing attitudes toward obese individuals, which has documented an increase in the stigmatization of obesity over time (25).

A third possibility is that the media may play a contributing role in the observed increases in weight bias. A recent study that assessed framing of obesity in American news coverage from 1985 to 2003 reported a fivefold increase in media attention to obesity since 1992 (26). One of the primary competing message frames in this national news coverage was the emphasis of obesity as a problem of personal responsibility, pointing to individualistic solutions rather than larger environmental or societal changes. Although research has challenged this notion and illustrated the complex interaction of biology, genetics, and the environment as important contributors to weight gain (27,28), the view that obesity stems from individual choice remains common. Sociocultural messages reinforcing the notion of personal responsibility for weight gain are also evident from the diet industry, which relies on framing obesity as a problem requiring individual solutions through various weight loss products. Annual revenues for the US diet industry in 1995 were \$33.3 billion (29), and increased to more than \$55 billion in 2006 (30).

The link between perceptions of personal responsibility for obesity and expressions of weight bias has been convincingly demonstrated in experimental research, and may help to explain increases in perceived weight discrimination. Providing people with information that emphasizes personal responsibility for obesity worsens negative stereotypes and stigma toward obese persons (31). In addition, obese individuals are more likely to be blamed and negatively stereotyped when they are perceived to be personally responsible for their weight gain, but receive more favorable evaluations and less blame when obesity can be attributed to a physical cause outside of personal control (32–37). Thus, attributions about personal responsibility for obesity, whether perpetuated by media coverage or by diet industry marketing, could potentially contribute to higher levels of weight bias and perceived discrimination. Future work is needed to help clarify these and other potential reasons for increasing rates of weight discrimination and to develop means for reducing bias.

There are several limitations to this study. First, the MIDUS survey combined weight and height in one category of discrimination cause, preventing separation of these two

variables; however, given a significantly higher average weight and BMI, but not shorter height, among the MIDUS participants reporting weight/height discrimination, it is expected that the category primarily reflected discrimination due to weight. Second, body weight and height in this sample were self-reported, and analyses were based on self-reported perceptions of weight/height discrimination rather than actual observed behaviors of discrimination. Finally, we excluded a portion of the MIDUS sample due to data limitations. However, the lack of systematic differences found in key characteristics of the excluded and included participants suggests that such exclusions were unlikely to bias the results.

The results of this study highlight several new and important findings about weight discrimination in the United States. This problem appears to be worsening over time, and has become comparable in prevalence to other forms of discrimination, such as race and age, which are protected under Federal legislation. Given that no federal legislation (and only one state law) exists to prohibit weight discrimination, it is concerning that so many overweight and obese individuals are vulnerable to discrimination and its harmful consequences and have no legal protection. National actions are needed to protect this population and to reduce bias and stigma associated with obesity.

#### ACKNOWLEDGMENT

This research was funded by the Rudd Center for Food Policy and Obesity at Yale University.

#### DISCLOSURE

The authors declared no conflict of interest.

© 2008 The Obesity Society

#### REFERENCES

1. Brownell KD, Puhl R, Schwartz MB, Rudd L (eds). *Weight Bias: Nature, Consequences, and Remedies*. Guilford: NY, 2005.
2. Puhl R, Brownell KD. Bias, discrimination, and obesity. *Obes Res* 2001;9:788–805.
3. Roehling MV. Weight-based discrimination in employment: psychological and legal aspects. *Pers Psychol* 1999;52:969–1017.
4. Puhl R, Brownell KD. Confronting and coping with weight stigma: an investigation of overweight and obese individuals. *Obesity (Silver Spring)* 2006;14:1802–1815.
5. Amy NK, Aalborg A, Lyons P, Keranen L. Barriers to routine gynecological cancer screening for White and African-American obese women. *Int J Obes* 2006;30:147–155.
6. Teachman BA, Brownell KD. Implicit anti-fat bias among health professionals: is anyone immune? *Int J Obes Relat Metab Disord* 2001;25:1525–1531.
7. Greenleaf C, Weiller K. Perceptions of youth obesity among physical educators. *Soc Psychol Educ* 2005;8:407–423.
8. Neumark-Sztainer D, Story M, Harris T. Beliefs and attitudes about obesity among teachers and school health care providers working with adolescents. *J Nutr Educ* 1999;31:3–9.
9. O'Brien KS, Hunter JA, Banks M. Implicit anti-fat bias in physical educators: physical attributes, ideology, and socialisation. *Int J Obes* 2007;31:308–314.
10. Eisenberg ME, Neumark-Sztainer D, Story M. Associations of weight-based teasing and emotional well-being among adolescents. *Arch Pediatr Adolesc Med* 2003;157:733–738.
11. Faith MS, Leone MA, Ayers TS, Moonseong H, Pietrobelli A. Weight criticism during physical activity, coping skills, and reported physical activity in children. *Pediatrics* 2002;110:e23.
12. Friedman KE, Reichmann SK, Costanzo PR *et al*. Weight stigmatization and ideological beliefs: relation to psychological functioning in obese adults. *Obes Res* 2005;13:907–916.
13. Puhl R, Latner J. Stigma, obesity, and the health of the nation's children. *Psychol Bull* 2007;133:557–580.

14. Puhl R, Moss-Racusin C, Schwartz MB. Internalization of weight bias: implications for binge eating and emotional wellbeing. *Obesity (Silver Spring)* 2007;15:19–23.
15. Allport GW. *The Nature of Prejudice*. Addison-Wesley: Cambridge, MA, 1954.
16. Carr D, Friedman MA. Is obesity stigmatizing? Body weight, perceived discrimination, and psychological well-being in the United States. *J Health Soc Behav* 2005;46:244–259.
17. Brim OG, Baltes PB, Bumpass LL *et al*. *National Survey of Midlife Development in the United States (MIDUS), 1995–1996*. 2nd ICPSR version. Inter-university Consortium for Political and Social Research: Ann Arbor, MI, 2003.
18. Ryff C, Almeida DM, Ayanian JS *et al*. *Midlife development in the United States (MIDUS), 2004–2006*. University of Wisconsin, Survey Center: Madison, WI, 2006.
19. Flegal KM, Carroll MD, Kuczmarski RJ, Johnson CL. Overweight and obesity in the United States: prevalence and trends, 1960–1994. *Int J Obes Relat Metab Disord* 1998;22:39–47.
20. Flegal KM, Carroll MD, Ogden CL, Johnson CL. Prevalence and trends in obesity among US adults, 1999–2000. *JAMA* 2002;288:1723–1727.
21. Mokdad AH, Serdula MK, Dietz WH *et al*. The spread of the obesity epidemic in the United States, 1991–1998. *JAMA* 1999;282:1519–1522.
22. Ogden CL, Carroll MD, Curtin LR *et al*. Prevalence of overweight and obesity in the United States, 1999–2004. *JAMA* 2006;295:1549–1555.
23. Sturm R. Increases in morbid obesity in the USA: 2000–2005. *Public Health* 2007;121:492–496.
24. Sturm R. Increases in clinically severe obesity in the United States, 1986–2000. *Arch Intern Med* 2003;163:2146–2148.
25. Latner JD, Stunkard AJ. Getting worse: the stigmatization of obese children. *Obes Res* 2003;11:452–456.
26. Lawrence RG. Framing obesity: the evolution of news discourse on a public health issue. *Harv Int J Press/Politics* 2004;9:56–75.
27. Barsh GS, Farooqi IS, O'Rahilly S. Genetics of body-weight regulation. *Nature* 2000;404:644–651.
28. Wadden TA, Brownell KD, Foster GD. Obesity: responding to the global epidemic. *J Consult Clin Psychol* 2002;70:510–525.
29. Marketdata Enterprises. *The U.S Weight Loss and Diet Control Market (4th Edition)*. Tampa, FL, 1996.
30. Marketdata Enterprises. *The U.S Weight Loss and Diet Control Market (9th Edition)*. Tampa, FL, 2007.
31. Puhl R, Schwartz MB, Brownell KD. Impact of perceived consensus on stereotypes about obese people: new avenues for bias reduction. *Health Psychol* 2005;24:517–525.
32. Anesbury T, Tiggemann M. An attempt to reduce negative stereotyping of obesity in children by changing controllability beliefs. *Health Educ Res* 2000;15:145–152.
33. Crandall CS. Prejudice against fat people: ideology and self-interest. *J Pers Soc Psychol* 1994;66:882–894.
34. DeJong W. Obesity as a characterological stigma: the issue of responsibility and judgments of task performance. *Psychol Rep* 1993;73:963–970.
35. DeJong W. The stigma of obesity: the consequences of naïve assumptions concerning the causes of physical deviance. *J Health Soc Behav* 1980;21:75–87.
36. Musher-Eizenman DR, Holub SC, Miller AB, Goldstein SE, Edwards-Leeper L. Body size stigmatization in preschool children: the role of control attributions. *J Pediatr Psychol* 2004;29:613–620.
37. Weiner B, Perry RP, Magnusson J. An attributional analysis of reactions to stigmas. *J Pers Soc Psychol* 1988;55:738–748.