



The Oxford Handbook of Integrative Health Science

Carol D. Ryff (ed.), Robert F. Krueger (ed.)

<https://doi.org/10.1093/oxfordhb/9780190676384.001.0001>

Published online: 09 October 2018 **Published in print:** 29 November 2018

Online ISBN:

9780190676407

Print ISBN: 9780190676384

Search in this book

CHAPTER

20 Psychosocial Consequences of Body Weight and Obesity



Deborah Carr, Vera K. Tsenkova

<https://doi.org/10.1093/oxfordhb/9780190676384.013.15> Pages 275–286

Published: 09 October 2018

Abstract

The body weight of U.S. adults and children has risen markedly over the past three decades. The physical health consequences of obesity are widely documented, and emerging research from the Midlife in the United States study and other large-scale surveys reveals the harmful impact of obesity on adults' psychosocial and interpersonal well-being. This chapter synthesizes recent research on the psychosocial implications of body weight, with attention to explanatory mechanisms and subgroup differences in these patterns. A brief statistical portrait of body weight is provided, documenting rates and correlates of obesity, with a focus on race, gender, and socioeconomic status disparities. The consequences of body weight for three main outcomes are described: institutional and everyday discrimination, interpersonal relationships, and psychological well-being. The chapter concludes with a discussion of the ways that recent integrative health research on the psychosocial consequences of overweight and obesity inform our understanding of population health.

Keywords: [body weight](#), [physical health](#), [obesity](#), [race](#), [gender](#), [socioeconomic status](#), [discrimination](#), [interpersonal relationships](#), [psychological well-being](#), [overweight](#)

Subject: [Health Psychology](#), [Psychology](#)

Series: [Oxford Library of Psychology](#)

Collection: [Oxford Handbooks Online](#)

Introduction

The body weight of adults in the United States has risen steadily over the past three decades. Nearly one third of all adults in the United States are currently classified as obese, and more than 60% are obese or overweight (Flegal, Kruszon-Moran, Carroll, Fryar, & Ogden, 2016). The effects of body weight on physical health are well documented: Obese persons evidence an elevated risk of cardiovascular diseases, including heart disease and stroke (Saydah et al., 2014); type 2 diabetes (Nguyen, Magno, Lane, Hinojosa, & Lane, 2008); metabolic syndrome (Nguyen et al., 2008); musculoskeletal disorders such as osteoarthritis (Crowson, Matteson, Davis, & Gabriel, 2013; Tepper & Hochberg, 1993); some cancers, including endometrial, breast, and colon (Guh et al., 2009); and premature mortality (Flegal, Kit, Orpana, & Graubard, 2013). The quality of everyday life also is compromised for obese persons, as they are at a heightened risk of chronic back pain (Guh et al., 2009); asthma and other breathing difficulties (McHugh, Symanski, Pompeii, & Delclos, 2009); sleep problems, including sleep apnea (Buxton & Marcelli, 2010; Punjabi, 2008); mobility limitations (Houston et al., 2009); poor health-related quality of life (Jia & Lubetkin, 2010); and hospitalization (Han et al., 2009).

p. 276 The physical health consequences of obesity are well documented, yet until recently relatively little was known about the social, interpersonal, and psychological consequences of body weight. This knowledge gap was due largely to the fact that prior studies relied on clinical samples (e.g., Balkau et al., 2007; Vorona et al., 2005) or large national health surveys such as the Behavioral Risk Factor Surveillance System (BRFSS; e.g., Beiko, Paoletti, Strange, & Kumbhare, 2015; Frankenfeld, Leslie, & Makara, 2015); National Health Interview Survey (NHIS; e.g., Fine, Philogene, Gramling, Coups, & Sinha, 2004; Masters, Powers, & Link, 2013; Narayan et al., 2007); or National Health and Nutrition Examination Surveys (NHANES; e.g., Preston, Mehta, & Stokes, 2013; Saydah et al., 2014; Tepper & Hochberg, 1993), which obtain rich data on health and sociodemographic characteristics, but limited information on the broad range of psychosocial factors that may affect or be affected by body weight. Likewise, the dearth of psychosocial data has prevented researchers from exploring factors that may buffer against (or intensify) the potentially harmful physical and psychological consequences of body weight, such as perceived social support (or strain), body image, and other resources (or liabilities) that might protect against weight-related stigma and strain.

The emergence of large longitudinal sample surveys designed by cross-disciplinary teams of scholars from psychology, sociology, medicine, human development, genetics, biostatistics, and health policy have played a pivotal role in extending research on the ways that obesity can affect psychological health, social relationships, discrimination, interpersonal treatment, and even one's sexual relationships. The Midlife in the United States (MIDUS) study has been an essential resource for studying the psychosocial consequences of obesity, as it obtains measures of self-reported body weight at three points in time, retrospective reports of adolescent weight, detailed reports on psychological health, perceived experiences of interpersonal and institutional discrimination, information on sexual well-being, and both biological and self-reported measures of weight-related physical conditions that may contribute to psychosocial well-being.

This chapter synthesizes recent cutting-edge research on the psychosocial implications of body weight, with careful attention to explanatory mechanisms and subgroup differences in these patterns. We begin by providing a brief statistical portrait of body weight in the United States, documenting rates and correlates of obesity, with a particular focus on race, gender, and socioeconomic status disparities. Second, we describe the consequences of body weight for three main outcomes: experiences of institutional and everyday discrimination, interpersonal relations, and psychological well-being. We highlight how studies of body weight may illuminate and enrich our understanding of broader social concerns, including the ways that stigmatized identities can affect life chances. We conclude with a brief discussion of the implications of this work for understanding health disparities in the United States, underscoring the value of an integrative approach to health science research.

Body Weight in the United States: Trends and Correlates

The proportion of Americans who are overweight or obese has increased markedly throughout the late twentieth and twenty-first centuries, a pattern described by the media and medical community as an “obesity crisis” (Brownell & Battle Horgen, 2003). National data show that roughly 30% of adults are currently obese, with a body mass index (BMI) of 30 or higher, and roughly 60% are classified as either overweight or obese, with a BMI of 25 or higher (Flegal et al., 2016). Rates of overweight and obesity increased steeply between the 1980s and 2010s, with all population subgroups experiencing such increases. One recent analysis calculated that between 1984 and 2014, the adjusted prevalence of obesity increased by 21.1% among US adults overall, although this rate of increase was higher among African Americans than whites (26.4. vs. 21%) (An & Xiang, 2016).

Contemporary obesity rates vary by age, sex, race, and socioeconomic status, such that midlife persons, men, African Americans and Hispanics, and persons with fewer socioeconomic resources are more likely than younger or older adults, women, non-Hispanic whites, or those with greater economic resources to be overweight or obese (Centers for Disease Control and Prevention, 2016). Studies that adopt an intersectionality approach and consider multiple personal identities have detected steep disparities; for instance, 28% of non-Hispanic white women are obese, yet rates approach 34% among Latino women and are more than 45% among African American women (Centers for Disease Control and Prevention, 2016). Socioeconomic gradients also are pronounced, where both educational attainment and household income are inversely linked to obesity risk. One analysis of 2008–2010 BRFSS data documented that obesity rates approach 33% among high school dropouts, compared with 21.5% among college graduates. Similar trends emerge when household income is considered, where obesity rates are 33% among adults earning less than \$15,000 per year versus 24.6% among those earning more than \$50,000 per year (Trust for America’s Health & Robert Wood Johnson Foundation, 2011). As we discuss further in this chapter, cultural norms regarding ideal body size vary by race, gender, and socioeconomic status, creating a context whereby obesity is more highly stigmatized and exacts a more profound personal toll in communities that uphold slenderness as a cultural ideal.

p. 277

Psychosocial Consequences of Body Weight

Although obesity is increasingly common and overweight status is the statistical norm in the United States today, persons with larger bodies still are regarded as one of the last acceptable targets of denigration (Puhl & Brownell, 2008). Unkind and unflattering depictions of obese persons are ubiquitous in popular culture (Kyrölä, 2016), while research consistently documents that children, adults, and even health care providers hold negative attitudes toward persons with a high BMI (Blackstone, 2016; Greenberg et al., 2003). In one classic study, Richardson, Goodman, Hastorf, and Dornbusch (1961) asked young children to indicate how much they liked each of several children portrayed in a line drawing; the results showed that the overweight child was rated as the least likable, lagging behind those with physical disabilities. These results have been replicated multiple times over the past five decades, revealing the persistence and even a recent increase in antiobesity sentiment in the twenty-first century (Latner & Stunkard, 2003).

The pervasiveness of negative attitudes toward overweight and obese persons has created a context in which persons with high body weight may be stigmatized by others, rendering them vulnerable to institutional and interpersonal mistreatment, which in turn may undermine their psychological well-being. If early theoretical writings on stigma are used as criteria, then obese persons clearly comprise a stigmatized population in the United States. Sociologist Erving Goffman (1963) defined stigma as any personal characteristic that is “deeply discrediting” to its possessors. Goffman (1963, p. 3) noted that these devalued

personal attributes typically fall into one of three categories: “tribal stigmata,” “abominations of the body,” and “blemishes of individual character.” Obese Americans arguably are stigmatized along the last two dimensions (DeJong, 1980). Attitudinal studies show that Americans view obese persons as physically unattractive and sexually undesirable (Boyes & Latner, 2009; Rooth, 2009) and as personally responsible for their weight due to some character flaw or “blemish,” such as laziness, gluttony, or a lack of self-control (Brownell et al., 2010; Crandall & Schiffhauer, 1998).

Yet, contemporary reconceptualizations of stigma suggest that prejudicial attitudes alone are not sufficient evidence that obese persons are a stigmatized group (Major & O’Brien, 2005). Rather, the individuals possessing those prejudicial attitudes must act toward stigmatized individuals in a way that affects their daily lives. Link and Phelan (2001) have argued that a core component of the stigma process is that the socially devalued person experiences discrimination and status loss, which in turn may have harmful consequences for his or her life chances, including psychological, economic, and physical well-being. However, until very recently, few studies evaluated directly whether obese and overweight persons are more likely than normal weight persons to report interpersonal and institutional discrimination, compromised interpersonal and romantic relationships, and undermined emotional well-being. In the past two decades, research on the stigmatization and well-being of obese persons has flourished, due in part to the availability of self-reported weight data and a rich array of psychosocial measures in the MIDUS study. These data have allowed us to delineate whether, how, and for whom body weight exacts a personal toll.

Institutional and Interpersonal Discrimination

Research based on the MIDUS has moved forward our understanding of weight-related discrimination by asking all sample members directly about their experiences with institutional discrimination and daily mistreatment, as well as their perceptions of the reason for this mistreatment, such as their body weight or gender. Specifically, MIDUS respondents are asked: “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?” (Brim et al., 1995). Respondents then indicate whether they were subjected to each of 11 types of institutional discrimination: 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.

p. 278 Day-to-day interpersonal discrimination was evaluated with the question: “How often on a day-to-day basis do you experience each of the following types of discrimination?” There were nine items in the responses: treated with less courtesy than other people; treated with less respect than other people; 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; people act as if you are called names or insulted; and you are threatened or harassed.

Using these measures, Andreyeva, Puhl, and Brown (2008) have documented that overweight and obese people are significantly more likely than their more slender counterparts to report interpersonal or institutional discrimination in general and stigmatization due specifically to their weight. The proportion reporting weight-related mistreatment increases monotonically as BMI increases. While roughly 10% of overweight persons report any form of weight-related mistreatment, the proportion rises steadily with BMI, where one quarter of persons with a BMI in the mid-30s and roughly half of those with a BMI above 40 report such encounters. Further, these same researchers have shown that the stigma of obesity is not fading over time, even as obesity becomes more common in the United States. Comparing two waves of MIDUS

data, they found that the prevalence of perceived weight-based discrimination increased from 7% in 1995–1996 to 12% in 2004–2006. Importantly, these increases were not attributable to rising rates of obesity.

Carr and Friedman (2005) examined precisely which types of mistreatment overweight and obese persons in the MIDUS reported. The odds of an individual reporting any type of work-related discrimination (i.e., fired, not hired, not promoted) increased steadily with BMI, even after potential confounds such as education, race, age, and health were controlled. Relative to normal weight persons (BMI 18.5 to 24.9), the odds of experiencing work-related discrimination increased from 1.26 among overweight (BMI 25–29.9) persons, to 1.51 for obese I (BMI 30–35) persons, and 1.84 among obese II/III (BMI 35+) persons. Yet, for the outcome of healthcare-related discrimination, only highly obese persons (BMI 35+) differed significantly from normal weight persons, even after controlling for demographic and health factors. Eight percent of obese II/III persons reported receiving inferior medical care, compared to just 3% of persons in all other weight categories. The authors suggested that these isolated effects for highly obese persons may reflect the fact that the physical health consequences of obesity are most acute at the highest levels of BMI (Allison et al., 1999), and some healthcare providers may act in an unkind or discouraging manner when trying to motivate behavioral change in those patients whom they perceive at serious health risk. Moreover, standard health care equipment and procedures may inhibit the delivery of high-quality healthcare to severely obese persons. For example, severely overweight people cannot fit into standard wheelchairs, blood pressure cuffs, or functional magnetic resonance imaging (fMRI) and computed tomographic (CT) scan machines (Perez-Pena & Glickson, 2003). Yet, this mistreatment may further undermine the physical health of obese persons by discouraging them from seeking timely care or undermining their efforts to lose weight (Fontaine et al., 1998).

Weight-based discrimination is not limited to institutional practices; it also pervades seemingly innocuous everyday interactions. Carr and colleagues (2005, 2008) examined the levels of interpersonal mistreatment reported by MIDUS respondents and again found a clear gradient where obese I and obese II/III persons reported significantly more daily slights, insults, and perceived denigration than their more slender counterparts. The researchers classified the daily discrimination measures into three broad categories: harassed or teased; treated disrespectfully (e.g., treated as if not smart); and treated as if one's character was flawed (e.g., treated as if dishonest). They found a gradient between BMI and being treated as if one had a flawed character, where each successive BMI category reported a higher score. By contrast, only obese II/III persons fared significantly worse than normal weight persons on the dimensions of harassment and disrespectful treatment.

p. 279 The research summarized thus far clearly demonstrates that extreme body weight heightens one's risk of perceived institutional and interpersonal discrimination. Yet, closer inspection of the MIDUS data reveals that the strength of these associations varies based on an individual's other personal traits, including race, gender, and socioeconomic status, demonstrating that cultural norms surrounding ideal body size moderate the social and interpersonal experiences of those with large bodies. For example, Carr and Friedman (2005) explored whether obese adults' experiences of workplace discrimination varied based on occupational status. The likelihood of experiencing employment discrimination was much larger for white-collar workers, or those working in professional or managerial positions, relative to those working in manual labor or service occupations. While obese persons working in lower status jobs were 1.5 times as likely as their normal weight counterparts to report employment discrimination, obese persons working in professional or higher status jobs were nearly 2.5 times as likely as their normal weight peers to report such discrimination. The researchers conducted parallel analyses using the day-to-day discrimination measures and once again found that being heavy exacted a more severe penalty when one worked in a white-collar job. Among men, obese white-collar workers reported the most frequent experiences of disrespectful treatment, while among women, obese white-collar workers most frequently reported that they were treated as if they had a character flaw.

Taken together, these results suggest that stigma is an inherently social process; the extent to which a personal characteristic is viewed as unattractive or indicative of a moral flaw varies across social contexts. As noted, economically advantaged Americans are less likely to be obese (Trust for America's Health and Robert Wood Johnson Foundation, 2011) and also are more likely to adopt negative views toward obese persons and to view slenderness as the ideal body type (Kashubeck-West & Huang, 2013). These patterns may reflect a strong belief in the Protestant work ethic among advantaged social groups; the belief that obesity is a consequence of laziness may be particularly common among those enjoying economic privilege (Crandall & Biernat, 1990). Physical appearances and putting forth a positive image of one's employer also may be a more critical aspect of job success in professional occupations than in blue-collar or service occupations, where much work tends to happen "backstage" rather than "frontstage" (Hochschild, 1983).

Linkages between body weight and interpersonal mistreatment also vary by race and gender, although in counterintuitive ways. D. Carr, Jaffe, and Friedman (2008) explored the extent to which race and gender conditioned the effects of body weight on harassment/teasing and perceptions that one was treated disrespectfully and treated as if they had a character flaw. The strong linear association between BMI and perceived mistreatment persisted for white men, white women, and black men, net of all controls. However, among black men, those with a normal range BMI reported significantly more mistreatment along all dimensions, relative to their obese counterparts. These findings may reflect greater acceptance of larger bodies in African American communities, as well as media images that portray larger black men as athletes or "gentle giants," whereas lean black men are portrayed as criminals and unfaithful romantic partners, and obese white men are portrayed as incompetent jokesters (Hebl & Turchin, 2005). An examination of the complex ways that race, gender, and body weight intersect to affect perceived stigmatization is possible only by using large population-based data sets such as the MIDUS.

Social and Intimate Relationships

An underlying assumption of research on coping with stressful experiences like discrimination is that the family is a safe haven and a source of support and solace (e.g., Noh & Kaspar, 2003). Studies of racial and ethnic discrimination clearly show support for this assumption, yet emerging evidence from MIDUS and other studies challenges the notion that families offer reprieve from stigmatization and mistreatment. Family members may be the primary source of criticism for overweight and obese persons, especially as they strive to lose weight. Puhl and Brownell (2006) studied a sample of overweight and obese Americans and found that family members were the most frequent source of weight stigmatization, with more than half of sample members reporting that they had been susceptible to "nasty remarks" from family.

Recent explorations of MIDUS extended this work by examining whether overweight and obese persons differed from their normal weight peers regarding the quality of their relationships with family, friends, coworkers, and romantic partners (Carr & Friedman, 2006; Carr, Murphy, Batson, & Springer, 2011, 2013). These studies revealed that high BMI was not uniformly associated with compromised relationships, and that these patterns varied based on personal weight histories, that is, whether one has been persistently heavy over the life course or has transitioned into or out of obesity status over time. The harmful consequences of early life overweight persist, even for adults who ultimately lose the weight.

Carr and Friedman (2006) examined associations between BMI category and both positive (e.g., emotional support) and negative (e.g., criticism) aspects of one's relationships with family, friends, coworkers, and spouse. They found no significant differences across the BMI categories with respect to the quality of relationships with friends, coworkers, and spouses. The researchers attributed these patterns to the fact that these relationships are largely voluntary; people tend to choose friends, spouses, and (to a lesser extent) coworkers with whom they have important attributes in common, including lifestyle choices and physical attractiveness (McPherson et al., 2001). Obese persons may either terminate unrewarding social

relationships or choose to interact only with persons who provide sufficient emotional warmth and support. Alternatively, the friends, spouses, and coworkers who befriend, marry, and work with obese individuals may be “wise persons”; according to Goffman (1963), “wise persons” are individuals who have not fully internalized negative stereotypes about the desirability and character of stigmatized persons, including obese individuals.

In sharp and surprising contrast, family relationships were strongly linked to BMI. D. Carr and Friedman (2005) found that severely obese persons reported significantly higher levels of strain and lower levels of support in their family relationships. Additionally, the detrimental effect of obesity on the quality of one’s relationships with family, defined here as parents and siblings, were significantly larger for those adults who had been overweight during their formative years. In fact, even if a person was “normal” weight in adulthood, his or her relationships with family were compromised if he or she had been overweight earlier in life—revealing the powerful ways that body weight shapes interpersonal relationships over the life course.

Why are family relationships affected by body weight, when marriages, work relationships, and friendships are not? Relationships with members of one’s family of origin are involuntary; even if an obese person is mistreated by parents or siblings, he or she cannot easily terminate these social ties (Litwak, 1981). Additionally, family relationships are an important source of health-related social control, where family members may “nudge” one another to engage in healthy lifestyles and abandon unhealthy choices (e.g., Umberson, Crosnoe, & Reczek, 2010). Yet, for obese persons, these interactions may be hurtful and create a context in which one’s family members are a source of stigmatization and demoralization, rather than support.

The MIDUS researchers also have investigated the ways that body weight affects one specific aspect of interpersonal relationships: sexual relations. This research showed that the extent to which obesity undermines one’s sexual relationships varies considerably by gender, revealing the power of the slender ideal for women in contemporary United States. Carr and colleagues explored associations between BMI and three aspects of sexuality: number of sexual partners over the past year, satisfaction with one’s current sexual relationship, and frequency of sexual relations over the past month. For women, each successive BMI category above normal weight was associated with significantly less frequent and less satisfying sex and a greater likelihood of having had no sexual partner in the past year. These effects persisted net of demographic and health controls. Among men, by contrast, only obese II/III persons had poorer sexual outcomes relative to normal weight men. These effects were largely accounted for by physical health conditions that may impede sexual performance, such as diabetes, depression, and the use of particular medications (Carr et al., 2011, 2013). These results suggest that the extent to which a particular trait is stigmatized varies by the larger social and cultural context, whereby any violation of the thin ideal can be detrimental to women, whereas a much wider range of body weights are considered acceptable among men.

Psychological Well-Being

A key strength of the MIDUS study, in addition to its novel measures of discrimination, is its rich battery of psychological well-being measures. Researchers have explored the extent to which BMI affects multiple dimensions of psychological well-being, with attention to the mechanisms that account for these patterns. Carr and Friedman (2005) found a strong association between BMI and self-acceptance, yet this association was wholly accounted for by obese persons' elevated risk of daily and institutional discrimination. Similarly, Carr et al. (2008) examined whether two indicators of mood, positive and negative affect, were linked to body weight. Again, they found a strong gradient where higher BMI was associated with significantly more frequent negative and less frequent positive affect, even after sociodemographic characteristics were controlled. However, after controlling for a range of explanatory mechanisms, including experiences of institutional and interpersonal discrimination, quality of interpersonal relationships with family, and weight-related intrusions into everyday life (e.g., compromised daily functioning and disability), they found that the negative psychological effects of high BMI became either nonsignificant or even reversed direction. After these mechanisms were controlled, obese I persons reported significantly more frequent positive affect, while overweight, obese I, and Obese II persons reported significantly less frequent negative affect, compared to normal weight persons. Taken together, these studies point to a powerful conclusion: High body weight, in and of itself, is not necessarily a source of compromised psychological well-being. Rather, it is the stressors and stigmatization associated with one's weight, most notably mistreatment at the hands of others, that accounts for the compromised self-acceptance and daily mood of obese Americans.

p. 281

Further exploration of BMI and psychological well-being reveals complex subgroup differences. Bookwala and Boyer (2008) examined gender differences in the association between BMI and psychological well-being, measured using the Ryff (1989) items that comprise the subscales of autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance. BMI was inversely associated with psychological well-being among women only. The authors attributed these patterns to cultural norms that uphold slenderness as the standard of beauty for women, the stringent monitoring women do of their own weight in an effort to achieve the slender ideal, and the premium that slender women experience on the dating and employment markets, relative to their heavier peers (Fredrickson & Roberts, 1997; McKinley & Hyde, 1996).

Conclusion and Future Directions

The research summarized in this chapter shows persuasively that obese and, to a lesser degree, overweight persons are the targets of persistent stigmatization in the United States. Although early research documented these trends through the eyes of those holding antiobese attitudes (Latner & Stunkard, 2003; Richardson et al., 1961), research based on the MIDUS study documented the experiences of those who are the target of stigmatization. Obese adults are at an elevated risk of every type of perceived discrimination measured in MIDUS, including workplace, healthcare, and daily discrimination. High body weight also is linked to more problematic relationships with family members, who are often the primary perpetrators of daily slights. These experiences, in turn, undermine obese persons' psychological well-being, self-esteem, and positive affect and intensify their negative affect.

Documenting the psychosocial consequences of obesity is an important objective in its own right; social, emotional, and sexual well-being are essential components of overall health. Yet, these results also carry important implications for population health; weight-related stigmatization both takes a direct toll on physical health and exacerbates the already harmful effects of high body weight on both self-reported and biological indicators of health. Waist circumference, a measure of abdominal adiposity that is highly correlated with BMI, is responsive to situational stressors (Cooper-McCann et al., 2014). Analyses of MIDUS

showed that day-to-day discrimination is linked prospectively to increases in waist circumference among men and women (Hunte, 2011). Perceived weight discrimination also significantly elevates one's risk of backaches, muscle soreness and weakness, fatigue, joint pain, cold and flu symptoms, stomach symptoms, stomach pains, shortness of breath (Sutin et al., 2016), and ultimately mortality (Sutin, Stephan, & Terracciano, 2015). Importantly, these effects persisted net of objective measures of obesity such as BMI. Studies using biomarker data in the MIDUS study further showed that weight discrimination increases one's risk of high allostatic load, lipid/metabolic dysregulation, glucose metabolism, and inflammation (Vadiveloo & Mattei, 2017). We investigated whether the impact of obesity on glycemic control was amplified by experiences of perceived weight discrimination and found that obese people who *also* perceived daily weight discrimination were more likely to have dysregulated glycemic control than obese people who did not report perceived discrimination due to weight (Tsenkova, Carr, Schoeller, & Ryff, 2011) (see Tsenkova et al., Chapter 18, in this volume).

The MIDUS study provides promising opportunities for expanding our knowledge of how, why, and for whom body weight affects health and well-being. We suggest several lines of future inquiry that take advantage of the multiwave, multicohort, biopsychosocial data. First, the rich array of psychosocial measures allows us to explore risk and resilience factors that either intensify or buffer against the distressing consequences of weight stigma. The MIDUS study has a particularly rich set of measures on social relationships and integration, including strain and support from family, friends, coworkers, and spouse, as well as perceived integration in one's neighborhood. Given evidence from the MIDUS study and elsewhere that immediate family often contribute to the stigmatization and mistreatment of obese persons (Carr & Friedman, 2006; Puhl & Brownell, 2006), the MIDUS study allows us to examine whether more distant sources of support, in the form of coworkers, neighbors, and friends, may be a particularly salient protective factor.

p. 282 Second, the extensive self-reported and biomarker measures may shed new light on the proximate pathways linking obesity and weight-related discrimination to compromised physical and mental well-being. One particularly novel strength of the MIDUS is its self-reported and actigraphic measures of sleep quality. Overweight and obese people are particularly vulnerable to sleep difficulties, due in part to sleep apnea (Palm, Janson, & Lindberg, 2015). Recent MIDUS analyses documented that both self-reported sleep problems, including difficulties falling asleep and staying asleep, and actigraphic measures of poor sleep quality are risk factors for disability and functional limitations (Friedman, 2016); inflammation (Kim et al., 2016); and depression (White, Rumble, & Benca, 2017). Documenting the extent to which sleep is an explanatory mechanism linking obesity to health and disability in the MIDUS study may point to potentially modifiable pathways for enhancing health and functioning.

Third, the multiwave MIDUS data, spanning nearly 20 years, allow us to explore the long-term consequences of obesity as well as the implications of weight change for health and well-being. Repeated measures of body weight and health across the three waves and a retrospective measure of early life body weight also enable researchers to explore the extent to which weight change is both a consequence and risk factor for compromised well-being. Most studies of body weight presume that a single point in time measure accurately captures one's body size, but as prior MIDUS studies have found, weight changes are consequential for one's identity and psychological well-being (D. Carr et al., 2013) and may also influence health behaviors and physical functioning. For example, persons who have been consistently overweight or obese may view weight loss regimens as futile, whereas those who have lost weight in the past may be more optimistic about the feasibility and value of such regimens.

Fourth, MIDUS obtains data on both monozygotic and dizygotic twins, which enable researchers to explore family-level similarity and dissimilarity regarding body weight and its consequences for health and well-being. These data allow us to explore intriguing questions about the ways that environmental inputs may modify genetic vulnerabilities (e.g., Johnson & Krueger, 2007; Jokela et al., 2016). For example, do

overweight and obese persons who experienced discrimination go on to have poorer physical and mental health outcomes than their overweight or obese co-twin who was spared this mistreatment? Such explorations will powerfully illustrate the extent to which later life health is a product of shared genetic background versus potentially modifiable environmental factors.

Fifth, the MIDUS Refresher sample has extended the range of birth cohorts included in the study. This provides a unique opportunity to explore whether the interpersonal and social consequences of body weight vary based on sociocultural and historical contexts. For instance, are experiences of weight-related stigmatization muted for persons belonging to birth cohorts for whom overweight and obesity rates were high during their formative years? Analyses from the first two waves of MIDUS demonstrated that overall rates of self-reported obesity stigma have not decreased over time, even as the prevalence of obesity increases (Andreyeva et al., 2008). However, the Refresher cohort in tandem with the three waves of MIDUS data enable researchers to delve into whether these patterns differ across birth cohorts.

Finally, the combined biomarker and self-reported MIDUS data are ideally suited for addressing one of the most hotly debated topics in obesity research today: Is obesity really a proxy for “unhealthy”? Although healthcare providers, insurance companies, and employers typically consider obesity as an unequivocal risk factor for poor health and disability, recent evidence from the NHANES finds that nearly half of overweight adults, 29% of obese persons, and even 16% of obesity II/III persons are classified as “metabolically healthy,” based on an index comprising blood pressure, triglyceride, cholesterol, glucose, insulin resistance, and C-reactive protein data (Tomiyama, Hunger, Nguyen-Cuu, & Wells, 2016). At the same time, fully 30% of “normal” weight persons are classified as metabolically “unhealthy.” However, the NHANES data cannot shed light on the complex social, environmental, and life course factors that differentiate those who show profiles of positive versus compromised metabolic health. The large MIDUS sample size provides an unprecedented opportunity for researchers to investigate the protective factors that distinguish healthy obese persons, as well as the risk factors that render some normal weight persons vulnerable to compromised cardiometabolic health.

p. 283 In conclusion, obesity is a well-established risk factor for a range of diseases and premature mortality (Centers for Disease Control and Prevention, 2016). Yet, recent research from the MIDUS study, which exploits rich self-reported and biological data on health and self-reported measures of discrimination, social relationships, and body weight, showed the far-ranging consequences of obesity for multiple facets of psychosocial well-being. These results carry important implications for policy and practice. Public education about the daily challenges facing obese persons and about the pervasiveness of prejudicial attitudes toward them may help to reduce unfair treatment of severely overweight Americans. Healthcare providers also could convey to patients the key messages of the Health At Every Size (HAES) movement, which promotes the philosophy that individuals of any body size can engage in healthy behaviors. These messages of encouragement, empowerment, and acceptance of body diversity may be more effective in promoting exercise and a healthy diet than more punitive or condescending approaches (Bacon, 2010).

Legislative changes also may be an effective strategy for reducing weight-based discrimination and mistreatment. Michigan is currently the only state that prohibits employment discrimination on the basis of weight. The Civil Rights Act of 1964 does not identify weight as a protected characteristic, and only in rare instances can severely obese people seek legal protection under Americans With Disabilities Act legislation. Expanding protected categories to include obese persons may be a potentially effective strategy for ensuring that prejudicial beliefs against stigmatized individuals are not translated into discriminatory acts that may ultimately have dire consequences for population health.

References

Allison, D. B., Zannolli, R., & Narayan, K. M. (1999). The direct health care costs of obesity in the United States. *American Journal of Public Health, 89*(8), 1194–1199.

[Google Scholar](#) [WorldCat](#)

An, R., & Xiang, X. (2016). Age–period–cohort analyses of obesity prevalence in US adults. *Public Health, 141*, 163–169.

[Google Scholar](#) [WorldCat](#)

Andreyeva, T., Puhl, R. M., & Brownell, K. D. (2008). Changes in perceived weight discrimination among Americans, 1995–1996 through 2004–2006. *Obesity, 16*(5), 1129–1134.

[Google Scholar](#) [WorldCat](#)

Bacon, L. (2010). *Health At Every Size: The surprising truth about your weight*. New York: BenBella Books.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Balkau, B., Deanfield, J. E., Després, J. P., Bassand, J. P., Fox, K. A., Smith, S. C., . . . Massien, C. (2007). International Day for the Evaluation of Abdominal Obesity (IDEA): A study of waist circumference, cardiovascular disease, and diabetes mellitus in 168,000 primary care patients in 63 countries. *Circulation, 116*(17), 1942–1951.

[Google Scholar](#) [WorldCat](#)

Beiko, T. Y., Paoletti, L., Strange, C. B., & Kumbhare, S. D. (2015). Emergency visit and hospitalization varies with BMI in chronic obstructive lung disease (COPD) patients in the United States BRFSS Survey. In *C45. Across the Universe of COPD Epidemiology. Conference Abstracts* (pp. A4457–A4457). New York: American Thoracic Society.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Blackstone, R. P. (2016). Prejudice, discrimination, and the preferred approach to the patient with obesity. In *Obesity* (pp. 23–39). New York: Springer International.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Bookwala, J., & Boyer, J. (2008). Gender, excessive body weight, and psychological wellbeing in adulthood. *Psychology of Women Quarterly, 32*, 188–195.

[Google Scholar](#) [WorldCat](#)

Boyes, A. D., & Latner, J. D. (2009). Weight stigma in existing romantic relationships. *Journal of Sex & Marital Therapy, 35*(4), 282–293.

[Google Scholar](#) [WorldCat](#)

Brim, O. G., Baltes, P. B., Bumpass, L. L., Cleary, P. D., Featherman, D. L., Hazzard, W. R., & Shweder, R. A. (1995). (1996). National Survey of Midlife Development in the United States (MIDUS). *ICPSR02760-v11. Ann Arbor, MI: Inter-university consortium for political and social research [distributor],(2016-03-23)* <https://doi.org/10.3886/ICPSR02760.v11>.

[WorldCat](#)

Brownell, K. D., & Horgen, K. B. (2003). *Food fight: the inside story of the food industry, America's obesity crisis, and what we can do about it*. New York: McGraw-Hill.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Brownell, K. D., Kersh, R., Ludwig, D. S., Post, R. C., Puhl, R. M., Schwartz, M. B., & Willett, W. C. (2010). Personal responsibility and obesity: A constructive approach to a controversial issue. *Health Affairs, 29*(3), 379–387.

[Google Scholar](#) [WorldCat](#)

Buxton, O. M., & Marcelli, E. (2010). Short and long sleep are positively associated with obesity, diabetes, hypertension, and cardiovascular disease among adults in the United States. *Social Science & Medicine, 71*(5), 1027–1036.

[Google Scholar](#) [WorldCat](#)

Carr, D., & Friedman, M. (2005). Is obesity stigmatizing? Body weight, perceived discrimination and psychological well-being in the United States. *Journal of Health and Social Behavior*, 46, 244–259.

[Google Scholar](#) [WorldCat](#)

Carr, D., & Friedman, M. (2006). Body weight and the quality of interpersonal relationships. *Social Psychology Quarterly*, 69(2), 127–149.

[Google Scholar](#) [WorldCat](#)

Carr, D., Murphy, L., Batson, H., & Springer, K. W. (2013). Bigger is not always better: The effect of obesity on sexual satisfaction and behavior of adult men in the United States. *Men and Masculinities*, 16(4), 452–477.

[Google Scholar](#) [WorldCat](#)

Carr, D., Springer, S., Batson, H., & Murphy, L. (2011). *Does size matter? Assessing the impact of obesity on women's and men's sexual behavior and satisfaction*. American Sociological Association annual meeting. Las Vegas, Nevada. August 2011.

Carr, D., Jaffe, K., & Friedman, M. (2008). Perceived interpersonal mistreatment among obese Americans: Do race, class, and gender matter? *Obesity*, 16(Suppl. 2), S60–S68.

[Google Scholar](#) [WorldCat](#)

Centers for Disease Control and Prevention. (2016). Adult obesity facts. Retrieved December 17, 2016, from

<https://www.cdc.gov/obesity/data/adult.html>

[WorldCat](#)

Cooper-McCann, R., Ayers, C., Albert, M., de Lemos, J., Neeland, I., McClurkin, M., . . . Powell-Wiley, T. M. (2014). Psychological stress is associated with increases in weight and waist circumference over time: Longitudinal data from the Dallas Heart Study. *Circulation*, 129(Suppl. 1), AP903.

[Google Scholar](#) [WorldCat](#)

Crandall, C., & Biernat, M. (1990). The ideology of anti-fat attitudes. *Journal of Applied Social Psychology*, 20(3), 227–243.

[Google Scholar](#) [WorldCat](#)

Crandall, C. S., & Schiffhauer, K. L. (1998). Anti-fat prejudice: Beliefs, values, and American culture. *Obesity Research*, 6(6), 458–460.

[Google Scholar](#) [WorldCat](#)

Crowson, C. S., Matteson, E. L., Davis, J. M., 3rd, & Gabriel, S. E. (2013). Contribution of obesity to the rise in incidence of rheumatoid arthritis. *Arthritis Care and Research*, 65(1), 71–77.

[Google Scholar](#) [WorldCat](#)

DeJong, W. (1980). The stigma of obesity: The consequences of naive assumptions concerning the causes of physical deviance. *Journal of Health and Social Behavior*, 75–87.

[Google Scholar](#) [WorldCat](#)

p. 284 Fine, L. J., Philogene, G. S., Gramling, R., Coups, E. J., & Sinha, S. (2004). Prevalence of multiple chronic disease risk factors: 2001 National Health Interview Survey. *American Journal of Preventive Medicine*, 27(2), 18–24.

[Google Scholar](#) [WorldCat](#)

Flegal, K. M., Kit, B. K., Orpana, H., & Graubard, B. I. (2013). Association of all-cause mortality with overweight and obesity using standard body mass index categories: A systematic review and meta-analysis. *Journal of the American Medical Association*, 309(1), 71–82.

[Google Scholar](#) [WorldCat](#)

Flegal, K. M., Kruszon-Moran, D., Carroll, M. D., Fryar, C. D., & Ogden, C. L. (2016). Trends in obesity among adults in the United States, 2005 to 2014. *Journal of the American Medical Association*, 315(21), 2284–2291.

[Google Scholar](#) [WorldCat](#)

Fontaine, K. R., & Bartlett, S. J. (1998). Estimating health-related quality of life in obese individuals. *Disease Management and Health Outcomes*, 3(2), 61–70.

[Google Scholar](#) [WorldCat](#)

Frankenfeld, C. L., Leslie, T. F., & Makara, M. A. (2015). Diabetes, obesity, and recommended fruit and vegetable consumption in relation to food environment sub-types: A cross-sectional analysis of Behavioral Risk Factor Surveillance System, United States Census, and food establishment data. *BMC Public Health*, 15(1), 1.

[Google Scholar](#) [WorldCat](#)

Fredrickson, B. L., & Roberts, T. A. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. *Psychology of Women Quarterly*, 21, 173–206.

[Google Scholar](#) [WorldCat](#)

Friedman, E. M. (2016). Self-reported sleep problems prospectively increase risk of disability: Findings from the survey of Midlife Development in the United States. *Journal of the American Geriatrics Society*, 64(11), 2235–2241.

[Google Scholar](#) [WorldCat](#)

Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. New York: Simon & Schuster.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Greenberg, B. S., Eastin, M., Hofschire, L., Lachlan, K., & Brownell, K. D. (2003). Portrayals of overweight and obese individuals on commercial television. *American Journal of Public Health*, 93(8), 1342–1348.

[Google Scholar](#) [WorldCat](#)

Guh, D. P., Zhang, W., Bansback, N., Amarsi, Z., Birmingham, C. L., & Anis, A. H. (2009). The incidence of co-morbidities related to obesity and overweight: A systematic review and meta-analysis. *BioMed Central Public Health*, 9, 88.

[Google Scholar](#) [WorldCat](#)

Han, E., Truesdale, K. P., Taber, D. R., Cai, J., Juhaeri, J., & Stevens, J. (2009). Impact of overweight and obesity on hospitalization: Race and gender differences. *International Journal of Obesity*, 33, 249–256.

[Google Scholar](#) [WorldCat](#)

Hebl, M. R., & Turchin, J. M. (2005). The stigma of obesity: What about men? *Basic and Applied Social Psychology*, 27(3), 267–275.

[Google Scholar](#) [WorldCat](#)

Hochschild, A. R. (1983). *The managed heart: commercialization of human feeling*. Berkeley: University of California Press.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Houston, D. K., Ding, J., Nicklas, B. J., Harris, T. B., Lee, J. S., Nevitt, M. C., . . . Health ABC Study. (2009). Overweight and obesity over the adult life course and incident mobility limitation in older adults: The health, aging and body composition study. *American Journal of Epidemiology*, 169(8), 927–936.

[Google Scholar](#) [WorldCat](#)

Hunte, H. E. (2011). Association between perceived interpersonal everyday discrimination and waist circumference over a 9-year period in the midlife development in the United States cohort study. *American Journal of Epidemiology*, 173(11), 1232–1239.

[Google Scholar](#) [WorldCat](#)

Jia, H., & Lubetkin, E. I. (2010). Obesity-related quality-adjusted life years lost in the US from 1993 to 2008. *American Journal of Preventive Medicine*, 39(3), 220–227.

[Google Scholar](#) [WorldCat](#)

Johnson, W., & Krueger, R. F. (2007). The psychological benefits of vigorous exercise: A study of discordant MZ twin pairs. *Twin Research and Human Genetics*, 10(02), 275–283.

[Google Scholar](#) [WorldCat](#)

Jokela, M., Berg, V., Silventoinen, K., Batty, G. D., Singh-Manoux, A., Kaprio, J., . . . Kivimäki, M., 2016. Body mass index and depressive symptoms: Testing for adverse and protective associations in two twin cohort studies. *Twin Research and Human Genetics*, 19(04), 306–311.

[Google Scholar](#) [WorldCat](#)

Kashubeck-West, S., & Huang, H. H. (2013). Social class relations with body image and eating disorders. In W. Ming Liu (Ed.), *The Oxford Handbook of Social Class in Counseling* (p. 197). New York: Oxford University Press.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Kim, T. H., Carroll, J. E., An, S. K., Seeman, T. E., Namkoong, K., & Lee, E. (2016). Associations between actigraphy-assessed sleep, inflammatory markers, and insulin resistance in the Midlife Development in the United States (MIDUS) study. *Sleep Medicine*, 27, 72–79.

[Google Scholar](#) [WorldCat](#)

Kyrölä, K. (2016). *The weight of images: Affect, body image and fat in the media*. New York: Routledge.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Latner, J. D., & Stunkard, A. J. (2003). Getting worse: The stigmatization of obese children. *Obesity Research*, 11(3), 452–456.

[Google Scholar](#) [WorldCat](#)

Link, B. G., & Phelan, J. C. (2001). Conceptualizing stigma. *Annual Review of Sociology*, 27(1), 363–385.

[Google Scholar](#) [WorldCat](#)

Litwak, E. (1981). *The modified extended family, social networks, and research continuities in aging*. New York: Columbia University Center for Social Sciences.

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Major, B., & O'Brien, L. T. (2005). The social psychology of stigma. *Annual Review of Psychology* 56, 393–421.

[Google Scholar](#) [WorldCat](#)

Masters, R. K., Powers, D. A., & Link, B. G. (2013). Obesity and US mortality risk over the adult life course. *American Journal of Epidemiology*, 177(5), 431–442.

[Google Scholar](#) [WorldCat](#)

McHugh, M. K., Symanski, E., Pompeii, L. A., & Delclos, G. L. (2009). Prevalence of asthma among adult females and males in the United States: Results from the National Health and Nutrition Examination Survey (NHANES), 2001–2004. *Journal of Asthma*, 46(8), 759–766.

[Google Scholar](#) [WorldCat](#)

McKinley, N. M., & Hyde, J. S. (1996). The objectified body consciousness scale: Development and validation. *Psychology of Women Quarterly*, 20, 181–215.

[Google Scholar](#) [WorldCat](#)

McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 27(1), 415–444.

[Google Scholar](#) [WorldCat](#)

Narayan, K. V., Boyle, J. P., Thompson, T. J., Gregg, E. W., & Williamson, D. F. (2007). Effect of BMI on lifetime risk for diabetes in the US. *Diabetes Care*, 30(6), 1562–1566.

[Google Scholar](#) [WorldCat](#)

Nguyen, N. T., Magno, C. P., Lane, K. T., Hinojosa, M. W., & Lane, J. S. (2008). Association of hypertension, diabetes, dyslipidemia, and metabolic syndrome with obesity: Findings from the National Health and Nutrition Examination Survey, 1999 to 2004. *Journal of the American College of Surgeons*, 207(6), 928–934.

[Google Scholar](#) [WorldCat](#)

Noh, S., & Kaspar, V. (2003). Perceived discrimination and depression: Moderating effects of coping, acculturation, and ethnic support. *American Journal of Public Health, 93*(2), 232–238.

[Google Scholar](#) [WorldCat](#)

Palm, A., Janson, C., & Lindberg, E. (2015). The impact of obesity and weight gain on development of sleep problems in a population-based sample. *Sleep Medicine, 16*(5), 593–597.

[Google Scholar](#) [WorldCat](#)

Perez-Pena, R., & Glickson, G. (2003). As obesity rises, health care indignities multiply. *New York Times*, A1.

<https://www.nytimes.com/2003/11/29/nyregion/as-obesity-rises-health-care-indignities-multiply.html>, accessed July 18, 2018.

[WorldCat](#)

p. 285 Preston, S. H., Mehta, N. K., & Stokes, A. (2013). Modeling obesity histories in cohort analyses of health and mortality. *Epidemiology 24*(1). <https://dx.doi.org/10.1097%2FEDE.0b013e3182770217>

[Google Scholar](#) [WorldCat](#)

Puhl, R. M., & Brownell, K. D. (2006). Confronting and coping with weight stigma: An investigation of overweight and obese adults. *Obesity, 14*(10), 1802–1815.

[Google Scholar](#) [WorldCat](#)

Punjabi, N. M. (2008). The epidemiology of adult obstructive sleep apnea. *Proceedings of the American Thoracic Society, 5*(2), 136–143.

[Google Scholar](#) [WorldCat](#)

Richardson, S. A., Goodman, N., Hastorf, A. H., & Dornbusch, S. M. (1961). Cultural uniformity in reaction to physical disabilities. *American Sociological Review, 26*, 241–247.

[Google Scholar](#) [WorldCat](#)

Rooth, D. O. (2009). Obesity, attractiveness, and differential treatment in hiring: A field experiment. *Journal of Human Resources, 44*(3), 710–735.

[Google Scholar](#) [WorldCat](#)

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological well-being. *Journal of Personality and Social Psychology, 57*(6), 1069–1081.

[Google Scholar](#) [WorldCat](#)

Saydah, S., Bullard, K. M., Cheng, Y., Ali, M. K., Gregg, E. W., Geiss, L., & Imperatore, G. (2014). Trends in cardiovascular disease risk factors by obesity level in adults in the United States, NHANES 1999–2010. *Obesity, 22*(8), 1888–1895.

[Google Scholar](#) [WorldCat](#)

Sutin, A. R., Stephan, Y., Grzywacz, J. G., Robinson, E., Daly, M., & Terracciano, A. (2016). Perceived weight discrimination, changes in health, and daily stressors. *Obesity, 24*(10), 2202–2209.

[Google Scholar](#) [WorldCat](#)

Sutin, A. R., Stephan, Y., & Terracciano, A. (2015). Weight discrimination and risk of mortality. *Psychological Science, 26*(11), 1803–1811.

[Google Scholar](#) [WorldCat](#)

Tepper, S., & Hochberg, M. C. (1993). Factors associated with hip osteoarthritis: Data from the first National Health and Nutrition Examination Survey (NHANES-1). *American Journal of Epidemiology, 137*(10), 1081–1088.

[Google Scholar](#) [WorldCat](#)

Tomiya, A. J., Hunger, J. M., Nguyen-Cuu, J., & Wells, C. (2016). Misclassification of cardiometabolic health when using body mass index categories in NHANES 2005–2012. *International Journal of Obesity, 40*(5), 883–886.

[Google Scholar](#) [WorldCat](#)

Tsenkova, V. K., Carr, D., Schoeller, D. A., & Ryff, C. D. (2010). Perceived weight discrimination amplifies the link between central adiposity and nondiabetic glycemic control (HbA1c). *Annals of Behavioral Medicine, 41*(2), 243–251.

[Google Scholar](#) [WorldCat](#)

Trust for America's Health and Robert Wood Johnson Foundation. (2011). *F as in Fat: How obesity threatens America's future—2011*. Washington, DC: Trust for America's Health. Retrieved December 15, 2016, from

<http://www.tfah.org/assets/files/TFAH2011FasInFat10.pdf>

[Google Scholar](#) [Google Preview](#) [WorldCat](#) [COPAC](#)

Umberson, D., Crosnoe, R., & Reczek, C. (2010). Social relationships and health behavior across life course. *Annual Review of Sociology, 36*, 139–157.

[Google Scholar](#) [WorldCat](#)

Vadiveloo, M., & Mattei, J. (2017). Perceived weight discrimination and 10-year risk of allostatic load among US adults. *Annals of Behavioral Medicine, 51*(1), 94–104.

[Google Scholar](#) [WorldCat](#)

Vorona, R. D., Winn, M. P., Babineau, T. W., Eng, B. P., Feldman, H. R., & Ware, J. C. (2005). Overweight and obese patients in a primary care population report less sleep than patients with a normal body mass index. *Archives of Internal Medicine, 165*(1), 25–30.

[Google Scholar](#) [WorldCat](#)

White, K. H., Rumble, M. E., & Benca, R. M. (2017). Sex differences in the relationship between depressive symptoms and actigraphic assessments of sleep and rest-activity rhythms in a population-based sample. *Psychosomatic Medicine, 79*(4), 479–484. ↵

[Google Scholar](#) [WorldCat](#)