

Obesity (Sometimes) Matters: The Importance of Context in the Relationship between Obesity and Life Satisfaction

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Abstract

Previous research has established the negative influence of obesity on subjective well-being. In the present work, the authors use multilevel modeling and Behavior Risk Factor Surveillance System data ($N = 1,319,340$) to examine how this relationship is influenced by the prevalence of obesity in the contexts in which individuals are living and how such relationships vary by gender. The results suggest that some of the influence of obesity on life satisfaction is the result of relative comparison. Implications for both our understanding of the growing “obesity epidemic” and the study of subjective well-being are discussed.

Keywords

BRFSS data, happiness, life satisfaction, multilevel models, obesity, reference group theory

Over the past decade, concern about obesity has grown in the United States. This alarm has been fueled by increasing rates of obesity and associated health problems across a variety of demographic groups. The Centers for Disease Control and Prevention (CDC) (2012) state that “obesity is common, serious, and costly” and offers a variety of statistics documenting both the growth in obesity and its relationship to “heart disease, stroke, type 2 diabetes, and certain types of cancer.” In addition to the association between obesity and poor physical health, a growing body of work has focused on the psychosocial costs of obesity among both adults (Blanchflower, Oswald, and Van Landeghem 2009; Oswald and Powdthavee 2007; Ross 1994) and adolescents (Schwimmer et al. 2005; Swallen et al. 2005). Although evidence has demonstrated the likelihood of a deleterious effect of obesity on various quality-of-life measures, less is known about exactly why obesity has such a detrimental influence. In the current research, we explore this question by examining the role of “relative obesity.” Specifically, we ask whether the effect of obesity on life satisfaction varies depending on the prevalence

of obesity in a respondent’s county. Evidence of this process would offer support to the idea of a relative obesity effect: an inherently social process connecting obesity to lower rates of subjective well-being¹ (SWB). We draw on social comparison and reference group theories as well as recent literature demonstrating the relative effects of income and sexual activity on SWB to offer an explanation of why obesity (sometimes) matters in terms of life satisfaction. In concluding, we suggest that a deeper understanding of context in the process by which obesity influences life satisfaction can both add to our understanding of the relative components of SWB more generally and offer important insights into the “obesity epidemic” in the United States.

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BACKGROUND

Overall, obesity prevalence increased by 61 percent from 1991 to 2000, reaching 35.5 percent among adult men and 35.8 percent among adult women in 2010 (Flegal et al. 2012; Mokdad et al. 2001). Although obesity is highly correlated with various demographic and socioeconomic characteristics, rates have risen significantly for all groups over the past two decades (Centers for Disease Control and Prevention 2012). Health researchers have long noted that obesity contributes to a variety of diseases and chronic health problems, including diabetes (Ford, Williamson, and Liu 1997), cardiovascular disease (Sowers 1998), hypertension (Rahmouni et al. 2005), dyslipidemia (Howard, Ruotolo, and Robbins 2003), and asthma (Beuther, Weiss, and Sutherland 2006). More recently, scholars have demonstrated the negative relationship between obesity and SWB. Using German Socioeconomic Panel data, Blanchflower et al. (2009) documented a negative association between body mass index (BMI) and life satisfaction among German adults, and Oswald and Powdthavee (2007) identified a similar pattern among a British sample. A number of scholars have also demonstrated that obesity increases the likelihood of depression (see Luppino et al. 2010 for a thorough review). Although some have argued that the relationship between obesity and emotional well-being can be bidirectional and that we must be careful in making claims that obesity causes less optimal mental states (Goodman and Whitaker 2002; Needham et al. 2010), researchers have shown that the influence of obesity on SWB holds even after controlling for endogeneity using instrumental variable analysis and other techniques (Graham and Felton 2005; Katsaiti 2010; Roberts et al. 2003).

Why Obesity Matters

What has received less attention is the mechanism through which obesity decreases emotional well-being. The inverse associations between obesity and physical health (Cornelisse-Vermaat et al. 2006; Hammond and Levine 2010), income (Zagorsky 2004), and other favorably viewed individual attributes suggests one possibility: obesity may decrease SWB by decreasing desirable physical and social characteristics. However, it is also plausible that part of the relationship between obesity and emotional well-being is fueled by a normative context in which obesity itself is devalued, above and beyond its influence on other experiences or characteristics. In other words, part of the reason obesity is related to lower

levels of happiness and life satisfaction may have to do not just with the potential outcomes of being obese but with the social stigma associated with the condition. An extensive body of work has demonstrated that obesity can lead to stigma (see Puhl and Heuer 2009 for a review) and that this stigma can have a negative effect on self-perceptions (Schafer and Ferraro 2011). Given these findings, we would expect the influence of obesity on SWB to be moderated by the level of stigma associated with obesity in a given context. Level of stigma is likely a combination of a variety of cultural and subcultural factors. However, we suggest that it will be heavily influenced by the prevalence of obesity in a given population. Obesity will be more of a normative violation and be more stigmatized when it is relatively rare, making it more likely to detract from emotional well-being. When it is more common (and therefore less of a normative violation), we would expect its effect on SWB to be weaker. From this perspective, emotional outcomes may be influenced by either “absolute” obesity (a direct result of a person’s weight or the effect of his or her weight on other personal characteristics) or “relative” obesity (a person’s weight in comparison with the weights of those around that person) or a combination of both. Similarly, any beneficial influence of not being obese on life satisfaction may be “absolute” or “relative” (moderated by local norms concerning the value of thinness).

Theories of Relativity and Related Empirical Work

The potential influence of “relative obesity” on SWB is consistent with a number of theoretical paradigms in sociology and social psychology. The concept of the “reference group” was first introduced by Herbert Hyman (1942) and began to receive significant scholarly attention soon thereafter. In their explication of Stouffer’s (1949) *The American Soldier*, Merton and Kitt (1950) explored the degree to which subjective evaluations of individuals’ situations are heavily influenced by the circumstances of others. They found that the degree to which objective conditions brought happiness, frustration, or a sense of inequity was profoundly shaped by the complex process through which respondents compared themselves with others. Out of reference group theory grew the concept of relative deprivation, which has been used to explain how people evaluate their situations and how this can influence violent crime (Blau and Blau 1982), social movements (Rose 1982), job satisfaction (Johnson and Johnson 1996), and a variety of other individual and social factors.

Concurrent with the development of the concept of the reference group, Festinger (1954) outlined a theory of social comparison in which he proposed a number of processes that individuals use to compare their situations with those of others. Although Festinger was focused more on when, and with whom, individuals draw comparisons than on the emotional outcomes of these processes, his work further specifies the role of reference groups identified by Merton and Kitt (1950). The evidence he offers from experimental research concerning the in-group nature of reference groups is consistent with Merton and Kitt's observations: individuals tend to compare themselves with others "like them," and their sense of satisfaction or dissatisfaction stems from these comparisons.

Our focus on relative obesity is also consistent with the little empirical work that addresses the influence of obesity on emotional well-being across different demographic groups and academic contexts. Working with data from the National Longitudinal Study of Youth, Graham and Felton (2005) found that the association between obesity and depression was much higher among whites than blacks or Hispanics. They suggested that because obesity was much more common among the latter two groups, the associated stigma was much less. Similarly, Pinhey, Rubinstein, and Colfax (1997) found significant negative associations between BMI and happiness among Guamanian Filipinos and Asians (groups with low average BMIs) but not Micronesians (a group with a high average BMI). While offering tentative support to the influence of norms on the relationship between obesity and well-being, both studies suffer from being able to compare only a small number of culturally distinct groups, some of which demonstrate high levels of within-group heterogeneity. Because the comparisons are across racial-ethnic groups, it is also impossible to determine whether the variation in the relationship between BMI and happiness is due to how common obesity is or if it is due to cultural attitudes toward body weight, which may or may not be strongly associated with the prevalence of obesity. For instance, Graham and Felton found a positive association between obesity and SWB among a Russian sample and suggested that it resulted from cultural beliefs tying obesity to prosperity.

In work focusing on academic achievement, Crosnoe and Muller (2004) found "that the negative longitudinal association between risk of obesity and achievement was stronger in schools with higher rates of romantic activity and lower average

body size among students, two school contexts in which obesity was likely to be stigmatized" (p. 393). This also offers some support to the role of peer contexts in shaping the relationship between obesity and other measures of success. In contrast, when looking at depression, Ross (1994) found that with one exception, being a member of a group with lower rates of obesity did not influence the relationship between obesity and depression (the one exception was among the well educated, who demonstrated a stronger positive relationship between obesity and depression). She did find, however, that the effect of obesity on depression was partially mediated by dieting attempts. She related attempts to lose weight to normative expectations and suggested that this offers support to the claim that peer weight norms influence the relationship between obesity and well-being.

The Role of Relativity for Other Correlates of Well-being

More broadly, this theoretical framework in which context shapes how individual characteristics influence SWB is also found in recent work demonstrating the relative effects of income on happiness. Although structured somewhat differently, this literature has shown that the process by which individual income influences SWB depends on the incomes of others in the same peer group or geographic context. For instance, using data from the World Values Survey, Ball and Chernova (2008) demonstrated that absolute income has less of an effect on a respondent's happiness than does relative income (individual income/average income). Drawing on data from the National Survey of Families and Households, Luttmer (2005) found that, after controlling for individual income, neighbors' incomes have a negative effect on respondents' happiness. Consistent with reference group theory, the negative influence of neighbors' income is stronger for respondents who socialize more with people in their neighborhood. Similarly, both Firebaugh and Tach (2008) and McBride (2001) demonstrated that the self-reported happiness of General Social Survey respondents is positively related to their own incomes yet negatively correlated with the incomes of their peers. The two studies conceptualized peer and reference groups differently, but their findings are remarkably similar.

Although not directly focused on SWB, evidence for the importance of relative income can also be found in research on preferences. Solnick and Hemenway (1998) found that when a sample

of Harvard public health students was given the option of living in a world in which they would make \$50,000 dollars a year and everyone else would make \$25,000, or one in which they would make \$100,000 and everyone else would make \$250,000, a majority of the respondents chose the first option: a world in which they would have half as much purchasing power but would be relatively high earners. The students appeared to place more value on relative than absolute income. The collective message from these findings is that the influence of an individual's income on his or her happiness or life satisfaction is dependent on the incomes of others within the individual's reference group or geographic context. Having little money (a socially undesirable trait) is not as much of a problem for emotional well-being if one's reference group has little money, but is a much bigger problem when one's reference group is financially better off.

Very similar findings have recently been demonstrated in the realm of sexual behavior. Engaging in sex more frequently increases happiness, but it is relative to the amount of sex one's reference group is having (Wadsworth 2014). Shifting our attention to the relationship between body weight and life satisfaction, we question whether being obese in an absolute sense or being obese relative to one's fellow community members is more influential in shaping life satisfaction. Just as context may moderate the influence of obesity on life satisfaction, it may also moderate the influence of nonobesity. Not being obese may be more emotionally beneficial in a context with lower levels of obesity. It should be noted that there is an important difference between the role of relative influence when looking at obesity rather than income (or sexual activity). None of the work on relative income has suggested that the positive value associated with having more money varies, only that norms around expected amounts will depend on context. In contrast, the degree to which obesity itself is devalued (or not) may vary depending on local obesity levels and associated norms around appropriate weight. As such, although "more is better" may be consistent across contexts when considering income (and, to a certain degree, sex), the idea that "less is better" may differ across contexts when considering weight.

In addition to varying by the prevalence of obesity in a geographic context, the level of stigma associated with obesity may also vary by gender. Although Puhl and Brownell (2006) found that emotional responses to weight-related stigma, such as

symptoms of depression, self-esteem issues, and binge-eating behavior were similar for men and women, findings concerning the levels of stigma for men and women have been inconsistent. Some studies have demonstrated that levels of weight-related stigma are similar across gender (Carr and Friedman 2005; Friedman et al. 2005), whereas others have found evidence suggesting that women experience higher levels of weight-related stigma (Cossrow, Jeffrey, and McGuire 2001; Jasper and Klassen 1990; Hebl and Turchin 2005). If stigma resulting from obesity does not vary by gender, we would expect the relationship between obesity and life satisfaction to be similar for men and women. Yet if women are in fact more stigmatized by obesity, we would expect the influence of obesity on life satisfaction to be stronger among women than men.

It is also conceivable that the degree to which county obesity rates shape weight-related stigma will differ by gender. Many studies have demonstrated that female-focused national media, such as beauty and fashion magazines, are influential in shaping female body expectations, body dissatisfaction, and associated health behaviors (Levine, Smolak, and Hayden 1994; Wilcox and Laird 2000) and that the primary focus of these messages is thinness. Although a much smaller body of work has demonstrated a similar relationship between national media messages and male body perceptions (Drewnowski and Yee, 1987; Mintz and Betz 1986), scholars have noted that the messages are more focused on weight gain, and it is unclear whether these messages are as pervasive for men as they are for women. If the message of thinness is stronger and more universal for women than men, we would anticipate less geographic variation in weight-related stigma for women. As such, the relationship between obesity and life satisfaction would be less influenced by county rates of obesity. To explore this possibility, we examine the influence of obesity on life satisfaction separately for men and women.

Given both the theoretical and empirical literatures discussed above, we propose six primary hypotheses. Consistent with previous research, we make the following hypothesis:

Hypothesis 1: Obesity will have a negative relationship with life satisfaction.

Because part of the "absolute" effect of obesity may be mediated by the negative relationships between obesity and other socially valued traits, we propose the following hypothesis:

Hypothesis 2: The negative relationship between obesity and life satisfaction will be attenuated when we control for income, education, employment, and marital status.

Because health is likely to be negatively associated with both obesity and life satisfaction, we hypothesize as follows:

Hypothesis 3: The negative relationship between obesity and life satisfaction will be attenuated when we control for self-reported health.

On the basis of the process of social comparison and weight-related stigmatization, we propose the following hypothesis:

Hypothesis 4: The relationship between obesity and life satisfaction will be stronger in counties with lower rates of obesity.

Last, because of more rigid and widely held body norms for women that are potentially more national than local, we anticipate both of the following possibilities:

Hypothesis 5: The negative relationship between obesity and life satisfaction will be stronger for women.

Hypothesis 6: The influence of county obesity rates will be more influential in shaping the relationship between obesity and life satisfaction for men than for women.

Surprisingly, outside of the area of income and one article on sexual frequency, there is scant research on how relative position influences SWB among national samples of adults. Testing these hypotheses can add to our understanding of obesity at the micro- and macro-levels and contribute to the broader literature on how relative position helps shape life satisfaction.

DATA AND METHODS

We use data from the Behavior Risk Factor Surveillance System (BRFSS) to investigate whether the relationship between individual obesity and life satisfaction for men and women is moderated by county-level obesity rates. Since 1984, the BRFSS has been the United States' largest ongoing telephone

health survey for tracking health conditions and risky behaviors (Centers for Disease Control and Prevention 2012). State health departments and the Behavioral Surveillance Branch of the CDC work collaboratively to construct sampling frames, using disproportionate stratified random samples that use area density (high vs. medium) as the two strata. This approach is more efficient than random-digit dialing and produces a representative sample of households with telephones in each state (Behavior Risk Factor Surveillance System 2006). After aggregating state data, yearly national sample sizes from 2005 to 2008 range from $n = 355,241$ to $n = 414,366$. BRFSS response rates vary by state and year but range from 37 percent to 69 percent.

The BRFSS provides ideal data for this study for several reasons. First, although the majority of questions in the BRFSS pertain to specific health issues and all waves collect information about participants' heights and weights, the 2005 to 2008 surveys inquire about respondents' overall life satisfaction and many other relevant variables that are discussed in greater detail below. Additionally, the large sample size of the BRFSS permits aggregation of individual responses, allowing us to construct different normative environments on the basis of county-level obesity rates. Because the BRFSS data are geocoded, a respondent's home state and county can be identified if his or her confidentiality can be ensured by collecting data from at least 50 individuals within that county. Although our decision to use counties as the unit of analysis in creating obesity or weight reference groups was motivated in part by the fact that counties are the lowest level of aggregation available in the BRFSS data, we also feel that they are the most theoretically relevant given our focus. As noted above, people tend to compare themselves with others like them. This likely includes neighbors, coworkers, classmates, and others with whom individuals have somewhat regular interaction. Many of the activities that put people in contact with such peers are organized around residential, economic, and educational patterns that are often county based. although for urban areas, one could argue that cities are more representative of such patterns of interactions (because of important distinctions between urban, suburban, and rural areas that are merged when examining large counties with urban centers) the use of cities as the unit of analysis would force us to drop all of the respondents who are living outside of metropolitan areas.

In the 2005 to 2008 data, county identifiers are available for 84.7 percent of the sample.²

representing 2,353 of the 3,143 counties in the United States. These counties range in size from Jackson County, Colorado (population 1,577) to Los Angeles County, California (population 9,519,338), with the average population of a county represented in our sample of 117,659. This is somewhat larger than the actual mean population for all counties in the United States (89,596). Thus, when considering only respondents with county identifiers, the sample is no longer truly representative because the data are disproportionately composed of individuals from somewhat larger counties (despite the presence of many small, rural counties). The aggregate obesity rate for all individuals without county identifiers in our sample is slightly higher than for those with county identification (35 percent vs. 32 percent), suggesting that obesity is slightly more common in smaller (often rural and southern) counties. That said, we have no reason to expect that the process by which obesity rates may shape the individual-level relationship between obesity and life satisfaction would be different for the omitted counties. As such, although we cannot be sure, we think it is unlikely that their inclusion would substantially affect our results.

Measures

The dependent variable in our analysis is life satisfaction. As previously noted, the 2005 to 2008 BRFSS includes the question "In general, how satisfied are you with your life?" Possible responses included are "very satisfied," "satisfied," "dissatisfied," and "very dissatisfied." The majority of respondents report being "very satisfied" (45 percent) or "satisfied" (49 percent), with only 4 percent and 1 percent indicating that they are "dissatisfied" and "very dissatisfied," respectively. Because of the distribution of responses, we treat the life satisfaction measure as binary, distinguishing between those who are "very satisfied" and "satisfied" or less. To make sure that this treatment of life satisfaction did not influence our findings, we reran all of the models discussed below using all four of the response categories in an ordered logit analysis. The findings of these models were not substantively different from those reported below (tables available on request).

For our primary explanatory variable, we adopt the National Heart, Lung, and Blood Institute's guidelines for obesity diagnosis, which use BMI to categorize patients on the basis of their relative risk for type 2 diabetes, hypertension, and cardiovascular disease. This scale identifies individuals with

BMI in the range of 30 to 34.9 kg/m² as obesity class I, 35 to 39.9 kg/m² as class II, and 40 kg/m² or higher as class III or extreme obesity (National Institutes of Health 1998). Unfortunately, the BRFSS only includes information about subjects' self-reported heights and weights, which other studies have found are systematically biased (e.g., Gorber et al. 2007; Spencer et al. 2001; Villanueva 2001). To address this issue, researchers have developed correction equations on the basis of the amount of self-report bias identified in surveys that obtain both self-reported and measured height and weight. We apply the corrections reported by Jain (2010) because this work specifically focused on validating corrections developed from an analysis of the National Health and Nutrition Examination Survey with BRFSS data. These corrections take into account respondents' age, gender, and race-ethnicity to account for varying levels of bias among different demographic groups and result in estimates of height and weight that have been shown to be more accurate. We used these corrected measures of height and weight to construct our BMI measure using the equation $BMI = \text{weight (kg)}/\text{height}^2 \text{ (m}^2\text{)}$. In total, 20.1 percent of the sample meets the qualifications for obesity class I, and 12.6 percent meets the criteria for obese class II or III. In the models below, we analyze both the effect of obesity (obesity class I) and the effect of severe obesity, which includes respondents in obesity categories II and III.

We also account for several other individual-level variables that may be correlated with obesity and that previous research has suggested are associated with life satisfaction. These include respondents' age, age squared (prior research shows that the relationship between age and life satisfaction is curvilinear; Dolan and Peasgood 2008), race-ethnicity (Wadsworth 2014) (African American, Hispanic, Native American, Asian, Hawaiian/Pacific Islander, other race, and multiracial are included in the model, with white as the reference category), marital status (Haring-Hidore et al. 1985; Veenhoven 1994) (divorced, widowed, separated, and never married are included, with married serving as our reference category), household income (Luttmer 2005; McBride 2001) (we use a continuous variable created by taking the midpoints of the response categories, and to adjust for right-censored income values, we multiplied the highest category, over \$75,000, by 1.5; we also divided the indicator into \$10,000 increments to make any effect on the dependent variable more easily interpretable), education (Dolan and Peasgood 2008) (a numerical value corresponding to

the respondent's completed years of education), employment status (Dolan and Peasgood 2008) (unemployed, homemaker, student, retired, and can't work are included in the model, with employed as the reference category) and self-rated health (Dolan and Peasgood 2008) (we use the BRFSS's suggested dichotomous coding: "poor" and "fair" are coded 0, and "good," "very good," and "excellent" are coded 1) (Behavior Risk Factor Surveillance System 2006). Descriptive statistics for these variables can be viewed in Table 1, for which we applied the BRFSS survey weights to adjust for the probability of selection, nonresponse, and noncoverage of households without telephones.

Our measure of obesity context was calculated by aggregating the general obesity classification (BMI ≥ 30 kg/m²) on the basis of the corrected heights and weights of all individual respondents in each county. This produces a rate of obesity for each county included in our sample, which ranges from 58 percent in Mountrail County, North Dakota, to 8 percent in Routt County, Colorado. The average county-level obesity rate in our sample is 32 percent. In addition to obesity context, we included county-level measures of racial composition (percentage black, percentage Hispanic, percentage Asian, percentage Hawaiian/Pacific Islander, and percentage Native American) and per capita income to capture other aggregate characteristics that may potentially influence both individual and aggregate levels of both obesity and life satisfaction. To ensure that our results are not showcasing some sort of cultural effect due to state-by-state variation, we also control for the fixed effects of states in which our counties are situated.

Methods

To determine whether the relationship between obesity and life satisfaction varies for individuals in different normative environments, we use multi-level logistic regression analysis (Rabe-Hesketh and Skrondal 2008). Multilevel models allow us to account for the fact that individuals are located (or "nested") in geographic aggregations (in this case, counties) that likely influence their response characteristics, a condition that would ordinarily violate the assumption of independent observations necessary for traditional linear and binary models, leading to biased parameter estimates. We use Stata 12.1 software to estimate maximum-likelihood models, allowing for random variation of our fixed-effect estimates at the county level and adjusting for different sample sizes and clustering

of level 1 and level 2 units. This accounts for the fact that the observations may violate the assumption of independence given that people are nested within counties. These issues, if not addressed, can lead to underestimated standard errors (Raudenbush and Bryk 2002). By allowing the random intercept in our logistic regression model to vary by county, we can account for different county-level obesity rates and estimate the effect that varying normative obesity environments have on our binary measure of life satisfaction. This process then allows us to calculate predicted life satisfaction scores for obese and nonobese individuals and examine how this relationship changes across counties with varying rates of obesity. We did not apply the BRFSS survey weights for these models because we implicitly allow the estimates to vary by the same units used in the study's stratified sampling frame (i.e., counties and states), which results in much more efficient estimates than those that would be obtained using a pseudo-likelihood estimator that incorporates the sampling weights (for more information, see Chambers, Dorfman, and Wang 2002).

Because different levels of obesity may have distinct influences on life satisfaction, we include measures of both obesity (BMI ≥ 30 kg/m²) and severe obesity (BMI ≥ 35 kg/m², considered class II and III obesity by the CDC). We run our models separately for men and women to allow for the possibility that both the influence of obesity and the moderating effect of context vary by gender. We test for significant differences across gender using the test recommended by Altman and Bland (2003):

$$Z = \frac{b_1 - b_2}{\sqrt{(SE_1)^2 + (SE_2)^2}}$$

RESULTS

Tables 2 and 3 provide the results of four gender-specific models (Table 2 for men and Table 3 for women). The results for each model include logits and standard errors, as well as odds ratios (ORs) for ease of interpretation. The first model in each table is a baseline model that examines the influence of obesity and basic demographic characteristics (race-ethnicity and age) on life satisfaction while controlling for respondents' states of residence. These models allow for a basic test of our first hypotheses, which suggests that obesity will have a negative effect on life satisfaction. In the second models, we include employment status, educational achievement, income, and marital status, characteristics that may be associated with obesity

Table 1. Descriptive Statistics.

Variable	Male	Female	Total
	Mean (SD)		
Health status			
Life satisfaction	.45 (.50)	.45 (.50)	.45 (.50)
Good health	.84 (.50)	.82 (.50)	.83 (.50)
Obese	.23 (.42)	.18 (.39)	.20 (.40)
Severe obesity	.11 (.32)	.13 (.34)	.13 (.33)
Employment status			
Employed	.69 (.46)	.53 (.50)	.61 (.49)
Unemployed	.05 (.23)	.05 (.22)	.05 (.22)
Homemaker	.00 (.06)	.15 (.36)	.08 (.27)
Student	.04 (.21)	.05 (.21)	.05 (.21)
Retired	.16 (.36)	.16 (.37)	.16 (.37)
Can't work	.05 (.21)	.05 (.23)	.05 (.22)
Marital status			
Married	.62 (.48)	.57 (.49)	.60 (.49)
Divorced	.08 (.26)	.10 (.30)	.09 (.28)
Widowed	.03 (.16)	.10 (.30)	.06 (.25)
Separated	.02 (.13)	.03 (.16)	.02 (.14)
Never married	.21 (.41)	.16 (.36)	.18 (.39)
Socioeconomic status			
Household Income (×1,000)	53.95 (41.26)	46.15 (40.42)	49.94 (41.02)
Education	12.89 (7.66)	12.89 (7.52)	12.89 (7.59)
Demographics			
Age (years)	44.67 (17.28)	46.78 (18.31)	45.75 (17.85)
White	.67 (.47)	.69 (.46)	.68 (.47)
Hispanic	.15 (.36)	.14 (.35)	.15 (.36)
Asian	.03 (.18)	.03 (.16)	.03 (.17)
Black	.18 (.57)	.20 (.60)	.19 (.59)
Hawaiian/Pacific Islander	.00 (.06)	.00 (.05)	.00 (.06)
Native	.01 (.11)	.01 (.10)	.01 (.10)
Multiracial	.02 (.12)	.01 (.12)	.01 (.12)
Other	.01 (.10)	.01 (.08)	.01 (.09)
Male	—	—	.38 (.50)
Female	—	—	.62 (.50)
County characteristics			
Per capita income (×1000)	21.06 (5.06)	20.90 (5.03)	20.96 (5.04)
% White	.75 (.20)	.75 (.20)	.75 (.20)
% Black	.10 (.13)	.11 (.14)	.10 (.14)
% Hispanic	.08 (.12)	.08 (.12)	.08 (.12)
% Asian	.03 (.06)	.03 (.05)	.03 (.06)
% Hawaiian/Pacific Islander	.00 (.01)	.00 (.01)	.00 (.01)
% Native	.01 (.05)	.01 (.05)	.01 (.05)
% Obese	.32 (.05)	.33 (.05)	.32 (.05)
<i>n</i>	498,224	821,116	1,319,340

Table 2. Multilevel Logistic Regression Results Predicting the Influence of Being Obese on Life Satisfaction among Men.

Variable	Model 1		Model 2		Model 3		Model 4	
	b (SE)	Odds Ratio	b (SE)	Odds Ratio	b (SE)	Odds Ratio	b (SE)	Odds Ratio
Obesity								
Obese	-.05 (.01)	.95***	-.09 (.01)	.91***	-.06 (.01)	.94***	-.18 (.05)	.84***
Severe obesity	-.34 (.01)	.71***	-.29 (.01)	.75***	-.19 (.01)	.83***	-.54 (.07)	.58***
Health								
Good health					.90 (.01)	2.46***	.90 (.01)	2.46***
Race-ethnicity (white)								
Black	-.31 (.01)	.73***	.05 (.01)	1.05***	.06 (.01)	1.06***	.08 (.01)	1.08***
Hispanic	-.21 (.01)	.81***	.03 (.01)	1.03*	.09 (.01)	1.09***	.10 (.01)	1.11***
Asian	-.27 (.02)	.76***	-.35 (.02)	.70***	-.33 (.02)	.72***	-.32 (.02)	.73***
Hawaiian/Pacific Islander	-.06 (.06)	.94	.06 (.07)	1.06	.08 (.07)	1.08	.09 (.07)	1.09
Native	-.28 (.03)	.76***	.00 (.03)	1.00	.04 (.03)	1.04	.03 (.03)	1.03
Multiracial	-.31 (.02)	.73***	-.13 (.02)	.88***	-.10 (.02)	.90***	-.09 (.02)	.91***
Other	-.24 (.04)	.79***	-.09 (.04)	.91**	-.07 (.04)	.93*	-.07 (.04)	.93
Employment status (employed)								
Unemployed			-.67 (.02)	.51***	-.59 (.02)	.55***	-.59 (.02)	.55***
Student			.35 (.02)	1.42***	.36 (.02)	1.43***	.36 (.02)	1.43***
Retired			.22 (.01)	1.25***	.28 (.01)	1.32***	.28 (.01)	1.32***
Can't work			-.82 (.02)	.44***	-.39 (.02)	.68***	-.39 (.02)	.68***
Homemaker			-.11 (.06)	.90*	-.05 (.06)	.95	-.05 (.06)	.95
Marital status (married)								
Divorced			-.66 (.01)	.52***	-.65 (.01)	.52***	-.65 (.01)	.52***
Widowed			-.69 (.01)	.50***	-.69 (.01)	.50***	-.68 (.01)	.51***
Separated			-.94 (.03)	.39***	-.93 (.03)	.39***	-.91 (.03)	.40***
Never married			-.66 (.01)	.52***	-.67 (.01)	.51***	-.67 (.01)	.51***

(continued)

Table 2. (continued)

Variable	Model 1		Model 2		Model 3		Model 4	
	<i>b</i> (SE)	Odds Ratio	<i>b</i> (SE)	Odds Ratio	<i>b</i> (SE)	Odds Ratio	<i>b</i> (SE)	Odds Ratio
Demographics								
Education			.02 (.00)	1.02***	.01 (.00)	1.01***	.01 (.00)	1.01***
Age	.00 (.00)	1.00**	-.02 (.00)	.98***	-.02 (.00)	.98***	-.02 (.00)	.98***
Age ²	.00 (.00)	1.00**	.00 (.00)	1.00***	.00 (.00)	1.00***	.00 (.00)	1.00***
Income			.00 (.00)	1.00***	.00 (.00)	1.00***	.00 (.00)	1.00***
County characteristics								
Income per capita							.00 (.00)	1.00**
% Black							-.07 (.04)	.93
% Hispanic							-.08 (.05)	.92
% Asian							-1.59 (.20)	.20***
% Hawaiian/Pacific Islander							-2.35 (2.97)	.10
% Native							.03 (.08)	1.03
% Obese							-.59 (.13)	.55***
Interaction terms								
Obese × % obese							.36 (.14)	1.43*
Severe obese × % obese							1.05 (.19)	2.86***
Constant	-.17 (.04)	.84	.04 (.04)	1.04	-.69 (.04)	.50	-.38 (.08)	.68

Source: Behavior Risk Factor Surveillance System 2005 to 2008.

Note: Referents are in parentheses.

* $p \leq .05$, ** $p \leq .01$, and *** $p \leq .001$ (two-tailed tests).

and life satisfaction. These models allow us to assess whether the effect of obesity on life satisfaction can be partially or fully explained by the negative association between other culturally valued attributes and obesity. Attenuation of the effect for obesity on life satisfaction between Model 1 and Model 2 would offer support to our second hypothesis. Similarly, in Model 3, we add a measure of SRH to determine whether any influence of obesity on life satisfaction is being mediated by overall health. This provides a test

of our third hypothesis. Last, Model 4 adds county-level variables indicating obesity rates, racial composition, and per capita income as well as two interaction terms representing how county obesity rates may shape the influence of obesity and severe obesity on life satisfaction. These interaction terms allow us to test our fourth hypothesis concerning the role of context in the relationship between obesity and life satisfaction. Our fifth and sixth hypotheses concern differences between men and women and are assessed

Table 3. Multilevel Logistic Regression Results Predicting the Influence of Being Obese on Life Satisfaction among Women.

Variable	Model 1		Model 2		Model 3		Model 4	
	b (SE)	Odds Ratio	b (SE)	Odds Ratio	b (SE)	Odds Ratio	b (SE)	Odds Ratio
Obesity								
Obese	-.25 (.01)	.78***	-.19 (.01)	.83***	-.15 (.01)	.86***	-.36 (.04)	.70***
Severe obesity	-.57 (.01)	.57***	-.40 (.01)	.67***	-.29 (.01)	.75***	-.51 (.05)	.60***
Health								
Good health					.90 (.01)	2.46***	.90 (.01)	2.46***
Race-ethnicity (white)								
Black	-.34 (.01)	.71***	.01 (.01)	1.01	.04 (.01)	1.04***	.04 (.01)	1.04***
Hispanic	-.37 (.01)	.69***	-.13 (.01)	.88***	-.05 (.01)	.95***	-.04 (.01)	.96***
Asian	-.28 (.02)	.76***	-.33 (.02)	.72***	-.30 (.02)	.74***	-.30 (.02)	.74***
Hawaiian/Pacific Islander	-.12 (.05)	.89*	.00 (.06)	1.00	.04 (.06)	1.04	.04 (.06)	1.04
Native	-.30 (.02)	.74***	-.02 (.02)	.98	.04 (.02)	1.04	.03 (.02)	1.03
Multiracial	-.31 (.02)	.73***	-.14 (.02)	.87***	-.09 (.02)	.91***	-.09 (.02)	.91***
Other	-.26 (.03)	.77***	-.11 (.03)	.90**	-.09 (.03)	.91**	-.09 (.03)	.91*
Employment status (employed)								
Unemployed			-.57 (.01)	.57***	-.49 (.01)	.61***	-.49 (.01)	.61***
Student			.13 (.02)	1.14***	.14 (.02)	1.15***	.14 (.02)	1.15***
Retired			.19 (.01)	1.21***	.24 (.01)	1.27***	.24 (.01)	1.27***
Can't work			-.82 (.01)	.44***	-.37 (.01)	.69***	-.37 (.01)	.69***
Homemaker			.11 (.01)	1.12***	.15 (.01)	1.16***	.15 (.01)	1.16***
Marital status (married)								
Divorced			-.57 (.01)	.57***	-.57 (.01)	.57***	-.57 (.01)	.57***
Widowed			-.53 (.01)	.59***	-.54 (.01)	.58***	-.54 (.01)	.58***
Separated			-.87 (.02)	.42***	-.85 (.02)	.43***	-.85 (.02)	.43***
Never married			-.51 (.01)	.60***	-.53 (.01)	.59***	-.52 (.01)	.59***

(continued)

Table 3. (continued)

Variable	Model 1		Model 2		Model 3		Model 4	
	<i>b</i> (SE)	Odds Ratio	<i>b</i> (SE)	Odds Ratio	<i>b</i> (SE)	Odds Ratio	<i>b</i> (SE)	Odds Ratio
Demographics								
Education			.02 (.00)	1.02***	.01 (.00)	1.01***	.01 (.00)	1.01***
Age	.02 (.00)	1.02***	.00 (.00)	1.00***	.00 (.00)	1.00***	.00 (.00)	1.00***
Age ²	.00 (.00)	1.00***	.00 (.00)	1.00***	.00 (.00)	1.00***	.00 (.00)	1.00***
Income			.00 (.00)	1.00***	.00 (.00)	1.00***	.00 (.00)	1.00***
County characteristics								
Income per capita							.00 (.00)	1.00*
% Black							.06 (.04)	1.06
% Hispanic							-.14 (.04)	.87***
% Asian							-1.30 (.17)	.27***
% Hawaiian/Pacific Islander							-4.94 (2.56)	.01
% Native							.07 (.07)	1.07
% Obese							-.62 (.10)	.54***
Interaction terms								
Obese × % obese							.62 (.12)	1.86***
Severe obese × % obese							.66 (.14)	1.93***
Constant	-.44 (.03)	.64	-.46 (.03)	.63	-1.18 (.03)	.31	-.92 (.06)	.40

Source: Behavior Risk Factor Surveillance System 2005 to 2008.

Note. Referents are in parentheses.

* $p \leq .05$, ** $p \leq .01$, and *** $p \leq .001$ (two-tailed tests).

by looking at whether the influence of key covariates differs significantly across the two samples.

Looking first at Model 1 for men (Table 2), we see significant effects of obesity and severe obesity on life satisfaction. After controlling for a variety of influential factors, compared with their nonobese counterparts, obese respondents have 5 percent reduced odds (OR = .95) and severely obese respondents have 29 percent lower odds (OR = .71) of reporting being very satisfied with their lives. In Model 2, we add marital

status, employment status, and income, all of which are significantly related to life satisfaction in the expected direction. After adding these variables, the size of the coefficient for obesity increased by 80 percent (from $-.05$ to $-.09$), whereas the coefficient for severe obesity decreased by 17 percent (from $-.34$ to $-.29$). These mixed findings offer limited support for the second hypothesis, which suggests that part of the reason obesity influences life satisfaction is due to its effect on other characteristics, such as marital and

employment status, education, and income. Although these factors may attenuate part of the influence of severe obesity, not controlling for them actually suppresses part of the effect of general obesity on life satisfaction. The third model demonstrates the importance of health on life satisfaction. It has a strong direct effect in that individuals who report good or better health have 2.5 times higher odds ($OR = 2.46$) of reporting being more satisfied with their lives. The inclusion of the health variable also explains part of the influence of obesity on life satisfaction (the coefficient for obesity decreases from $-.09$ to $-.06$, and the coefficient for severe obesity drops from $-.29$ to $-.19$). This finding of partial mediation (that poor health is part of the reason that obesity decreases life satisfaction) provides support for our third hypothesis, at least for the male sample. The fourth model in Table 2 addresses our fourth hypothesis and primary research question: does the frequency of obesity in a county moderate the relationship between obesity and SWB at the individual level? The answer for men is yes. The positive and statistically significant coefficients for the interaction of county obesity rate with obesity ($b = .36$, $OR = 1.43$) and severe obesity ($b = 1.05$, $OR = 2.86$) demonstrate that differences in life satisfaction between obese (and severely obese) and nonobese male respondents are significantly reduced in counties with higher versus lower rates of obesity (we interpret the size of this interaction more thoroughly below). It is also worth noting that per capita income and percentage obese also exert independent effects on life satisfaction. Those living in wealthier counties tend to report higher levels of life satisfaction, and those living in counties with higher rates of obesity report lower rates.

The four models in Table 3 represent the same analyses but for women, and they tell a very similar story. Model 1 demonstrates that obese and very obese women report lower levels of life satisfaction. The odds ratios of $.78$ and $.57$ indicate that obese and very obese women have 22 percent and 43 percent lower odds than nonobese women of reporting being very satisfied with their lives. Although this relationship is similar to that demonstrated in the male model, a test for the difference in standard errors between the male and female models (Altman and Bland 2003) suggests that the differences are statistically significant ($p < .001$). Consistent with hypothesis 5, the negative effect of obesity on life satisfaction is stronger for women than it is for men. Generally, other variables in the model exhibit similar patterns to those in the male model.

Model 2 in Table 3 demonstrates the influence of employment status, marital status, and income

on life satisfaction. Similar to the male models, all of these relationships are in the expected direction. Comparing Models 1 and 2 also shows the degree to which adding these personal characteristics influences the effects of the two obesity variables on life satisfaction. The effect of obesity decreases by 32 percent and the effect of severe obesity decreases by 43 percent once we control for marital status, employment status, education, and income. This attenuation of the coefficients representing the effects of obesity and severe obesity between Models 1 and 2 suggests that part of the obesity effect for women is the result of the relationship between these positively valued characteristics (being married, being employed, and having a higher level of education and a higher income) and both obesity and life satisfaction. The third model in Table 3 demonstrates the importance of health for women's life satisfaction. Similar to men, women who report good or better health have nearly 2.5 times higher odds of reporting higher levels of life satisfaction. Also similar to the men, the influence of health explains part (about 25 percent) of the influence of obesity (the coefficient for obesity decreases from $-.19$ to $-.15$ for the obese and from $-.40$ to $-.29$ for the severely obese). Model 4 in Table 3 shows that, similar to men, the influence of obesity and severe obesity on the life satisfaction of women varies depending on the prevalence of obesity in the county. Although the coefficients representing the interaction between individual obesity and severe obesity and county obesity are somewhat different across the male and female models, these differences are not statistically significant at $p < .05$.

Together, the findings from the four models and the comparison with the male models suggest that women in general pay a higher life satisfaction cost for being either obese or severely obese and that this cost varies on the basis of county obesity rates in the same way it does for men. This finding does not support our sixth hypothesis, which suggests that local norms around expected weight may be less influential for women than men.

An important question for the current research is just how much influence context has on the relationship between obesity and life satisfaction. It is difficult to interpret the substantive meaning of interaction terms without considering the effects of the variables that constitute the interaction, and given the size of the sample, just saying that the coefficient representing the interaction is statistically significant should not convince us of its substantive importance. To better interpret the effect of

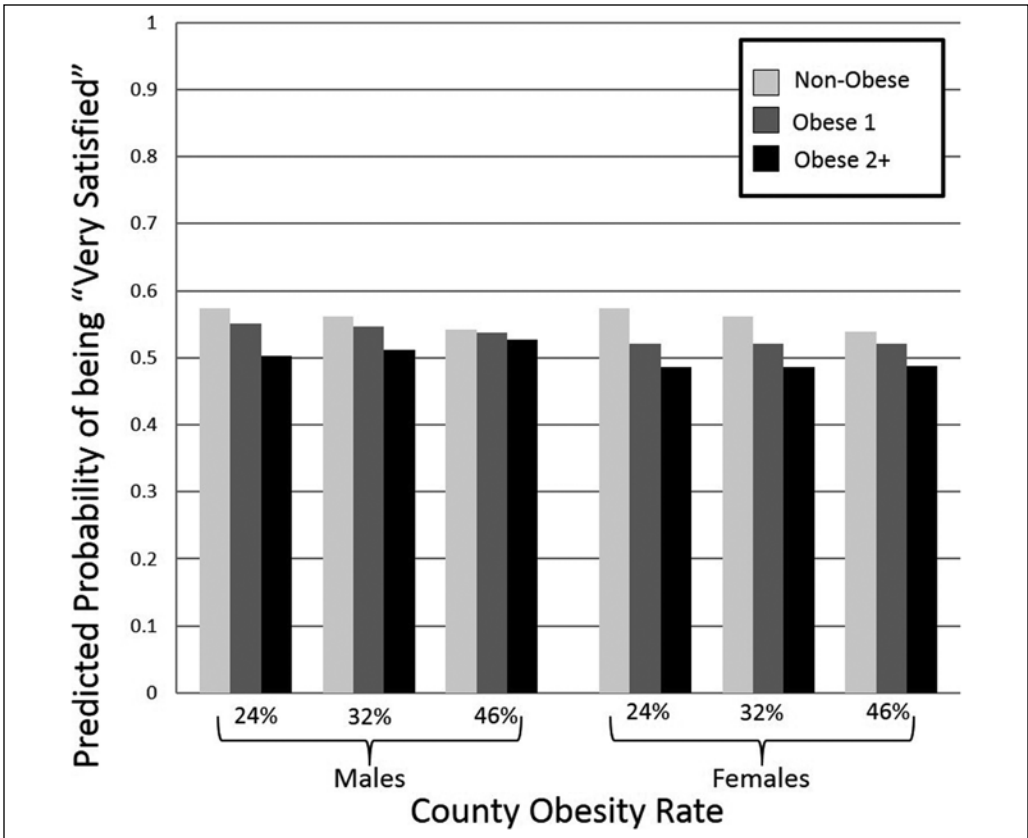


Figure 1. Predicted Probabilities of High Life Satisfaction, by Obesity Status.

context, we have computed expected life satisfaction estimates for individuals with certain characteristics across counties with low obesity (24 percent obese, the 5th percentile of county obesity rates), medium obesity (32 percent obese, the median obesity rate), and high obesity (46 percent obese, the 95th percentile of county obesity rates). Figure 1 illustrates what happens to the life satisfaction levels of an obese, very obese, and non-obese white, 30-year-old, college-educated, employed, childless man and woman with average annual income (\$53,947 for men and \$46,150 for woman) and health as the prevalence of obesity in their counties of residence changes.

For men in low-obesity counties, there is little more than a 2 and 7 percentage point respective difference between the obese and nonobese, and severely obese and nonobese, in the likelihood of reporting high life satisfaction. In counties with higher levels of obesity, this difference virtually disappears (less than 1.5 percent separates the non-obese and severely obese, and the difference

between the nonobese and obese is less than .5 percent). In other words, there is almost no emotional cost of obesity in terms of life satisfaction for men living in high-obesity counties. For women, the average life satisfaction difference between obese and nonobese individuals is reduced by more than half, from 5 percent to 2 percent, when moving from low- to high-obesity counties. For the very obese, it drops from 9 percent to 5 percent.

An important finding, which the expected value graphs illustrate, is that much of the shrinking of life satisfaction differences between the obese and nonobese as county rates of obesity increase is due to nonobese individuals becoming less satisfied. This is especially true for women, for whom almost all of the shrinking differences in life satisfaction are due to nonobese women becoming less satisfied in high obesity counties. Although the degree to which change in life satisfaction differences across contexts are driven by the nonobese is somewhat unexpected, it is also consistent with our general theoretical framework: the influence of weight

on life satisfaction depends on the strength of weight norms, which vary by local weight distributions. Just as being obese may, in some cases, become less emotionally costly in high-obesity environments, being thin can become less advantageous if thinness is less valued (as expected in high-obesity contexts). As such, the overall effect of weight on SWB is influenced by normative expectations around appropriate weight or body size. Why local weight norms may have a stronger influence on the life satisfaction of obese men compared with nonobese women is an interesting empirical question that should be addressed in future research.

DISCUSSION AND CONCLUSION

Consistent with previous research, our findings show that obesity is negatively associated with life satisfaction. Obese individuals in general are less satisfied with their lives, and those experiencing class II or III obesity are even less satisfied. More important, the findings begin to address the question of why this is the case. First of all, it does not appear that the effect of obesity on life satisfaction is simply the result of other valued social, economic, and physical characteristics that are associated with both obesity and life satisfaction, but in opposite directions. The present work, which examines the mediating roles of employment, marriage, education, income, and health, suggests that the percentage of obesity's influence that can be explained by these characteristics ranges from 0 percent (for obese men) to 49 percent (for severely obese women). Although they cannot explain much of the effect (especially for men), these mediating processes are an important aspect of the relationship and deserve additional attention in future research.

The findings also demonstrate that the degree to which obesity and nonobesity are associated with life satisfaction can be influenced by the prevalence of obesity in a given geographic context. Where obesity is more common, there is less difference among obese, severely obese, and nonobese individuals' SWB, whereas when the prevalence of obesity decreases, the difference in life satisfaction between the obese and nonobese increases. Although women generally pay a higher emotional cost for being obese, the role of context in moderating the relationship between obesity status and life satisfaction appears to be similar for men and women.

Unfortunately, the BRFSS data do not allow us to evaluate the precise mechanism by which the

county rate of obesity influences the individual-level relationship between obesity and life satisfaction. Although previous research suggests that obesity is often stigmatized (Lewis and Van Puymbroeck 2008), and we would expect the level of stigma to both be contingent on the prevalence of obesity and to influence life satisfaction, we are not able to measure stigma at either the individual or county level. However, the moderating effect of county obesity on the relationship between respondents' obesity and life satisfaction is consistent with both long-standing theories of social comparison (Festinger 1954) and the role of reference groups (Merton and Kitt 1950), as well as the more recent literature on relative income effects (Firebaugh and Tach 2008; Luttmer 2005; McBride 2001) and the influence of obesity on SWB among different racial and ethnic groups (Graham and Felton 2005; Pinhey et al. 1997).

Drawing on theoretical and empirical work on normative expectations and social comparison can also help explain gender differences. As noted above, research has demonstrated more specific norms around appropriate weight for women than for men (Cossrow et al. 2001) and that body dissatisfaction is more associated with low self-esteem, depression, and other negative emotional states among women than men (Grossbard et al. 2009). These patterns help explain why the life satisfaction cost of being obese is greater for women than for men. The finding that the role of context appears to be similar for men and women suggests that although the stigma of obesity may vary by gender, how such stigma is influenced by context may not be gender specific.

The finding that the "obesity context" moderates the influence of individual weight on life satisfaction may be useful in illuminating findings from previous research on obesity in social networks. Drawing on data from the Framingham Heart Study, Christakis and Fowler (2007) found that the likelihood of an individual's becoming obese increased substantially if he or she had a friend, sibling, or spouse who became obese. Although the authors concluded that obesity spreads through social ties and suggested that one possible mechanism is changing norms around being overweight, they are not able to assess the connection between obesity in one's reference group and how one might subjectively experience one's own obesity. Although the present work is cross-sectional in nature and cannot speak to individual changes in obesity, by demonstrating that the relationship between obesity status and SWB is partly

dependent on the obesity of one's reference group, this work offers some support to Christakis and Fowler's suggestion concerning the potential importance of norms in the spread of obesity within social networks. Although Christakis and Fowler focused on the risk for becoming obese, whereas we investigate how the prevalence of obesity shapes its effect on well-being, taken together, the studies suggest that when obesity is more prevalent, it is less emotionally costly, and being non-obese is less emotionally beneficial. To the degree that a lower emotional cost or reward may influence health behaviors associated with obesity, higher prevalence of obesity among one's friends and relatives may increase the risk for an individual to become obese.

Our examination of the role of context in the relationship between obesity and life satisfaction also broadly suggests one potential explanation for the national increase in obesity in the United States. Our findings demonstrate that where obesity is more prevalent, the difference in life satisfaction between the obese and nonobese is smaller for women and almost nonexistent for men. The same relationship is likely to exist over time: the emotional cost and advantage of obesity and nonobesity, respectively, may be decreasing as the prevalence of obesity increases. If future research finds evidence for this trend over time, it would offer additional insight into the causes of the exponential growth in obesity over the past 30 years: a cyclical process in which the emotional cost of obesity declines, resulting in greater prevalence, resulting in fewer emotional costs.

In addition to our inability to measure directly the proposed causal mechanism, other potential limitations of the present work include BRFSS response rates, our lack of indicators for other emotional states that could complicate the relationship between obesity and life satisfaction, and our inability to examine the degree to which the role of context may vary by race and ethnicity. As noted above, the BRFSS response rates range from 37 percent to 69 percent depending on the state and year. It is possible that willingness to respond is related to key variables in the present work, such as obesity status, health, and life satisfaction. Future research should explore the possibility of using other survey data with higher response rates or adopting other approaches to address the potential for nonrandom response patterns. Second, life satisfaction is the only measure of SWB or emotional health that is universally available in the BRFSS. Ideally, we would have also included measures of depression or other indicators of mental health to

more fully explore the relationship between obesity and emotional well-being. If possible, such measures should be included in future analyses. Last, it is likely that weight-related stigmatization varies by race-ethnicity and, given patterns of residential, educational, and employment segregation, that reference groups are more likely to include members of the same race and/or ethnicity. Because we did not have enough respondents from various racial and ethnic groups in many of our counties, we were not able to create race-ethnicity-specific reference groups and explore how the patterns of influence differed for various groups. We see this as an important avenue for future research.

In addition to furthering our understanding of the relationship between obesity and life satisfaction, the present work adds to a growing body of research that demonstrates the relative nature of some of the well-established correlates of SWB, a body of research that to our knowledge has been primarily limited to the effects of income (for an exception, see Wadsworth 2014). We argue that there is also a relative effect of obesity: in fact, the only effect of obesity status on life satisfaction for men and roughly half the effect for women appears to be relative. In an attempt to deepen our understanding of how various factors influence happiness and life satisfaction, exploring the relative component of other characteristics such as marriage, employment, and health status would likely be a fruitful avenue for future research. To date, it appears that the influence of some of the most consistent correlates of happiness can only be understood by considering the role of context and normative expectations.

NOTES

1. *Subjective well-being* has been used as an overarching term in much of the economics and psychology literature to encompass indicators of self-reported happiness, general satisfaction with life, and general quality of life.
2. Counties with fewer than 50 respondents contributed 15.3 percent of the sample, which therefore could not be identified.

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