# Obesity Metaphors: How Beliefs about the Causes of Obesity Affect Support for Public Policy

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**Context:** Relatively little is known about the factors shaping public attitudes toward obesity as a policy concern. This study examines whether individuals' beliefs about the causes of obesity affect their support for policies aimed at stemming obesity rates. This article identifies a unique role of metaphor-based beliefs, as distinct from conventional political attitudes, in explaining support for obesity policies.

**Methods:** This article used the Yale Rudd Center Public Opinion on Obesity Survey, a nationally representative web sample surveyed from the Knowledge Networks panel in 2006/07 (N = 1,009). The study examines how respondents' demographic and health characteristics, political attitudes, and agreement with seven obesity metaphors affect support for sixteen policies to reduce obesity rates.

**Findings:** Including obesity metaphors in regression models helps explain public support for policies to curb obesity beyond levels attributable solely to demographic, health, and political characteristics. The metaphors that people use to understand rising obesity rates are strong predictors of support for public policy, and their influence varies across different types of policy interventions.

**Conclusions:** Over the last five years, the United States has begun to grapple with the implications of dramatically escalating rates of obesity. Individuals use metaphors to better understand increasing rates of obesity, and obesity metaphors are independent and powerful predictors of support for public

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policies to curb obesity. Metaphorical reasoning also offers a potential framework for using strategic issue framing to shift support for obesity policies.

**Keywords:** Obesity, metaphor, public opinion.

Dating back to Susan Sontag's classic text *Illness as Metaphor*, health problems have often been represented in metaphorical terms (1977). Metaphors are often used in daily life in both personal (e.g., the body's "defense mechanisms" are activated when we "fight off" an illness) and societal (e.g., our nation's "war on cancer") depictions of health matters. Indeed, the use of metaphors is so common that people are often unaware of their role in thinking and language. George Lakoff and Mark Johnson (1980) argue that metaphors play a central role in human cognition, political behavior, and social interaction. Reasoning by using metaphors appears to give individuals cognitive shortcuts for making sense of new or complex societal problems and determining which governmental policies to support or oppose (Schlesinger and Lau 2000). In this article, we posit that people think about the causes of the growing problem of obesity in America using metaphors. We then test empirically how individuals' agreement with metaphors about the causes of obesity influences their views of the appropriateness of governmental proposals to lower rates of obesity.

## Reasoning by Metaphor

Americans are inundated by warnings of threats and crises related to their health and other aspects of life. So to preserve a modicum of equanimity, most people ignore the vast majority of these cautionary messages, some by disregarding public affairs entirely and others by selectively filtering out troubling information. Nonetheless, periodically an issue manages to capture our collective attention, leading us to view it as a pressing social problem. When a problem becomes salient to the public at large, individuals attempt to make sense of it through cues from a variety of sources, including media depictions, framing by politicians, and—for social concerns that touch our daily lives—personal experience or information gleaned from social networks (Entman and Herbst 2001;

Gamson 1992). Prior work suggests that political ideology (Jacoby 1991) and political party affiliation (Koch 1998; Rein and Schon 1994) are instrumental in shaping citizens' views of the appropriateness of policy responses to social problems.

The use of metaphors and analogies provides another route for citizens to make sense of public policy issues (Stone 1988). Lakoff and Johnson describe "the essence of the metaphor as understanding and experiencing one kind of thing in terms of another" (1980, p. 5). Time is "money," and it can be "saved," "spent," or "squandered." Metaphors are comparisons that cross domains to other spheres of policymaking (e.g., waging "war" on a social problem) or other domains entirely (e.g., determining how government should respond to a policy problem by thinking about how a family might respond to a concern for a child) (Lakoff 2002; Shimko 1994). In their book *Metaphors We Live By*, Lakoff and Johnson argue that rather than being solely linguistic constructions, metaphors are crucial to shaping people's thoughts (1980). In this vein, Sontag describes in detail how the application of a war metaphor to illness influences both how people view those afflicted with a disease and the disease itself:

> In an all out war, expenditure is all out, imprudent—war being defined as an emergency in which no sacrifice is excessive. But the wars against diseases are not just calls for more zeal, and more money to be spent on research. The metaphor implements the way particularly dreaded diseases are envisaged as an alien "other," as enemies are in modern wars; and the move from demonization of the illness to the attribution of fault to the patient is an inevitable one. (1989, p. 99)

Analogies are similar to metaphors in that they clarify one concept in terms of another. Analogies differ, however, by making comparisons within the same general realm of experience, such as comparing an ongoing economic recession in terms of a past recession. Most crucially, analogies prove useful to decision making by supplying a one-to-one mapping between one case and another, so that one can extrapolate from the first case to the second. By contrast, metaphors are *partial* comparisons highlighting certain features of a newly identified matter of concern. For instance, policymakers can declare "war" on a social problem to mobilize attention, without necessarily suggesting that society needs to declare martial law or conscript its citizens as part of this mobilization.

The partiality of metaphorical reasoning allows people to use multiple metaphors to help clarify complex social phenomena. On a personal level, a loved one can be compared to the sun, to a flower, to a spring day, with every one of these comparisons highlighting distinct and meaningful attributes that make that person attractive. Likewise, political leaders can declare war on a societal problem to emphasize the need for collective mobilization, can evoke America's capacity to "put a man on the moon" to highlight the need for a clear timeline for responding to that societal problem, and can equate our commitments to act with those of a giant "national family" in order to underscore the depths of our reciprocal moral obligations to one another.

In the realm of public policy, metaphors may be particularly influential in shaping public opinion under four circumstances. First, a problem may be best explained using metaphors at the early stages of an issue attention cycle (Downs 1972). When a social concern is just emerging on the policy agenda, its ideological relevance typically has not been well defined, and political leaders have yet to cast it in clear partisan terms. Shimko contends that the use of metaphor is unavoidable for newer problems because "we always have to draw on those things which are familiar to us to make sense of what we do not know" (1994, p. 661). Moreover, an issue's novelty can heighten the power of the metaphor in capturing the public's attention (Sopory and Dillard 2002). For example, when Americans were first becoming aware of AIDS as a national concern, the "gay plague" metaphor forcefully and viscerally embodied the potential devastation of this health threat. This metaphor also powerfully labeled AIDS as a condition that had originated in groups outside the society's mainstream, thereby heightening the public's fears of being exposed to threats from unknown others.

Second, metaphors may be most useful to citizens who are not usually interested in public affairs. As noted earlier, many Americans are relatively unengaged in affairs of state and are politically uninformed (Delli and Keeter 1996). Consequently, when this segment of the public is mobilized around a salient social concern, they lack the depth of understanding to easily deploy conventional ideological or partisan templates. Nonetheless, they may be able to draw on personal experiences to enable them to evaluate proposed policies in metaphor-based terms (Schlesinger and Lau 2000).

Third, people tend to invoke metaphors most often when trying to comprehend complicated problems and confusing or elusive concepts.

Perhaps the most dramatic illustration is found in biblical commentaries, that God can be characterized only through metaphor. According to Lakoff and Johnson, "We grasp more complicated concepts by means of other concepts that we understand in clearer terms" (1980, p. 115).

Finally, metaphorical reasoning may be most influential in the public's assessment of social policy when elite discourse and media representations are themselves rich in metaphors. Political elites often use metaphors and analogies as a form of rhetoric to persuade members of the public without delving into the technical details of an issue (Bosman 1987). Indeed, the very nature of America as a political entity and its constitutional foundations have been explicated by American political leaders throughout history using rhetoric rich in metaphor (Zashin and Chapman 1974).

## Public Opinion and Obesity Metaphors

Little is known about the factors that shape public attitudes toward obesity as a social concern (Oliver and Lee 2005). Nonetheless, all four of these circumstances in which metaphors may be influential in shaping public attitudes are relevant to obesity policy. We posit that reasoning by metaphor helps determine how Americans think about increasing obesity rates in America and therefore also their support for various public policies to lower these rates.

First, obesity has only recently come to the public's attention and is still only beginning to emerge onto the U.S. political agenda. The number of Americans who are overweight started to rise sharply in the 1980s, and experts began warning of an obesity crisis by the early 1990s (Saguy and Riley 2005). Throughout the early part of this decade, the issue received little attention in the mass media (Kersh and Morone 2005), and no more than 2 to 3 percent of the public considered it to be among the most important health problems facing the country (Schlesinger 2005). The emergence of obesity onto the political agenda was catalyzed in part by a surgeon general's report (U.S. Department of Health and Human Services 2001) on the topic and the extensive media coverage of the issue that followed. Over the last several years, the number of articles on obesity in the largest national newspapers and news weeklies increased a thousandfold (Kersh and Morone 2005), and the proportion of the public viewing obesity as among the most important national health problems rose sevenfold (Schlesinger 2005).

Second, as might be expected with a newly salient issue, the partisan and ideological connections remain largely inchoate. Using 2001 data, early work by Oliver and Lee found that partisan affiliation and ideological identification explained relatively little of the variance in support for government policy regarding obesity (2005). Even though the issue is new, an unusually broad cross section of the public has become mobilized to think about it. Now, 90 percent of the public believe that most Americans are overweight; 67 percent think that this is a major issue; and 90 percent think that those who are overweight face discrimination or other ill treatment (Taylor, Funk, and Craighill 2006). This widespread attention may reflect the personal significance that the issue has for much of the public, considering that two-thirds of all Americans are considered to be overweight. Many Americans who are neither politically sophisticated nor engaged in public affairs are nonetheless concerned about the need for a response to the obesity problem.

Third, some evidence indicates that the public recognizes a complex set of causal pathways that could account for increasing rates of obesity. Although many people attribute weight problems to a lack of personal willpower, a substantial majority also recognizes the potential influences of the availability of unhealthy foods and the lack of efficacious "treatments" for weight problems, and about half the public also views genetic influences as relevant (Oliver and Lee 2005; Taylor, Funk, and Craighill 2006). This complex assessment of causal pathways leads to an equally complex (and diffuse) assignment of responsibility for solving the problem, with Americans relatively evenly split between those favoring a collective or an individual response (Roper Center Archives 2004). Of those who favor a collective response, opinion is further divided into assigning primary responsibility to commercial interests, schools, the medical profession, or the government.

Finally, discourse among policymakers regarding obesity is rich in analogies and metaphorical comparisons (Kersh and Morone 2002). Perhaps the best known of these rhetorical motifs is the characterization of an "obesity epidemic" (McGinnis 2004). This terminology first appeared in the medical journals in the early 1990s and was enthusiastically adopted by political elites roughly a decade later (Oliver 2005; Schlesinger 2005). Some people have challenged the use of the term *epidemic* to describe the increasing rates of obesity (Campos 2004; Campos et al. 2006; Gard and Wright 2005; Oliver 2005), and some recent evidence suggests concerns regarding the health risks faced by those in the overweight but not obese

range may be overblown (Flegal et al. 2005, 2007). Nonetheless, the metaphor has been sufficiently evocative to capture and hold the attention of both the news media and the public. Its implications are clear in the power of this framing to heighten the public's concerns about obesity and in the potential threat that overweight Americans represent to their fellow citizens. Although this sort of contagious disease metaphor has primacy in elite discourse, one can identify several other potentially powerful metaphorical comparisons: (1) likening obesity to other "sinful" behaviors that evoke the opprobrium of the biblical injunctions against sloth and gluttony (Kersh and Morone 2002); (2) treating obesity as a form of disability, thereby triggering norms of protection against discrimination (Saguy and Riley 2005); and (3) portraying obesity as a consequence of choices outside the control of most individuals, either because they have become "addicted" to certain properties of commercially prepared foods (Mintz 1997) or because their preferences have been distorted by the commercial motivations of the food industry (Schlosser 2001). In short, the public has plenty of metaphors to draw on to help them explain why so many Americans have become overweight in recent years.

## Purpose of the Study

This study is designed to examine whether individuals' beliefs about the causes of obesity have affected their support for specific policies aimed at stemming obesity rates. We are interested in identifying the unique role of metaphor-based beliefs—as distinct from conventional political attitudes—in explaining public support for specific, obesity-related public policies. Using a national survey fielded in 2006/2007, we examined how respondents' demographic and health characteristics, political attitudes, and agreement with seven obesity metaphors might explain their support for obesity policies. Our overarching goal was to apply a general theory of metaphor-based reasoning to a newly emerging policy concern: the "obesity epidemic" in America. We tested three hypotheses:

### *Hypothesis 1*

The respondents' political ideology and partisanship will be more instrumental than their agreement with specific obesity metaphors in

predicting support for redistributive (i.e., those that incorporate tax-based financing) policies to curb obesity.

We asserted earlier that obesity has not yet been framed in clearly partisan terms. Public views of tax increases to fund social policy initiatives, however, fit more readily into conventional partisan and ideological orientations in American politics. Therefore, in accordance with hypothesis 1, we expect individuals' political ideology and partisanship will play a larger role in explaining their support for redistributive obesity policies compared with their support for policies that do not require a tax increase.

### *Hypothesis 2*

The respondents' endorsement of metaphors at the extremes of personal blameworthiness (i.e., being overweight is completely the individual's own fault or completely due to societal forces) will explain much of the variance in support for policies aimed at penalizing the individual.

As we defined them in this article, policy metaphors contain an evaluative component (Schlesinger and Lau 2000). Put somewhat differently, metaphors help people think about who is to blame for social problems. We predict that blame attribution will be particularly influential in shaping public support for policies penalizing individuals for engaging in weight-increasing behaviors (which we later refer to as price-increasing policies).

### *Hypothesis 3*

The respondents' endorsement of metaphors in the middle of the spectrum of personal blameworthiness (i.e., partially the fault of the individual but also due to social causes) will be most influential in explaining support for compensatory or "helping" policies that do not require tax support.

Not all metaphors carry a clear assignment of blame, because they invoke more complex causal attributions of responsibility. We anticipate that agreement with "mixed-blame" metaphors (incorporating elements of both individual and societal responsibility for rising rates of obesity in America) will be associated with public support for policies embodying a more diffuse or unclear allocation of costs and benefits. (As noted above,

we refer to this category of government interventions as "compensatory" policies, involving various forms of regulation or mandated practices that do not exact explicit financial penalties.) This third class of policies contrasts with those in which the costs of intervention are broadly diffused to society (via tax financing) and those for which the costs are concentrated on the purported perpetrators (via penalties in the form of price increases). Mixed-blame metaphors are likely to be most salient in the context of support for compensatory policies, precisely because those who embrace these metaphors recognize that the causes of obesity are complex and multifaceted.

## Data and Methods

### *Data Source*

To test these hypotheses, we fielded a new national survey, the Yale Rudd Center Public Opinion on Obesity Survey, in late 2006 through early 2007, to examine Americans' beliefs regarding obesity (N = 1,009). We asked the respondents questions about specific obesity metaphors used commonly in elite discourse and examined their support for sixteen obesity-related policies. This survey was conducted using Knowledge Networks (KN), an Internet survey research firm. KN employs random digit dialing to recruit its online research panel, which has been shown to be representative of the U.S. population (Baker et al. 2003). Unlike other telephone- and Internet-based research, KN surveys are based on a sampling frame that includes both listed and unlisted phone numbers and provides Internet/computer access to those panel members. The strength of its sampling frame and high completion rates have made KN an increasingly common mode for data collection in studies published across a number of academic disciplines (Davis and Fant 2005; Harris 2003; Lerner et al. 2003).

In November 2006, we pretested the instrument's reliability and validity. The survey completion rate was 75 percent.[1] Although the survey was designed to assess attitudes from a representative cross section of the American public, the KN sample diverged from representativeness in several ways. The descriptive statistics reported here took into account these deviations by using poststratification weights. The regression results reported here did not use these sample weights; the weighted

regression results were qualitatively similar and are available on request from the authors.

## Outcomes: Support for Obesity Policies

We studied sixteen policies aimed at curbing obesity. We chose them from a comprehensive list compiled by Brescoll, Kersh, and Brownell (2008) of seventy obesity-related policies introduced as federal legislation between 2003 and 2005 and supplemented with policies introduced in two or more states. Brescoll and her colleagues surveyed nutrition science and political experts to identify which of these seventy policies were viewed as having the largest potential impact on public health and which were deemed the most politically feasible. In our survey, the sixteen policies included were identified by these elite respondents as having a large impact on public health and moderate political feasibility. That is, we deliberately chose policies for the survey instrument that did not already have overwhelming public support. For example, we opted not to include a policy to fund research on obesity prevention, since political experts already viewed this policy as feasible and likely to be supported by the majority of the American public. We did this to ensure sufficient variation in public support to make it possible to discern what personal characteristics and beliefs might lead to this variation. Second, we tried to include different types of policies, both tax and subsidy policies, mandate and incentive policies, tax- and nontax-financed policies, and policies regulating different sectors (e.g., schools, manufacturing, food establishments).

The respondents were asked to identify on an ordinal scale whether they strongly supported, somewhat supported, neither supported nor opposed, somewhat opposed, or strongly opposed each policy. For policies 1 through 7, the respondents were asked whether they would support the policy if it meant that they would need to pay an additional $50 per year in taxes. (Regulatory policies were assumed to require no additional taxes, whereas interventions that depended on funding, subsidies, or revenues forgone through tax incentives were described as requiring higher taxes.)

To find out whether policies grouped into congruent clusters, we performed a factor analysis on the reported support for the sixteen policies. This factor analysis revealed the three distinct factors just described in

our hypotheses. The variables measuring support for all sixteen policies had factor loadings over 0.46 and were therefore retained for further analysis. The first factor contained *redistributive policies* (the seven that required a tax increase). The nine policies that did not involve taxes were grouped into two factors that we labeled *compensatory policies* and *price-raising policies*. As noted above, compensatory policies are those aimed at helping or protecting citizens. Price-raising policies had a more punitive bent, intending to reduce rates of obesity by punishing through the pocketbook those individuals engaging in behaviors that lead to obesity (e.g., not exercising, buying unhealthy foods). The three subscales had moderate to high internal reliability. (Cronbach's alpha was 0.89 for the redistributive policies, 0.77 for the compensatory policies, and 0.68 for the price-raising policies.) These three factors accounted for 60 percent of the total variance in policy support. From this factor analysis, we created three separate outcome variables by averaging the support expressed for all the policies in the redistributive, compensatory, and price-raising categories, respectively. These sixteen policies by factored group are the following.

### *Redistributive Policies*

1. To provide funding to public schools to make fresh fruit, vegetables, and low-fat milk available for free at school lunches.
2. To eliminate fast-food and soft-drink concessions from our public schools and to use federal tax dollars to compensate the schools for the revenues they now make on these concessions.
3. To provide individuals with tax credits for gym memberships or nutritional counseling.
4. To use government funds to create a national network of summer camps for all low-income children that emphasize good nutrition and exercise.
5. To create a government-funded public education campaign to warn against the dangers of yo-yo dieting and poor body image.
6. To use government funds to establish a national network of obesity treatment programs modeled on treatment for other addictions.
7. To require that employers provide all workers paid time each day for exercise and pay for a portion of gym memberships, and have government subsidize the cost.

### *Compensatory Policies*

1. To have zoning laws require that all new residential and commercial developments include sidewalks and other safe paths to encourage physical activity.
2. To require warning labels on foods with high sugar or fat content, indicating that such foods may be addictive.
3. To require television stations to provide free time for public-service announcements on healthy eating and exercise in proportion to the food advertising they carry.
4. To prohibit all high-fat, high-sugar food advertising on media watched primarily by children.
5. To have government require that restaurants and fast-food establishments prepare their foods using the healthiest ways of cooking, even if this drives up the costs of a meal.
6. To extend to overweight people the same legal protections and benefits offered to people with other physical disabilities.

### *Price-Raising Policies*

1. To require grocers to add a surcharge to high-sugar, high-fat foods and use the revenues to reduce their prices for fresh fruits and vegetables.
2. To impose a tax on junk food similar to existing government taxes on cigarettes and alcohol.
3. To require health insurers to charge higher premiums for policyholders who are overweight or fail to exercise regularly, allowing them to reduce premiums for everyone else.

## Obesity Metaphors

For this study, we examined the role of seven specific metaphors about the causes of obesity, derived from elite discourse and refined using in-depth qualitative research methods. (For more details about the initial identification of these seven metaphors, see Schlesinger, Brescoll, and Barry 2008.) These metaphors are (1) obesity as sinful behavior (e.g., sloth, gluttony); (2) obesity as a disability; (3) obesity as a form of eating

disorder; (4) obesity as a food addiction; (5) obesity as a reflection of time crunch; (6) obesity as a consequence of manipulation by commercial interests; and (7) obesity as a result of a toxic food environment.

In the survey, each metaphor was described to the respondents in a few sentences as a possible explanation for why Americans are more overweight today than in the past (see full text for each in the appendix). Following our previous work on the role of metaphors in shaping attitudes toward public policy (Schlesinger, Brescoll, and Barry 2008), the brief paragraph describing each metaphor explicitly incorporated narratives regarding the origins of obesity, assignments of responsibility for reducing obesity harms, attitudes toward fairness, and emotional responses to overweight people (Schlesinger and Lau 2000). These metaphors can be arrayed along a continuum from those most directly attributable to personal choices to those most directly attributable to external forces, the former being most strongly associated with blaming those who are overweight. For example, the highest individual blame metaphor is *obesity as sinful behavior*, which reads:

> A big problem with America is that people are unwilling to work hard or control their impulses. People who are overweight aren't even trying to get healthier. Fat people can't do their jobs well and cost us all more for their health care. So it's unfair when those people make others pay for their lack of effort. When I see people who are overweight, they disgust me.

Obesity as sinful behavior incorporates ideas of obesity as being due to laziness ("unwilling to work hard") as well as gluttony ("or control their impulses"). It includes an element related to fairness ("those people make others pay for their lack of effort") and an emotional response ("they disgust me"). In our pilot study noted earlier, we examined two distinctive "sinful behavior" metaphors that differentiated between "obesity as sloth" (e.g., sitting around, playing video games, watching TV) and "obesity as gluttony" (e.g., eating too much, lacking restraint). Our analysis of these using qualitative methods suggested that these two high-blame metaphors group together into a single metaphor that combined both aspects of "sinful" behavior.

At the other end of the continuum, the lowest individual blame metaphors are *obesity as industry manipulation* and *obesity as toxic food environment*. Both metaphors involve the least blame for individuals and

attribute the increasing rates of obesity almost exclusively to factors external to the individual. For example, the toxic food environment metaphor reads:

> A big problem in this country is that we're surrounded by choices that are cheap and easy but not good for us. We have become so used to eating fatty, sugary foods that healthy foods are lost in a sea of unhealthy alternatives. So people are overweight because processed foods displace natural foods and large restaurant portions replace reasonable meals. It's not fair that it's become so hard to find healthy foods at a reasonable price. When I see a person who's overweight, I get angry at our society for allowing bad food choices to drive out the good ones.

Obesity as toxic food environment emphasizes the broader societal responsibility for the lack of availability of health foods at affordable prices. This metaphor includes elements of fairness ("not fair that it's become so hard to find healthy foods at a reasonable price") and an emotional component ("I get angry at our society for allowing bad food choices to drive out the good ones"). Similarly, the industry manipulation metaphor emphasizes the role of big business (e.g., food manufacturers, advertisers, agricultural conglomerates) rather than individuals in changing the way Americans eat.

In contrast, the four "mixed-blame" metaphors incorporate elements of both individual choice and external forces as contributing to obesity rates. They are *obesity as time crunch*, *obesity as food addiction*, *obesity as eating disorder*, and *obesity as disability*. There is not a clear ordering of these four middle metaphors from high to low individual blame, because the causal stories embedded in each metaphor incorporate both individual behaviors and factors that are outside individuals' control. The obesity as disability metaphor and perhaps the obesity as eating disorder metaphor may rank somewhat lower in terms of individual blame to the extent that they emphasize the genetic etiology of obesity. For example, the obesity as disability metaphor reads:

> A big problem in this country is that we blame the victim for things they cannot control. People who are overweight get treated particularly badly by others, whether at work or in social settings, even though their weight problems come from their parents. It's not right when people who are overweight are denied a chance to live a full and

> happy life, so when I see a person who is overweight my heart goes out to them.

The phrase "come from their parents" can refer to inherited physiological traits, prenatal factors, or early parental influences that affect a person's weight as an adult. In a similar manner, many chronic health conditions may be due to both genetic and early developmental influences that are often hard to disentangle. While a disabled individual can influence his or her health status in certain ways (e.g., medication adherence), framing obesity in terms of disability emphasizes the extent to which being obesity fall mostly outside an individual's control. A disability is not usually something that one can overcome simply through force of will. Thus, describing obesity in terms of disability emphasizes the importance of providing discrimination protections. In contrast, the obesity as time crunch metaphor may incorporate somewhat more individual responsibility than does the disability metaphor. This metaphor reads:

> A big problem with America is that work has gotten in the way of more important things. Everyone getting fat is just a symptom of a society that emphasizes work at the expense of people's well-being. People who are overweight just don't have the time to exercise or prepare healthy home-cooked meals. It's unfair that people are under so much pressure to make ends meet that they have no time to take care of their health. So when I see people who are overweight, I get nostalgic for the days when life was slower and it was easier to live a healthy lifestyle.

The time crunch metaphor blames growing rates of obesity on both individual choices and the changing structure of society. Individuals are not exercising as much as they should or taking the time to eat healthy meals, but this is as much the fault of a changing societal norms and values as it is the fault of individuals. The metaphor includes a fairness implication ("it's unfair that people are under so much pressure to make ends meet that they have no time to take care of their health") and the emotional connotation is one of nostalgia for the healthier lifestyle norms of prior generations.

For each metaphor, respondents were asked, "Out of every 100 Americans with weight problems, for how many do you think that this account

explains a lot about why they are overweight?" As these questions were originally formulated, respondents were able to assign values to these responses that totaled more than 100, reflecting the possibility that obesity might have multiple causes for particular individuals. For purposes of our statistical analyses, we normed the responses so that a respondent's total estimates for the seven narratives would sum to 100 to assess the perceived relative salience of each metaphor as an explanation for obesity.

Our pilot study suggested that each of the seven metaphors was seen as a distinctive cause of obesity. To ensure that these explanations were not closely correlated in the perceptions of respondents, however, we conducted a factor analysis (results available from the authors on request). Each of the metaphors was identified as a distinctive factor, with two distinctive exceptions. First, sinful behavior does not factor on its own but was negatively loaded on all the other factors (i.e., the other six metaphors). This inverse relationship is strongest for the disability and eating disorder metaphors. Second, two of the metaphors loaded fairly strongly on a single factor: the disability and eating disorder metaphors. But the first-order correlation of their perceived salience in explaining obesity among the American public was low (0.12). Consequently, we included each in the regression models as independent explanatory variables. Likewise, diagnostics were performed to confirm that the metaphors were not collinear with the conventional political attitudes of ideological orientation or partisan affiliation.

We reported descriptive statistics using dichotomized cutoffs of metaphors. If the respondent assigned a given account a score of 10 or greater, we coded the response as an "important explanation." A score of 25 or greater for a given metaphor was coded as a "very important explanation." We report the proportion of respondents scoring each of the seven metaphors as important or very important explanations for increasing rates of obesity in America.

## Political Attitudes

The respondents' political ideology and partisan identification, measured using three-point scales, were included in models as explanatory variables. The respondents identified their political ideology as conservative, moderate, or liberal and their party identification as Republican, Independent, or Democrat. The correlation between ideology and party

identification was 0.48, so both measures were included in regression models.

## Demographic and Health Characteristics

Our study included detailed demographic and health characteristics for each respondent, including age, race, education, household income, employment status, and region of the country. Each of these sociodemographic attributes has been shown in past research to be associated with the variation in public support for health and social policies (Koch 1998; Lau and Schlesinger 2005; Oliver and Lee 2005; Schlesinger and Lee 1993). We also collected health information, including height and weight from which body mass index (BMI) was calculated, and then grouped into three BMI levels (i.e., BMI $<25$ for slender/normal weight, BMI 25 to 29 for overweight, and BMI $>30$ for obese), self-reported health status (i.e., excellent/very good, fair/poor), and self-reported exercise level (i.e., 3+ times per week, 1 to 2 times per week, $<1$ time per week/never).

## Statistical Approach

We used OLS and ordered logit regression to examine how the respondents' demographic and health characteristics, political attitudes, and agreement with the seven metaphors explained their support for obesity policies. For each of the three grouped policy outcomes (i.e., support for the redistributive, compensatory, and price-raising policies), we ran three OLS regression models. The first model included only demographic and health characteristics. The second model included demographic and health characteristics as well as political attitudes. The third model included demographic and health characteristics, political attitudes, and respondents' ratings of the seven metaphors. We treated these metaphors as continuous variables. In all models, we omitted the sinful behavior variable as the reference category. We used R-squared values assessing goodness of fit to compare the three models for each outcome.

In a second set of regression analyses, we use ordered logit to examine support for each of the sixteen individual policy outcomes controlling for demographic and health characteristics, political attitudes, and

respondents' endorsement of metaphors. To simplify the interpretation of the coefficients in these models, we recoded support for each causal metaphor as dichotomous: 1 if a respondent endorsed it as explaining at least 10 percent of why Americans are overweight and zero otherwise. (The results reported were not particularly sensitive to using other thresholds for dichotomization of support.)

## Study Results

Table 1 reports the weighted descriptive statistics for the full study sample (N = 1,009) compared with national rates. Table 2 reports the respondents' assessment of how well each of the metaphors explained increasing obesity in America. The obesity metaphors are arrayed (top to bottom) from high to low individual blame. This table indicates that all seven metaphors were viewed as "important" explanations for Americans' weight problems (in the sense that they were seen as important causes for at least 10 percent of those who are overweight) by a majority of survey respondents. Seventy-eight percent of the respondents viewed the toxic food environment metaphor as an important explanation. Although a smaller proportion of the public saw each of these causes as "very important" (explaining a quarter or more of the obesity problem), it is clear that all seven explanations were embraced by a substantial number of Americans. The multicausal nature of the obesity problem is also captured in the bottom panel of table 2, which identifies the number of metaphors that each respondent viewed as important. Only 11 percent of respondents viewed two or fewer metaphors as important explanations. By contrast, 42 percent regarded at least five of the seven metaphors as important. In addition, descriptive statistics reveal a low correlation between respondents' political attitudes (e.g., political ideology, partisan identification) and their assessment of how well each of the metaphors explained the increasing obesity in America (available from the authors on request). This suggests that metaphor-based views of the causes of obesity are distinct from individuals' political attitudes.

Table 3 shows the proportion of respondents supporting each of sixteen obesity-related public policies. We listed the seven redistributive, six compensatory, and three price-raising policies from most to least supported. Redistributive policy support ranged from 68 percent support for a policy to provide funding to public schools to make fresh

TABLE 1
Weighted Characteristics of Survey Respondents Compared with National Rates, 2006/2007

| | Full Sample (N = 1,009) | National Rates |
|---|---|---|
| **Individual characteristics**[a] | | |
| Female (%) | 51.5 | 52.0 |
| Age (%) | | |
| Age 18–29 | 21.9 | 21.7 |
| Age 30–44 | 28.1 | 31.4 |
| Age 45–59 | 27.6 | 25.8 |
| Age 60+ | 22.4 | 21.4 |
| Race/ethnicity (%) | | |
| White/non-Hispanic | 67.8 | 69.9 |
| Black | 11.3 | 11.2 |
| Hispanic | 12.9 | 12.7 |
| Other | 7.8 | 6.2 |
| Education (%) | | |
| <High school degree | 14.7 | 16.7 |
| High school degree | 31.3 | 32.3 |
| Some college | 27.7 | 27.1 |
| Bachelor's degree or higher | 26.3 | 23.4 |
| Household income (%) | | |
| <$30,000 | 43.5 | 27.5 |
| $30,000–$74,999 | 38.0 | 41.3 |
| >= $75,000 | 18.5 | 31.2 |
| Employment status (%) | | |
| Employed | 61.7 | NA |
| Unemployed | 5.7 | NA |
| Retired | 15.3 | NA |
| Other (e.g., disabled, homemaker, other) | 17.3 | NA |
| Region (%) | | |
| Northeast | 18.6 | 19.1 |
| Midwest | 22.4 | 22.8 |
| South | 36.2 | 35.6 |
| West | 22.8 | 22.6 |
| **Health characteristics**[b] | | |
| Mean BMI | 28.1 | |
| BMI <25 (%) | 30.5 | 39.2 |
| BMI 25–29 | 34.1 | 35.0 |
| BMI 30+ | 35.4 | 25.8 |

*Continued*

TABLE 1—*Continued*

| | Full Sample (N = 1,009) | National Rates |
|---|---|---|
| Self-reported health (%) | | |
| Excellent/very good | 46.9 | 61.1 |
| Good | 37.9 | 26.2 |
| Fair/poor | 15.2 | 12.3 |
| Self-reported exercise level per week (%) | | |
| 3+ times per week | 32.1 | 24.0 |
| 1–2 times per week | 24.2 | 11.5 |
| <1 per week/never | 43.7 | 64.4 |
| **Political attitudes**[c] | | |
| Political ideology (%) | | |
| Conservative | 33.1 | 41.4 |
| Moderate/"middle of the road" | 41.4 | 33.5 |
| Liberal | 25.5 | 25.1 |
| Party identification (%) | | |
| Republican | 41.4 | 40.6 |
| Undecided/independent | 6.3 | 9.7 |
| Democrat | 52.3 | 49.7 |

*Note:* KN sample weights used to calculate descriptive statistics.
[a]Comparison data extracted from the September 2007 Current Population Survey. Question wording differed for employment variable in KN and CPS, therefore no comparison data are provided.
[b]Comparison data extracted from the 2006 National Health Interview Survey, CDC National Center for Health Statistics.
[c]Comparison data extracted from the 2004 American National Election Study (NES).

fruit, vegetables, and low-fat milk available for free at school lunches, to only 37 percent support for a policy requiring that employers give all workers paid time each day for exercise and pay for a portion of gym memberships. Among compensatory policies, support ranged from 66 percent support for a zoning policy requiring that all new residential and commercial developments include sidewalks and other safe paths to encourage physical activity, to 33 percent for extending to overweight people the same legal protections and benefits offered to people with other disabilities. Public support was lowest for the three nontax, price-raising policies. Only 25 percent of respondents, for example, supported requiring health insurers to charge higher premiums for policyholders who are overweight or fail to exercise, even though this would reduce premiums for everyone else.

TABLE 2
Respondent Beliefs about Causes of Obesity

| Obesity Metaphor | Individual Blame | Important Explanation[a] | Very Important Explanation[b] |
|---|---|---|---|
| Sinful behavior | *High blame* | 50.5% | 17.6% |
| Addiction | | 71.2 | 15.8 |
| Time crunch | | 58.0 | 12.5 |
| Eating disorder | ↓ | 65.2 | 14.1 |
| Disability | | 51.3 | 9.6 |
| Industry manipulation | | 54.1 | 12.1 |
| Toxic food environment | *Low blame* | 77.5 | 23.9 |
| N | | | 1,009 |
| Respondents identifying multiple causal narratives as important explanations | | | |
| % identifying 1 to 2 metaphors as important | | | 11.3% |
| % identifying 3 to 4 metaphors as important | | | 46.5 |
| % identifying 5 to 7 metaphors as important | | | 42.2 |
| N | | | 1,009 |

*Notes:* [a]Indicates the proportion of survey respondents describing each metaphor as an "important explanation" for why Americans are overweight. Respondents were asked: "Out of every 100 Americans with weight problems, for how many do you think that this account explains a lot about why they are overweight?" If the respondent assigned a given account a score of 10 or greater, we coded the response as an important explanation.
[b]If the respondent assigned a given account a score of 25 or greater, we coded the response as a very important explanation.

The OLS regression results for the three grouped policy outcomes are presented in table 4. These findings indicate that respondents' perceptions regarding the explanatory power of obesity metaphors had a pronounced impact on their policy support above and beyond their political attitudes.[2] For each policy grouping, the inclusion of metaphors (columns 3, 6, and 9) substantially increased the explained variance in policy support in comparison with demographic and health characteristics alone (columns 1, 4, and 7) and political attitudes (columns 2, 5, and 8). Metaphors contributed the most explanatory power for the compensatory policies. For this outcome, the incremental R-squared associated with the model that includes the seven metaphors (0.18) was substantially larger than the models including just demographic and health characteristics (0.08) and demographic, health, and political attitudes (0.11).

There are some differences in the role of the metaphors in predicting policy support across the redistributive, compensatory, and price-raising

TABLE 3
Support for Policies Aimed at Curbing Obesity

| | % Supporting[b] |
|---|---|
| **Redistributive Policies (Tax Increasing)[a]** | |
| *School lunches*: Provide funding to public schools to make fresh fruit, vegetables, and low-fat milk available for free at school lunches. | 68.3 |
| *School concessions*: Eliminate fast-food and soft-drink concessions from our public schools and use federal tax dollars to compensate the schools for the revenues they now make on these concessions. | 54.3 |
| *Tax credits*: Provide individuals with tax credits for gym memberships or nutritional counseling. | 49.3 |
| *Low-income summer camps*: Use government funds to create a national network of summer camps for all low-income children that emphasize good nutrition and exercise. | 48.4 |
| *Body-image campaign*: Create a government-funded public education campaign to warn against the dangers of yo-yo dieting and poor body image. | 44.1 |
| *Treatment programs*: Use government funds to establish a national network of obesity treatment programs modeled on treatment for other addictions. | 39.8 |
| *Worker paid time*: Require that employers provide all workers paid time each day for exercise and pay for a portion of gym memberships, and have government subsidize the cost. | 37.0 |
| **Compensatory Policies** | |
| *Zoning laws*: Have zoning laws require that all new residential and commercial developments include sidewalks and other safe paths to encourage physical activity. | 65.5 |
| *Food labeling*: Require warning labels on foods with high sugar or fat content, indicating that such foods may be addictive. | 63.0 |
| *Public-service announcements*: Require television stations to provide free time for public-service announcements on healthy eating and exercise in proportion to the food advertising they carry. | 55.4 |
| *Food advertising*: Prohibit all high-fat, high-sugar food advertising on media watched primarily by children. | 52.5 |

| | |
|---|---|
| *Food establishments*: Have government require that restaurants and fast-food establishments prepare their foods using the healthiest ways of cooking, even if this drives up the costs of a meal. | 48.1 |
| *Antidiscrimination protections*: Overweight people should be subject to the same legal protections and benefits offered to people with other physical disabilities. | 33.1 |
| **Price-Raising Policies** | |
| *Grocer surcharge*: Require grocers to add a surcharge to high-sugar, high-fat foods and use the revenues to reduce their prices for fresh fruits and vegetables. | 29.2 |
| *Junk-food tax*: Impose a tax on junk food similar to existing government taxes on cigarettes and alcohol. | 28.4 |
| *Insurance premiums*: Require health insurers to charge higher premiums for policyholders who are overweight or fail to exercise regularly, allowing them to reduce premiums for everyone else. | 24.6 |
| N | 1,009 |

*Note:* Sample weights used to calculate proportion supporting.

[a]For the seven redistributive policies, respondents were asked whether they would support the policy if it meant they would need to pay an additional $50 per year in taxes.

[b]Percentage supporting includes respondents reporting that they either "strongly support" or "somewhat support" the policy.

TABLE 4
OLS Regression Results for Redistributive, Compensatory, and Price-Raising Policies

| | Redistributive Policies | | | Compensatory Policies | | | Price-Raising Policies | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| **Demographic[a] and health[b] characteristics** | | | | | | | | | |
| Female | 0.355*** | 0.341*** | 0.307*** | 0.246*** | 0.239*** | 0.203*** | 0.001 | −0.002 | 0.030 |
| | (5.31) | (5.26) | (4.71) | (4.36) | (4.30) | (3.69) | (0.02) | (0.02) | (0.43) |
| Age 30–44 | −0.027 | 0.004 | 0.043 | 0.051 | 0.069 | 0.118 | −0.004 | 0.006 | 0.027 |
| | (0.29) | (0.04) | (0.48) | (0.64) | (0.89) | (1.56) | (0.04) | (0.07) | (0.27) |
| Age 45–59 | −0.233** | −0.200** | −0.201** | 0.069 | 0.089 | 0.090 | −0.213** | −0.209** | −0.206** |
| | (2.44) | (2.14) | (2.19) | (0.86) | (1.11) | (1.16) | (2.16) | (2.09) | (2.07) |
| Age 60+ | −0.223* | −0.180 | −0.203 | 0.189* | 0.227** | 0.183 | −0.257* | −0.228 | −0.198 |
| | (1.65) | (1.36) | (1.55) | (1.66) | (2.00) | (1.64) | (1.85) | (1.62) | (1.39) |
| Black | 0.353*** | 0.160 | 0.132 | 0.208** | 0.077 | 0.052 | 0.042 | 0.013 | 0.043 |
| | (3.26) | (1.47) | (1.22) | (2.29) | (0.83) | (0.56) | (0.38) | (0.11) | (0.36) |
| Hispanic | 0.401*** | 0.307** | 0.327*** | 0.311*** | 0.246** | 0.261** | 0.349** | 0.359** | 0.321** |
| | (3.06) | (2.41) | (2.60) | (2.80) | (2.23) | (2.45) | (2.53) | (2.57) | (2.30) |
| Other race | 0.380*** | 0.335*** | 0.306*** | 0.290*** | 0.253*** | 0.216*** | 0.226** | 0.208** | 0.206** |
| | (3.75) | (3.38) | (3.13) | (3.44) | (3.02) | (2.65) | (2.19) | (1.99) | (1.96) |
| High school diploma | 0.153 | 0.152 | 0.151 | 0.125 | 0.119 | 0.108 | 0.101 | 0.100 | 0.104 |
| | (1.55) | (1.57) | (1.58) | (1.50) | (1.43) | (1.33) | (0.99) | (0.96) | (1.00) |
| Some college | 0.081 | 0.097 | 0.068 | 0.129 | 0.138 | 0.100 | −0.003 | −0.014 | −0.038 |
| | (0.76) | (0.94) | (0.66) | (1.43) | (1.54) | (1.14) | (0.03) | (0.13) | (0.34) |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Bachelor's degree+ | 0.221** (2.01) | 0.210** (1.96) | 0.183* (1.73) | 0.150 (1.61) | 0.152 (1.64) | 0.113 (1.26) | 0.069 (0.60) | 0.048 (0.42) | 0.032 (0.27) |
| Middle income | −0.029 (0.39) | −0.002 (0.02) | −0.007 (0.10) | −0.069 (1.07) | −0.037 (0.58) | −0.052 (0.84) | −0.134* (1.71) | −0.131 (1.65) | −0.103 (1.29) |
| High income | −0.025 (0.26) | −0.012 (0.13) | −0.001 (0.01) | 0.013 (0.17) | 0.034 (0.43) | 0.031 (0.40) | 0.031 (0.32) | 0.034 (0.34) | 0.010 (0.10) |
| Unemployed | 0.040 (0.27) | −0.016 (0.11) | −0.024 (0.17) | 0.075 (0.60) | 0.047 (0.38) | 0.041 (0.34) | −0.068 (0.44) | −0.077 (0.50) | −0.060 (0.39) |
| Retired | −0.136 (1.02) | −0.126 (0.96) | −0.127 (0.98) | 0.078 (0.69) | 0.075 (0.66) | 0.090 (0.81) | 0.155 (1.13) | 0.148 (1.06) | 0.093 (0.66) |
| Other employment | 0.124 (1.34) | 0.129 (1.42) | 0.107 (1.20) | 0.134* (1.70) | 0.152* (1.94) | 0.119 (1.57) | 0.043 (0.45) | 0.024 (0.25) | −0.001 (0.01) |
| Region: Midwest | −0.183* (1.85) | −0.189** (1.97) | −0.132 (1.38) | −0.178** (2.12) | −0.185** (2.23) | −0.141* (1.75) | −0.042 (0.41) | −0.037 (0.36) | −0.028 (0.27) |
| Region: South | −0.154* (1.66) | −0.125 (1.38) | −0.087 (0.98) | −0.109 (1.38) | −0.090 (1.16) | −0.062 (0.81) | 0.010 (0.10) | 0.011 (0.11) | −0.022 (0.23) |
| Region: West | −0.39*** (3.82) | −0.41** (4.10) | −0.393*** (4.04) | −0.342*** (3.95) | −0.352*** (4.12) | −0.349*** (4.23) | −0.154 (1.46) | −0.164 (1.55) | −0.179* (1.69) |
| BMI 25–29 | 0.015 (0.18) | −0.010 (0.12) | −0.010 (0.13) | 0.001 (0.01) | −0.015 (0.22) | −0.027 (0.41) | 0.033 (0.39) | 0.019 (0.23) | 0.011 (0.13) |
| BMI 30+ | 0.087 (1.04) | 0.109 (1.35) | 0.091 (1.14) | 0.038 (0.55) | 0.058 (0.84) | 0.042 (0.62) | −0.125 (1.48) | −0.122 (1.42) | −0.113 (1.31) |
| Good health | −0.123* (1.67) | −0.129* (1.80) | −0.17** (2.40) | −0.012 (0.19) | −0.011 (0.18) | −0.045 (0.75) | −0.15** (1.99) | −0.15** (1.96) | −0.115 (1.51) |

*(Continued)*

TABLE 4—*Continued*

| | Redistributive Policies | | | Compensatory Policies | | | Price-Raising Policies | | |
|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Fair/poor health | 0.016 | −0.022 | −0.049 | 0.097 | 0.061 | 0.039 | −0.052 | −0.051 | −0.023 |
| | (0.15) | (0.22) | (0.49) | (1.08) | (0.69) | (0.45) | (0.48) | (0.47) | (0.21) |
| Exercise 1 to 2 times per week | 0.130 | 0.127 | 0.097 | 0.010 | 0.016 | −0.005 | 0.092 | 0.100 | 0.117 |
| | (1.46) | (1.48) | (1.15) | (0.13) | (0.22) | (0.07) | (1.01) | (1.09) | (1.28) |
| Exercise <1 times per week | 0.014 | 0.037 | 0.004 | −0.028 | −0.004 | −0.033 | −0.3*** | −0.2*** | −0.2*** |
| | (0.17) | (0.49) | (0.05) | (0.43) | (0.07) | (0.52) | (3.10) | (2.95) | (2.64) |
| **Political characteristics**[c] | | | | | | | | | |
| Moderate | | 0.28*** | 0.26*** | | 0.20*** | 0.18*** | | 0.024 | 0.017 |
| | | (3.49) | (3.29) | | (2.88) | (2.70) | | (0.29) | (0.21) |
| Liberal | | 0.35*** | 0.33*** | | 0.196** | 0.186** | | 0.096 | 0.091 |
| | | (3.76) | (3.58) | | (2.43) | (2.37) | | (0.96) | (0.90) |
| Undecided/ independent | | −0.260* | −0.288* | | 0.017 | −0.053 | | −0.245 | −0.216 |
| | | (1.67) | (1.85) | | (0.13) | (0.40) | | (1.50) | (1.30) |
| Democrat | | 0.33*** | 0.29*** | | 0.23*** | 0.17*** | | 0.060 | 0.083 |
| | | (4.31) | (3.76) | | (3.39) | (2.69) | | (0.73) | (0.99) |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Metaphors**[d] | | | | | | | | | |
| Disability | | | 0.02*** | | | 0.02*** | | | −0.01** |
| | | | (4.07) | | | (4.74) | | | (2.36) |
| Eating disorder | | | 0.01*** | | | 0.01*** | | | −0.01** |
| | | | (3.14) | | | (3.21) | | | (2.40) |
| Addiction | | | 0.009** | | | 0.01*** | | | −0.01** |
| | | | (2.55) | | | (3.42) | | | (2.05) |
| Time crunch | | | 0.01*** | | | 0.01*** | | | −0.01* |
| | | | (2.87) | | | (3.77) | | | (1.76) |
| Industry | | | 0.02*** | | | 0.02*** | | | 0.004 |
| manipulation | | | (4.93) | | | (6.77) | | | (0.96) |
| Toxic | | | 0.01*** | | | 0.01*** | | | −0.002 |
| environment | | | (4.61) | | | (5.61) | | | (0.62) |
| N | 973 | 962 | 952 | 973 | 962 | 952 | 981 | 970 | 959 |
| R-squared | 0.11 | 0.18 | 0.22 | 0.08 | 0.11 | 0.18 | 0.06 | 0.07 | 0.09 |

*Notes:* Absolute value of t statistics in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%.

[a]The reference category for age is 18 to 29; the reference category for race is white/non-Hispanic; the reference category for education is less than a high school diploma; the reference category for income is low income (<$30,000); the reference category for employment status is full- or part-time employment; and the reference category for region of the country is the Northeast.

[b]The reference category for body mass index is <25; the reference category for self-reported health is excellent/very good; and the reference category for self-reported exercise is 3+ times per week.

[c]The reference category for ideology is conservative, and the reference category for political party identification is Republican.

[d]The reference category for metaphors is sinful behavior.

policies. For compensatory and redistributive policies, all the mid- and low-level blame metaphors (i.e., obesity as disability, eating disorder, addiction, time crunch, industry manipulation, and toxic food environment) were positively and significantly associated with policy support. The picture was very different for the (more punitive) price-raising policies. In this case, the coefficient on the disability, eating disorder, and food addiction metaphors was significant and negative. This finding suggests that the belief in the role of these metaphors in causing obesity was associated with significantly lower policy support for these punitive policies, a somewhat unexpected finding because the attributions of blame for these metaphors were mixed, incorporating some individual responsibility.

Ideology and political party identification were independently predictive of support for the redistributive and compensatory policy outcomes, but not the price-raising policies. More liberal and Democratic respondents were significantly more likely to support the enactment of the first two categories of government intervention, compared with conservative and Republican respondents. These associations were larger for the redistributive policies, perhaps reflecting the response to the taxes associated with these forms of intervention.

Women were significantly more likely than men to support redistributive and compensatory policies, but here again, not price-raising policies. Older respondents were significantly less likely to support redistributive and price-raising policies. Hispanics and those in other race categories were significantly more likely than whites to support all three policy groupings. Those with at least a bachelor's degree were more likely to support the enactment of redistributive policies, compared with those with less than a high school degree. Those respondents in the Midwest and West were less supportive of redistributive and compensatory policies than those in the Northeast. Controlling for other factors, income and work status did not significantly affect policy support. Finally, health status variables explained little of the variation in support for policies to curb obesity. Respondents who reported that they exercised less than once per week or never were significantly less likely to support price-raising policies, compared with those who exercised more often (i.e., at least three times or more per week).

The prior results mask the considerable variation across the sixteen individual outcomes in the relative importance of the seven metaphors

in predicting policy support. Table 5 lists the metaphors significantly associated (at least at a 0.05 confidence level) with policy support. An ↑ arrow indicates that a metaphor was significantly and positively associated with policy support, while a ↓ arrow indicates that the metaphor was significantly and negatively associated with policy support. (Full regression results are available from authors on request.)

TABLE 5
Metaphors Explaining Support for 16 Obesity Policies

| Redistributive Policies | Compensatory Policies | Price-Raising Policies |
|---|---|---|
| **School lunches** | **Zoning laws** | **Grocer surcharge** |
| Toxic food environment(↑) | Sinful behavior(↓) | Industry manipulation(↑) |
| **School concessions** | Eating disorder(↑) | Toxic food environment(↑) |
| Toxic food environment(↑) | Industry manipulation(↑) | **Junk-food tax** |
| **Tax credits** | Toxic food environment(↑) | Industry manipulation(↑) |
| Sinful behavior(↓) | **Food labeling** | Toxic food environment(↑) |
| Industry manipulation(↑) | Sinful behavior(↓) | **Insurer premiums** |
| Toxic food environment(↑) | Addiction(↑) | Sinful behavior(↑) |
| **Low-income summer camps** | Toxic food environment(↑) | Disability(↓) |
| Sinful behavior(↓) | **Public-service announcements** | |
| Eating disorder(↑) | Industry manipulation(↑) | |
| Toxic food environment(↑) | Toxic food environment(↑) | |
| **Body-image campaign** | **Food advertising** | |
| Eating disorder(↑) | Industry manipulation(↑) | |
| Toxic food environment(↑) | Toxic food environment(↑) | |
| | **Food establishments** | |
| | Industry manipulation(↑) | |
| | Toxic food environment(↑) | |

*(Continued)*

TABLE 5—*Continued*

| Redistributive Policies | Compensatory Policies | Price-Raising Policies |
|---|---|---|
| **Treatment programs** | **Antidiscrimination protections** | |
| Sinful behavior(↓) | Sinful behavior(↓) | |
| Disability(↑) | Disability(↑) | |
| Eating disorder(↑) | Eating disorder(↑) | |
| Toxic food environment(↑) | Addiction(↑) | |
| **Worker paid time** | Time crunch(↑) | |
| Sinful behavior(↓) | Toxic food environment(↑) | |
| Eating disorder(↑) | | |
| Time crunch(↑) | | |
| Toxic food environment(↑) | | |

*Note:* For reference, table 3 includes a full description of the 16 obesity policies. In these models, we coded each causal narrative variable as 1 if a respondent endorsed it as an important (10 percent or greater) cause of obesity and zero otherwise. Narratives are included in the table if they were significantly associated (at either the 0.05 or 0.01 level) with supporting a specific obesity policy. A ↑ indicates that a narrative was positively associated with policy support, while a ↓ indicates that the narrative was negatively associated with policy support. Policies are arrayed in each column from high to low public support.

Policies are grouped within each column from high to low overall public support.

To illustrate the variation in important metaphors across outcomes, we focus on the least-supported policy in each grouping. Among the redistributive policies, the tax-based policy requiring employers to give all workers paid time for exercise had the lowest level of public support (37 percent). Agreement with the time crunch, eating disorder, and toxic food environment metaphors was positively associated with support for the policy requiring employers to give all workers paid time each day for exercise and to pay for a portion of gym memberships, whereas embracing the sinful behavior metaphor was negatively associated with support. Among the compensatory policies, the policy providing overweight people the same legal protections and benefits offered to people with other physical disabilities ranked lowest in public support (33 percent). This is one of the few policies that were positively associated with endorsing the obesity as disability metaphor. Requiring health insurers to charge higher premiums to policyholders

who are overweight or who fail to exercise ranked lowest in public support among the price-raising policies (25 percent). Agreement with the obesity as disability metaphor was negatively associated with support while endorsing the sinful behavior metaphor was positively associated with public support for charging higher insurance premiums.

Looking across the predictors of individual policies, several broad patterns emerged from these results. It is striking that among the two metaphors with the lowest individual blame (i.e., industry manipulation and toxic food environment), the toxic food environment was broadly predictive of policy support, whereas industry manipulation was consistently associated with support for only compensatory policies. Equally interesting is the divergence of explanatory metaphors among the price-raising policies. One might have thought that "snack taxes" would be viewed as a way of punishing those who consume unhealthy, fattening snacks too often. Yet the sinful behavior metaphor that powerfully predicted support for surcharges on insurance premiums was not at all predictive of support for snack taxes. Instead, it was the societal blame metaphors—toxic food environment and industry manipulation—that were associated with policy support, suggesting that the public viewed snack taxes as a way of punishing the *industry* that produces snack food rather than the people who consume it.

The results for individual policy outcomes indicate that metaphors were more often significant predictors of policy support than political attitude measures (regression results for sixteen policy outcomes available on request from the authors). Political ideology and partisan affiliation were most consistently significant predictors of support for the redistributive policies, which is not surprising because the associated tax increases required provide a simple heuristic for respondents with well-developed political attitudes toward taxation to decide whether or not to favor the policy. In models predicting support for compensatory and price-raising policies, the political attitude variables were seldom significant.

## Discussion

Over the last five years, the United States has begun to grapple with the implications of dramatically escalating rates of obesity, and as a

consequence, policy proposals have proliferated. Using newly available national survey data, our findings indicate that the metaphors that people use to understand why obesity rates in the United States are rising are powerful predictors of support for public policies aimed at curbing obesity. Our results suggest that the role of metaphors is distinct from traditional political beliefs in explaining policy support. That is, metaphors are important to explaining the variation in public attitudes toward obesity policies beyond the variation in support explained by ideology and partisanship alone.

As expected, we found that measures of political ideology and partisan affiliation were less important predictors of policy support in the obesity domain compared with other more ideologically charged (e.g., abortion policy) or more established (e.g., health reform) health policy domains. We did find that political ideology and partisanship were significantly associated with support for redistributive (tax-based) obesity policies. Despite the newness of the obesity policy domain, the respondents appeared to assess these policies based on their conventional political attitudes toward taxation. In contrast, compensatory and price-raising policies were less readily identifiable in ideological or partisan terms. These results suggest that the metaphors people use to explain increasing rates of obesity are distinct from their political beliefs and affiliations.

Another important finding relates to the variation in the predictive power of metaphors across the sixteen policies. These patterns are in expected directions. Endorsing the obesity as addiction metaphor was positively associated with support for requiring warning labels on foods with high sugar or fat content, indicating that such foods may be addictive. The lowest individual blame metaphors (i.e., industry manipulation and toxic food environment) were consistently positively associated with policy enactment, whereas the high individual blame metaphor (i.e., sinful behavior) was negatively associated with policy support. (As noted earlier, the exception to this was that those endorsing the sinful behavior metaphor were more likely to support a policy requiring health insurers to charge higher premiums for policyholders who are overweight or fail to exercise.) This is consistent with work by Oliver and Lee (2005) indicating that those respondents attributing obesity to personal choices were less likely to support government intervention in private behavior.

Those agreeing with the obesity as disability metaphor were generally less supportive of governmental policies to address the obesity problem. This finding makes sense if disability labels (e.g., linked to inherited traits) render governmental policies less likely to have a significant, measurable impact on obesity rates. Agreement with the disability metaphor was significantly associated with only three policies—support for antidiscrimination protections, support for increased funding for treatment, and opposition to charging an overweight individual more for health insurance. These positions were consistent with the view of obesity as a medical condition primarily genetic in its etiology and deserving of access to treatment and legal protections. However, this finding suggests that framing obesity as a matter of genetics may not be the best strategy for advocates aiming to more broadly increase public support for policy action.

Likewise, the finding in table 5 that the sinful behavior metaphor is not associated with support for the grocer surcharge or junk food tax but is associated with support for charging overweight individuals more for health insurance makes sense. If overweight individuals are thought of as gluttonous and/or lazy, they may be viewed as deserving punishment. Accordingly, under this frame, others in society should not be forced to pay for their lack of restraint.

Our findings indicate that one's own personal health status (i.e., BMI, self-reported exercise level, and self-reported health) appears to play a minimal role in explaining the variation in support for obesity policies. This is surprising to the extent that personal experience is typically viewed as central to political engagement on health (McSween 2002). But it may reflect the difficulty that people have in anticipating how particular policies might affect them directly.

We identified some important differences in support for the sixteen policies by race. Blacks were significantly more likely than whites to support two policies: (1) using government funds to create for all low-income children a national network of summer camps that emphasize good nutrition and exercise and (2) extending to overweight people the same legal protections and benefits offered to people with other physical disabilities (results available on request from the authors). The former is consistent with other public opinion research suggesting that blacks tend to be more likely than whites to support redistributive health and social policies (Lau and Schlesinger 2005; Schlesinger and Lee 1993). Likewise, blacks' greater support for antidiscrimination policy

for overweight individuals might be explained by a greater sensitivity on the basis of group identification as a group who has historically been discriminated against.

We should note a few limitations to this study. First, both health status and weekly exercise were self-reported. People tend to overestimate their exercise level and underestimate how much they weigh. This is consistent with self-serving biases found in the psychological literature, in which people tend to present themselves in a more favorable light. More objective measures of these variables may lead to different outcomes. However, given that our interest is how respondents' own perceptions of their weight and health status affect their support for policy outcomes, this limitation is less concerning.

Second, in our descriptive results, we characterize all seven narratives being viewed by respondents as important explanations for Americans' weight problems. This may not be the only way to measure salience of these metaphors. However salience is elicited, there are a variety of ways of identifying whether a person considers a particular metaphor to be "important." For our purposes, we defined an "important" explanation as one receiving a score of at least 10 out of 100 and a "very important" explanation as one receiving a score of at least 25 out of 100. We chose these cutoffs to illustrate the point that respondents viewed the obesity problem as more complex than simply caused by a single factor (e.g., Americans do not get enough exercise). Other cutoffs could just as easily been chosen to make this point. Although the regression analyses for individual policy support yielded slightly different patterns of association depending on these thresholds, these broad patterns were not substantially changed.

Third, there may be an eighth metaphor now in play in policy discourse that was not identified in our preliminary review of elite representations: obesity as a contagious condition. This was long embedded in the notion of an "obesity epidemic," but the distinctive implications of contagion—personal exposure and attendant threats to well-being—were not fully articulated in the elite literature until relatively recently (Christakis and Fowler 2008). The notion that associating with people who are overweight might increase one's own risk of obesity raises the specter of a whole new range of policy responses (e.g., interventions aimed at peer groups and social networks or, in the extreme, policies akin to quarantine responses for infectious diseases).

Fourth, factors other than metaphorical reasoning may well shape the public's concerns about the obesity problem. For example, obesity may have captured the public imagination so quickly and intensely because it embodies a moral panic that plays into people's fears about other social risks, such as downward mobility (Campos 2004; Campos et al. 2006). In future research, it would be helpful to explore how these broader risk perceptions relate to the perceived salience of particular metaphors and interact with their impact on support for obesity-related policies.

Study findings provide clues to a potential framework for policymakers and interest groups to influence support for obesity policies by framing the causes of obesity through metaphor. Baumgartner and Jones describe how elites use data, symbolic images, and emotional appeals to shift the terms of policy debates (1993). The public may focus on certain aspects of an issue to the exclusion of other facets. But if new aspects of an issue that have been ignored are shown to be important, public support may shift. This may be particularly true in the case of complex problems like obesity. The dominant images associated with a policy may be transformed as a result of technological change, dramatic media events, or a subtle evolution in public perceptions. A good illustration is the case of nuclear power, in which positive images of this technology as a low-cost, clean energy source were replaced over time by darker imagery of nuclear waste disposal problems and safety hazards (Baumgartner and Jones 1991). A more contemporary illustration is the recent decline in the stigma that the American public associates with breast cancer, in response to corporate involvement that made it a badge of honor rather than a source of shame to be a breast cancer survivor (Ehrenreich 2001).

For obesity prevention advocates, framing obesity using low-blame metaphors (e.g., obesity as the product of industry manipulation, an increasingly toxic food environment) may be the most effective strategy for increasing support for public policy. Likewise, highlighting the metaphor of sinful behavior by linking the concepts of sloth, gluttony, and individual responsibility may be the best approach for those interested in either blocking policy action or enacting more punitive policies. As we noted, framing obesity using the disability and eating disorder metaphors may have the unintended consequence of stifling public policy action to the extent that individuals view government as ineffectual in addressing a problem that is genetic in its origin. Further

research is needed to test experimentally whether exposure to different causal frames can shift obesity policy support in this manner, how substantial such shifts would be, and how much they would persist over time.

## Endnotes

1. We report a sample completion rate rather than a sample response rate, as is typical with web-based panels.
2. Regression results are consistent with a simple correlation between political attitudes and policy metaphors (results not shown). Bivariate correlations indicate a relatively low association between a respondent's political ideology or political party identification and attitudes toward the seven policy metaphors. Correlations range from 0.05 to 0.13.

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Appendix
Survey Language for Seven Obesity Metaphors

| Obesity Metaphor | Language |
|---|---|
| Obesity as sinful behavior | A big problem with America is that people are unwilling to work hard or control their impulses. People who are overweight aren't even trying to get healthier. Fat people can't do their jobs well and cost us all more for their health care. So it's unfair when those people make others pay for their lack of effort. When I see people who are overweight, they disgust me. |
| Obesity as food addiction | A big problem in the U.S. is that people get hooked on certain things and just can't quit. When people get used to eating sugary, fatty foods, some can't keep themselves from eating more and more so they become overweight. It's not fair that this is true for some people, but others can eat whatever they want and not gain weight. People who are heavy must feel so helpless, having lost control over their own bodies. |
| Obesity as eating disorder | A big problem in the U.S. is that our society sends the wrong messages about what it means to be attractive. When people can't achieve these unrealistic views of ideal weight, they feel bad about themselves and go on fad diets that just make them fatter. It's unfair to expect people to become something that they're not and it's shameful that we expose young people to such unrealistic messages about physical attractiveness. |
| Obesity as time crunch | A big problem with America is that work has gotten in the way of more important things. Everyone getting fat is just a symptom of a society that emphasizes work at the expense of people's well-being. People who are overweight just don't have the time to exercise or prepare healthy home-cooked meals. It's unfair that people are under so much pressure to make ends meet that they have no time to take care of their health. So when I see people who are overweight, I get nostalgic for the days when life was slower and it was easier to live a healthy lifestyle. |

| | |
|---|---|
| Obesity as disability | A big problem in this country is that we blame the victim for things they cannot control. People who are overweight get treated particularly badly by others, whether at work or in social settings, even though their weight problems come from their parents. It's not right when people who are overweight are denied a chance to live a full and happy life, so when I see a person who is overweight my heart goes out to them. |
| Obesity as industry manipulation | A big problem in the United States is that commercial interests dictate our choices and values. In particular, advertising distorts how we value food. Americans used to eat to live, now we live to eat. People are overweight because businesses just want to sell them more food and keep them on the couch, watching TV. It's not right when corporate America controls our lives. So when I see a person who is overweight, I feel frustrated that we let big business make them that way. |
| Obesity as toxic food environment | A big problem in this country is that we're surrounded by choices that are cheap and easy but not good for us. We have become so used to eating fatty, sugary foods that healthy foods are lost in a sea of unhealthy alternatives. So people are overweight because processed foods displace natural foods and large restaurant portions replace reasonable meals. It's not fair that it's become so hard to find healthy foods at a reasonable price. When I see a person who's overweight, I get angry at our society for allowing bad food choices to drive out the good ones. |

*Note:* For each item, survey respondents were asked to respond to the following: "Out of every 100 Americans with weight problems, for how many do you think that this account explains a lot about why they are overweight?"