Who is to blame for the rise in obesity?

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\textbf{Abstract}

We sought to determine who the public perceives as most contributing to the rise in obesity and to identify the determinants of such perceptions. A nationwide survey was conducted among 800 US individuals. Respondents were asked to place each of seven entities (food manufacturers, grocery stores, restaurants, government policies, farmers, individuals, and parents) into three categories: primarily, somewhat, and not to blame for the rise in obesity. Eighty percent said individuals were primarily to blame for the rise in obesity. Parents were the next-most blameworthy group, with 59% ascribing primary blame. Responses fell along three dimensions related to individual responsibility, agribusiness responsibility, and government-farm policy. A number of individual-specific factors were associated with perceptions of blame. For example, individuals with a more statist score on the economic political ideology scale were more likely to blame the government and agribusiness for obesity.

\textbf{Introduction}

Although the evidence clearly reveals that a larger proportion of Americans are now overweight and obese compared to two decades ago, consensus on the causes and implications of the trend has been difficult to reach (Casazza et al., 2013; Keith et al., 2006). Within the public health community, the rise in obesity has been heralded as an epidemic, and there is a pervasive view that government action is urgently and badly needed. Such calls, however, have not produced much headway in terms of actual large-scale policy initiatives. Even among the policy alternatives that have been aggressively pursued (such as re-structuring school lunches, mandating caloric labeling on menus in chain restaurants, and implementing soda/snack taxes), the resulting behavioral changes have been modest at best (Harnack & French, 2008; Swartz, Braxton, & Viera, 2011; Thow, Jan, Leeder, & Swinburn, 2010). Thus, despite the rise in obesity, the American public has been relatively unresponsive to those policies designed to reduce obesity and improve health. One possible explanation for this disconnect could be that the general public (whose opinions constrain and inform public policy) interprets the causes of obesity differently than public health professionals. Interestingly, one study in England showed that doctors (general practitioners) were more likely to indicate individual factors (such as eating too much and not enough exercise) as a cause of obesity than was the general public, although both groups thought individual factors were the primary blame (Ogden & Flanagan, 2008).

Oliver and Lee (2005) identified three potential causes for the rise in obesity: (1) genetic factors (i.e., obesity is inherited from parents, born that way), (2) environmental factors (such as poor food offered in restaurants), and (3) personal factors (i.e., lack of willpower, self-control). In a phone survey conducted in 2001, individuals were asked to indicate the extent to which they agreed or disagreed that each of these three factors could explain the prevalence in obesity. Results of the study revealed that individuals viewed obesity as a consequence of personal factors (i.e., individual failure) more so than genetic or environmental factors (Oliver & Lee, 2005).

Consumer activist groups and many public health professionals, on the other hand, have repeatedly argued that individuals are powerless to stop the rising tide of obesity; that forces outside their control (in other words, environmental factors) are to blame and are in need of constraint. The following quotations are illustrative of this viewpoint:

- “The obesity crisis would not be solved by treating it as a personal failing on the part of those who weigh too much… We must realize that our predicament cannot be solved through individual action alone.” David Satcher, 16th Surgeon General of the United States (Levi, Segal, & St. Laurent, 2011).
- “Obesity is not merely a matter of individual responsibility. Such suggestions are naive and simplistic.” Bruce Silverglade, Center for Science in the Public Interest (Silverglade, 2004).
- “We’ve got to move beyond personal responsibility.” Margo Wootan, Center for Science in the Public Interest (Balko, 2004).
• “If only it were that simple. The harsh reality is that millions of Americans can’t be trusted to look after their own well-being.”
  David Lazarus, consumer columnist, Los Angeles Times (Lazarus, 2012).
• “Everyone talks about personal responsibility, and that won’t work here... These are things that have to be done at a govern-
  mental level, and government has to get off its ass.” Robert Lustig, pediatric endocrinologist, University of California at San Francisco (Allday, 2012).

That the “food environment” rather than individual responsibil-
ity is to blame for the increase in obesity may, of course, be true. Whether the general public actually believes it to be true is, how-
ever, an altogether different matter. Moreover, it may be the case
that the causes of obesity are multifaceted and genetic and environ-
mental factors may interact with personal factors in causing obesity outcomes.

As will be discussed more fully in the next section, it important
to note that public opinion is, at least partially, influenced by the
manner in which obesity issues are framed in the public discourse.
As such, different entities have vested interests in framing the de-
bate in one way or another (Kwan, 2009). As Kwan (2009, p. 45) put it, “Obesity is not an unambiguous medical fact. It is a social
fact that various cultural producers vie to define.” As noted, many
public health professionals have actively promoted a “toxic food
environment” frame that tends to blame the rise in obesity on
“Big Food” and ill-conceived social policies. Not surprisingly, food
manufacturers, seeking to avoid new regulations, have an interest
in promoting a “personal responsibility” frame. For example, the
food industry-funded Center for Consumer Freedom regularly
writes editorials and blog posts including statements such as:
“Only by building up people’s personal responsibility and guiding
it towards the correct – albeit difficult – path can dieters improve
their health.”

Despite some prior evidence suggesting the American public
does not necessarily subscribe to blaming the food environment
for the rise in obesity, recent developments may have caused a
change in public opinion. In the last decade, obesity has become
a focal point in the media, the medical community, academia,
and in Washington DC Americans have seen a revamped National
School Lunch Program, two upgrades for the Food Guide Pyramid
(first MyPyramid then MyPlate), calorie labels added to many res-
taurant menus, and taxes added to soft drinks and snacks in some
locales. Additionally, they have witnessed criticisms of McDonald’s
(and other fast-food restaurants) and farm policies accused of
excacerbating America’s obesity problem via supersizing and the
production of high fructose corn syrup. Finally, the public has been
exposed to messages from many sources arguing that the obesity
epidemic is not their fault (see previous quotations). In light of
these changes and the heightened attention on obesity in recent
years, it is possible the general public has adjusted its opinion
regarding the causal factor(s) of obesity. The purpose of this paper
is to re-examine the “who’s to blame” question from the citizenry’s
point of view while providing a wider range of potential entities
potentially affecting weight outcomes and exploring, in more de-
tail, the determinants of perceptions of blame.

Background

There are a variety of theories regarding the drivers of public
opinion. The classical view is that public opinion is largely driven
by fundamental underlying values or attitudes that are relatively
stable. By contrast, Zaller (1992) argued that public opinion is lar-
gely driven by exposure to communication among the elites.
According to Zaller (1992), an individual’s willingness to receive
or adopt the opinions of the elite depends on the extent to which
they pay attention to such discourse and the extent to which the
message is consistent with prior attitudes (which are more rigidly
fixed among the more politically aware).

In the context of body weight, it is likely the case that many
Americans have strong pre-determined attitudes that impact their
beliefs about obese-culpability. For example, compared to virtually
every other country in the world, Hofstede, Hofstede, and Minko
(2010) has shown that Americans tend to be among the most indi-
vidualistic. Thus, regardless of elite communication, there are likely
to be strong cultural factors pre-disposing Americans toward view-
ing obesity as a result of individual decisions. Indeed, this appears
to be what much of the previous research shows. For example, Har-
pers, Milici, Sarda, and Schwartz (2012) found parents ascribed 60% of
the blame for childhood obesity to personal responsibility and 40% to
the food environment. As another example, Wang and Coups
(2010) reported that 72% of survey respondents indicated that fac-
tors related to personal responsibility (i.e., overeating and not exer-
cising) had “a lot to do” with causing obesity, whereas only 19% felt
genetics had “a lot to do” with causing obesity.

However, as the prevalence of obesity has risen, so too has elite
discourse about the issue, and as such, it is possible that these new
messages may also affect public opinion. Research from more than
a decade ago showed relatively little relationship between partisan
affiliation and ideology and support for government policies re-
lated to obesity (Oliver & Lee, 2005). However, obesity has become
a much more discussed and politicized issue, and as more recent
surveys suggest, ideology and political affiliation are now signifi-
cant predictors of support for public policy interventions related
bod weight (Barry, Brescoll, Brownell, & Schlesinger, 2009).
Moreover, Barry et al. (2009) also showed that agreement with dif-
ferent obesity metaphors influences support for public policy,
with those believing that obesity is a result of sinful behavior (arguably
a result of individual responsibility) being less likely to support
redistributive and compensatory obesity policies than those who
see obesity as a result of disability, industry manipulation, or a
toxic food environment.

Barry et al. (2009) conceptualized support for public policy as
dependent on beliefs about the causes for obesity; however, they
devoted less time discussing the determinants of the causal beliefs.
Zaller’s (1992) model would suggest that political ideology and
affiliation are likely to have an independent effect on culpability-
beliefs above and beyond the effects they have on support for gov-
ernment policies. In fact, Crandall (1994) has shown that ideology
and party affiliation are associated with perceptions of whether
obesity is caused by a lack of willpower, with conservatives and
Republicans being more likely to perceive overweight as a result
of a lack of willpower than liberals and Democrats.

Researchers have been interested in the public’s beliefs about
the causes for the rise in obesity insofar as it affects attitudes to-
ward the obese. A criticism of the personal-responsibility perspec-
tive is that it can potentially lead to the stigmatization of the obese
and result in depression and other psychological and physical
problems (Friedman et al., 2005; Puhl & Heuer, 2010). Empirical
evidence of the link between perceptions of personal responsibility
and stigmatization was noted by Crandall (1994), who showed that
negative attitudes toward overweight individuals were positively
correlated with perceptions of overweightness being caused by a
lack of individual will power. Nevertheless, some experts have ar-
gued that public policy should promote stigmatization to reduce
the prevalence of obesity (Callahan, 2013).

Interestingly, however, body weight does not appear to be a
strong predictor of support or opposition to obesity policies (Barry
et al., 2009). Moreover, obese adults seeking treatment appear to
have more negative attitudes about overweight individuals and
have higher beliefs about weight controllability than non-obese
college students (Friedman et al., 2005). Likewise, the overweight
are no less likely to have negative attitudes toward overweightedness than are people who are normal weight (Crandall, 1994)). Thus, the very people purportedly being stigmatized are also among the same group of people responsible for the alleged stigmatizing.

Although individual-blame beliefs can produce adverse consequences related to stigmatization, less widely acknowledged is that viewing obesity as a result of a toxic food environment or other non-individual factors can lead to perceptions of victimization, which can be de-motivating and lead its own set of psychological problems. For example, Wang and Coups (2010) showed that individuals who felt genetics (a non-controllable factor) were a significant cause of obesity were less likely to exercise and eat fruits and vegetables as compared to those who felt individual lifestyle behaviors had “a lot to do” with causing obesity.

In sum, previous research suggests a predisposition among Americans toward viewing obesity as an individual responsibility. However, such a perspective appears to be related to political ideology, and may have some stigmatizing effects. Curiously, body weight appears to be a poor (or inconsistent) predictor of beliefs about obese culpability.

We build on this prior research in a number of ways. First, we provided opportunities for subjects to ascribe blame to a larger selection of potential causal entities than in much of the previous research. Moreover, to create an “even” playing field, we also focused on specifically-named entities and we avoided using leading adjectives such as “toxic” or “unhealthy.” Secondly, much of the previous work in this area used a question format in which respondents could strongly agree that each factor (or entity) contributed to the prevalence of obesity. By contrast, our questioning approach is more conducive to encouraging people to make trade-offs, which is constructed to mirror the US population in terms of selected socio-economic characteristics. Panelists earned $1.50 to complete the survey, which was administered using the Qualtrics software platform. Twenty-six respondents did not answer all the survey questions and were excluded from the sample, leaving 774 usable responses. This sample size yields a sampling error of 3.5% on a dichotomous choice question.

Table 1 reports summary statistics describing the characteristics of the sample. In Table 1, and in the remainder of the results that follow, observations are weighted so as to force the proportion of the sample falling in the various US census age, education, gender, race, region, and income categories to match the proportions in the population. The weights were created using iterative proportional fitting techniques (Izrael, Hoaglin, & Battaglia, 2000; Izrael, Hoaglin, & Battaglia, 2004). Even before the application of the weights, however, the characteristics of the sample matched up well with the US population, with the largest discrepancy coming from an over-sampling of white, non-Hispanic individuals.

The questionnaire

The key question analyzed in this paper is shown in Fig. 1. Respondents were shown a list of seven entities on the far left-hand side of the screen, and were asked to click on each entity and, one-by-one, drag them to the right-hand side of the screen and place into one of three boxes indicating the extent to which the respondent believed the entity was to blame for the rise in obesity. The three categories were “primarily to blame,” “some what to blame,” and “not to blame.” Respondents were not permitted to proceed until all seven entities were placed in a box. There was no restriction on how many entities could be placed on any one box.

In addition to this question, respondents were queried about their gender, age, income, education, race, and state of residence. We also asked about the presence of children in the household, whether the household was involved in farming, and the extent to which the respondent ate fast food and exercised. Because many authors have investigated a potential link between participation in the federal food-stamp program and obesity (Baum, 2011; Burgstahler, Gundersen, & Garasky, 2012; Fan, 2010; Gibson, 2003; Meyerhoefer & Pylypchuk, 2008; Ver Ploeg, Mancino, Lin, & Wang, 2007), we also asked respondents whether they had ever received food stamps.

Methods

Sample

In March 2011, an online survey was administered to over 800 panelists in the registry maintained by Clear Voice Research, LLC,

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1 It is true that survey respondents in this study could still place all entities in the “primarily to blame” box; however, our data revealed this was rarely the case (less than 0.1% said all seven entities were not to blame or were somewhat to blame; only 1.2% said all seven were primarily to blame).

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### Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Mean or percent</th>
<th>St. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>% Female</td>
<td>51%</td>
<td>–</td>
</tr>
<tr>
<td>Age</td>
<td>Age in years</td>
<td>45.23</td>
<td>16.10</td>
</tr>
<tr>
<td>Income</td>
<td>Annual household income ($1000s)</td>
<td>71.55</td>
<td>49.55</td>
</tr>
<tr>
<td>College degree</td>
<td>% With bachelor's degree from college or university</td>
<td>27%</td>
<td>–</td>
</tr>
<tr>
<td>White race</td>
<td>% White</td>
<td>68%</td>
<td>–</td>
</tr>
<tr>
<td>Black race</td>
<td>% Black</td>
<td>11%</td>
<td>–</td>
</tr>
<tr>
<td>Hispanic race</td>
<td>% Hispanic</td>
<td>14%</td>
<td>–</td>
</tr>
<tr>
<td>Other race</td>
<td>% Not white, black, or Hispanic</td>
<td>6%</td>
<td>–</td>
</tr>
<tr>
<td>Northeast region</td>
<td>% Residing in Northeastern US Census region</td>
<td>18%</td>
<td>–</td>
</tr>
<tr>
<td>Midwest region</td>
<td>% Residing in Midwestern US Census region</td>
<td>22%</td>
<td>–</td>
</tr>
<tr>
<td>South region</td>
<td>% Residing in Southern US Census region</td>
<td>37%</td>
<td>–</td>
</tr>
<tr>
<td>West region</td>
<td>% Residing in Western US Census region</td>
<td>23%</td>
<td>–</td>
</tr>
<tr>
<td>Children in household</td>
<td>% With child under age 12 in household</td>
<td>31%</td>
<td>–</td>
</tr>
<tr>
<td>Farm relationship</td>
<td>% With anyone in family that farms for a living</td>
<td>9%</td>
<td>–</td>
</tr>
<tr>
<td>Fast food consumption</td>
<td>Number of meals per week eaten at fast food Restaurants</td>
<td>1.49</td>
<td>1.23</td>
</tr>
<tr>
<td>Exercise frequency</td>
<td>Number of hours per week spent exercising</td>
<td>2.73</td>
<td>2.34</td>
</tr>
<tr>
<td>Food stamp recipient</td>
<td>% Ever received food stamps</td>
<td>28%</td>
<td>–</td>
</tr>
<tr>
<td>Personal/social ideology</td>
<td>Average of five questions from Poltopia quiz where –2 = prefers much less</td>
<td>0.17</td>
<td>0.68</td>
</tr>
<tr>
<td></td>
<td>government, and +2 = prefers much more government</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Economic ideology</td>
<td>Average of five questions from Poltopia quiz where –2 = prefers much less</td>
<td>0.11</td>
<td>0.74</td>
</tr>
<tr>
<td></td>
<td>government, and +2 = prefers much more government</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Finally, ten questions were asked to gauge the respondent’s political ideology. Political scientists have devised a host of categorizations to describe political ideology (Jost, Federico, & Napier, 2009), and many rely on single dimensional measurements such as left vs. right or liberal vs. conservative or Republican vs. Democrat. However, many researchers have argued that ideologies are more complex and require multi-dimensional measures. A common two-dimensional approach to ideological categorization is to segregate views toward social and cultural issues from economic issues (Duckitt, Wagner, du Plessis, & Birum, 2002; Evans, Heath, & Lalljee, 1996; Layman & Carsey, 2002). We adopted the two-dimensional approach in the survey, and used the ten item political ideology scale developed by the Institute for Humane Studies at George Mason University and hosted on www.Politopia.com.

Data analysis

Survey data were first analyzed to determine which entity(ies) respondents believed were primarily, somewhat, or not to blame for the rise in obesity. One important issue to consider is that responses to this question may be related to one another along one or more underlying attitudes or beliefs. Stated differently, the likelihood of ascribing blame to one entity may increase (or decrease) when blame is ascribed to another entity due to some common, yet unobserved, underlying factors. As such, we utilized exploratory factor analysis to identify those common factors underlying the response patterns. Once these factors were identified, we then used regression analysis to identify the relationship between perceptions of blame and individual characteristics such as socio-demographic variables, food and exercise behaviors, farm relationship, and ideology.

Results

Who is to blame?

Figure 2 reports the percentage of respondents ascribing no, some, or primary blame for the rise in obesity to seven different entities. Respondents overwhelmingly ascribed blame to individuals. Eighty percent said individuals were primarily to blame for the rise in obesity and another 14% said individuals were somewhat to blame. Only 6% thought individuals were not to blame. Clearly, the general public views obesity as a personal responsibility. This fact is further emphasized by the finding that parents are the next-most blameworthy entity with 59% ascribing primary blame and 32% ascribing some blame to parents.

Food manufacturers and restaurants were thought somewhat blameworthy followed by government policies and grocery stores. Half the respondents said government policies were not to blame, but the remaining half thought the government was either somewhat or primarily to blame. The only entities thought to be blameless for the rise in obesity by a majority of individuals were grocery stores and, particularly, farmers. Only 4% of respondents thought farmers were primarily to blame and only 13% thought farmers were somewhat to blame, leaving 82% who said farmers were not to blame.
viduals and parents were primarily to blame may be less likely to place blame on farmers; in contrast, an individual who ascribed blame to restaurants and grocery stores may be more likely to also ascribe blame to the food manufacturers who supply these entities. For these reasons, we performed an exploratory factor analysis to identify those common factors underlying the response patterns.

The factor analysis revealed that the Eigenvalues (the variance explained for all seven possible factors was 1.89, 0.82, 0.14, 0.00, −0.19, −0.24, and −0.24. To select the number of factors to retain for analysis, we followed the suggestions of Hatcher (1994). He suggested first constructing a scree-test plot and looking for breaks in the Eigenvalues. There was a large break in Eigenvalues between factors 1 and 2 (1.89, 0.82) and between 2 and 3 (0.82, 0.14) but not between 3 and 4 (0.14, 0.00), which would favor a three factor solution. Secondly, Hatcher (1994) suggested examining the percentage of variance explained by the retained factors. In our case, only three factors positively contributed to the total amount of variance and each explained at least 5% of the total variance (the first explained 87%, the second explained 37%, and the third 6%). Thus, three factors also seemed appropriate given this criterion. Finally, Hatcher (1994) suggested an “interpretability” criterion: (i) does the rotated pattern have simple structure (i.e., each variable significantly loads onto one and only one factor; each factor has a few variables with high loadings and other variables with low loadings), (ii) do the variables that load onto a factor share some conceptual meaning, and (iii) do the variables that load onto different factors seem to be measuring different constructs. The three factor solution passes this “interpretability” criterion. Thus, we retained the first three factors for analysis.

Table 2 reports the standardized regression coefficients resulting from exploratory factor analysis using an oblique (i.e., factors are correlated) promax rotation. The analysis reveals an intuitive pattern of results with the individual items each uniquely loading onto only one of the three factors. The first factor is termed Agribusiness Responsibility, as the three entities showing the highest factor loadings were restaurants, food manufacturers, and grocery stores. Individuals with a high score on the Agribusiness Responsibility factor are those who assign blame for the rise in obesity to the firms who process, advertise, and sell food. The two entities with high loadings on the second factor were farmers and government policies. Respondents might link these two entities because of well-known federal farm subsidies, which some groups have argued are linked to obesity (Pollan, 2003; Tillotson, 2004). (Note: others, such as Alston, Sumner, and Vosti (2008) have found evidence to the contrary). As such, we called the second factor Government-Farm Policy. The last factor underlying the data is termed Personal Responsibility as the two entities exhibiting large factor loadings were parents and individuals.

The correlations reveal an individual with a higher than average belief in Personal Responsibility is likely to have a lower than average belief that Government-Farm Policy is to blame for obesity. Interestingly, the correlation between the Agribusiness Responsibility and Government-Farm Policy factors is 0.63, implying that those who perceive Government-Farm Policy to blame are also likely to perceive agribusinesses as blameworthy. This high correlation might speak to a belief in crony-capitalism, in which government policies are shaped by agribusiness interests.

Regression analysis

Results from the factor analysis were used to construct normalized factor scores for each respondent and each factor, and these variables were used as dependent variables in regression analyses analyzing the relationship between perceptions of blame and

<table>
<thead>
<tr>
<th>Entity</th>
<th>Sample mean a</th>
<th>Factor 1: Agribusiness responsibility</th>
<th>Factor 2: Government-farm policy</th>
<th>Factor 3: Personal responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restaurants</td>
<td>−0.08</td>
<td>0.68 b</td>
<td>−0.08</td>
<td>−0.01</td>
</tr>
<tr>
<td>Food manufacturers</td>
<td>0.18</td>
<td>0.60 *</td>
<td>0.09</td>
<td>0.07</td>
</tr>
<tr>
<td>Grocery stores</td>
<td>−0.43</td>
<td>0.48 *</td>
<td>0.25</td>
<td>−0.08</td>
</tr>
<tr>
<td>Farmers</td>
<td>−0.78</td>
<td>0.00</td>
<td>0.58</td>
<td>−0.05</td>
</tr>
<tr>
<td>Government policies</td>
<td>−0.33</td>
<td>0.14</td>
<td>0.54</td>
<td>0.06</td>
</tr>
<tr>
<td>Parents</td>
<td>0.51</td>
<td>0.06</td>
<td>0.08</td>
<td>0.61 *</td>
</tr>
<tr>
<td>Individuals</td>
<td>0.74</td>
<td>−0.06</td>
<td>−0.13</td>
<td>0.58 *</td>
</tr>
<tr>
<td>Correlation with factor 1</td>
<td>1.00 *</td>
<td>0.63 *</td>
<td>0.63</td>
<td>0.04</td>
</tr>
<tr>
<td>Correlation with factor 2</td>
<td>0.63</td>
<td>1.00 *</td>
<td>0.43 *</td>
<td>−0.43 *</td>
</tr>
<tr>
<td>Correlation with factor 3</td>
<td>0.04</td>
<td>0.43 *</td>
<td>1.00 *</td>
<td>−0.43 *</td>
</tr>
<tr>
<td>% Variance explained</td>
<td>86.67</td>
<td>37.40</td>
<td>6.39</td>
<td></td>
</tr>
</tbody>
</table>

a Mean response on scale −1 = not to blame, 0 = somewhat to blame, +1 = primarily to blame.

b Following convention, factor loadings higher than 0.40 are flagged with an asterisk (*).
individual-specific characteristics. Table 3 reports the results of seemingly unrelated regressions, where the three normalized factor scores were regressed against demographic variables, food and exercise behaviors, a farm relationship variable, and variables measuring political ideology.

Females were less likely to ascribe blame for obesity to Government-Farm Policy than were males; however, the opposite was true of Personal Responsibility. Higher income individuals thought government-farm policy was more to blame than lower income individuals, but the opposite was true in regards to Personal Responsibility. More highly educated individuals – those with a college degree – assigned more blame to agribusinesses and to government-farm policy than did lesser educated individuals. Increased fast food consumption and increased exercise frequency were associated with an increased belief that government-farm policy was to blame for the rise in obesity.

Interestingly, farmers and those with family-relationships to farmers were more likely to ascribe blame to Government-Farm Policy than were non-farmers. Moreover, recipients of food stamps were also more likely to blame government and farm policy for obesity than were non-food stamp recipients. It appears that those who have most directly benefited from government subsidies (farmers and food stamp recipients) are also those who believe the government is to blame for raising obesity. These individuals are perhaps in the best position to personally witness the potential harm that some government policies create (while at the same time reaping the benefits from other government policies that provide them subsidies).

Relatedly, the results show that those individuals with a higher score on the economic political ideology scale (i.e., those who believe the government should be more involved in economic affairs) are also those who believe the government (and agribusinesses) is to blame for obesity. The findings are somewhat paradoxical. On the one hand, those who want the government to further intervene in the market are also those who think the government has caused the problem of obesity. One might interpret such a finding as an inconsistency insofar as it reveals the difficulty in crafting policies that do not have adverse unintended consequences. An alternative interpretation, however, is that such individuals wish to see more government intervention in the economy precisely because they perceived the government itself as having caused the problem. One difficulty with the latter interpretation is that the economic ideology measure was constructed by asking what the government “should do” in regards to issues like taxes, jobs, health care, and social security for which the government may not have any blame. Nevertheless, the finding that individuals who desire more government intervention in economic matters are more likely to believe agribusinesses are to blame for the rise in obesity is in line with a common view that government power should be used to constrain “greedy capitalists” from imposing harm on others in society.

### Table 3

<table>
<thead>
<tr>
<th>Variable</th>
<th>Agribusiness responsibility</th>
<th>Government-farm policy</th>
<th>Personal responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>−0.142</td>
<td>−0.072</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>(0.193)</td>
<td>(0.181)</td>
<td>(0.167)</td>
</tr>
<tr>
<td>Female</td>
<td>−0.072</td>
<td>−0.123</td>
<td>0.144</td>
</tr>
<tr>
<td></td>
<td>(0.061)</td>
<td>(0.057)</td>
<td>(0.053)</td>
</tr>
<tr>
<td>Age</td>
<td>0.001</td>
<td>−0.003</td>
<td>0.006</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Income</td>
<td>0.001</td>
<td>0.001</td>
<td>−0.002</td>
</tr>
<tr>
<td></td>
<td>(0.001)</td>
<td>(0.001)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>College degree</td>
<td>0.200</td>
<td>0.194</td>
<td>−0.104</td>
</tr>
<tr>
<td></td>
<td>(0.071)</td>
<td>(0.067)</td>
<td>(0.062)</td>
</tr>
<tr>
<td>White vs. other race</td>
<td>−0.268</td>
<td>−0.257</td>
<td>−0.014</td>
</tr>
<tr>
<td></td>
<td>(0.122)</td>
<td>(0.114)</td>
<td>(0.106)</td>
</tr>
<tr>
<td>Black vs. other race</td>
<td>−0.200</td>
<td>−0.024</td>
<td>−0.049</td>
</tr>
<tr>
<td></td>
<td>(0.150)</td>
<td>(0.141)</td>
<td>(0.130)</td>
</tr>
<tr>
<td>Hispanic vs. other race</td>
<td>−0.188</td>
<td>−0.115</td>
<td>−0.014</td>
</tr>
<tr>
<td></td>
<td>(0.142)</td>
<td>(0.133)</td>
<td>(0.123)</td>
</tr>
<tr>
<td>Northeast vs. west region</td>
<td>0.089</td>
<td>0.055</td>
<td>−0.021</td>
</tr>
<tr>
<td></td>
<td>(0.092)</td>
<td>(0.087)</td>
<td>(0.080)</td>
</tr>
<tr>
<td>Midwest vs. west region</td>
<td>0.101</td>
<td>0.148</td>
<td>−0.122</td>
</tr>
<tr>
<td></td>
<td>(0.089)</td>
<td>(0.084)</td>
<td>(0.077)</td>
</tr>
<tr>
<td>South vs. west region</td>
<td>0.122</td>
<td>0.102</td>
<td>−0.054</td>
</tr>
<tr>
<td></td>
<td>(0.08)</td>
<td>(0.075)</td>
<td>(0.077)</td>
</tr>
<tr>
<td>Children in household</td>
<td>−0.063</td>
<td>−0.074</td>
<td>−0.012</td>
</tr>
<tr>
<td></td>
<td>(0.069)</td>
<td>(0.065)</td>
<td>(0.060)</td>
</tr>
<tr>
<td>Farm relationship</td>
<td>0.100</td>
<td>0.198</td>
<td>−0.188</td>
</tr>
<tr>
<td></td>
<td>(0.102)</td>
<td>(0.096)</td>
<td>(0.089)</td>
</tr>
<tr>
<td>Fast food consumption</td>
<td>0.038</td>
<td>0.072</td>
<td>−0.042</td>
</tr>
<tr>
<td></td>
<td>(0.025)</td>
<td>(0.024)</td>
<td>(0.022)</td>
</tr>
<tr>
<td>Exercise frequency</td>
<td>0.029</td>
<td>0.026</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.012)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>Food stamp recipient</td>
<td>0.084</td>
<td>0.179</td>
<td>−0.235</td>
</tr>
<tr>
<td></td>
<td>(0.068)</td>
<td>(0.064)</td>
<td>(0.059)</td>
</tr>
<tr>
<td>Personal/social ideology</td>
<td>0.065</td>
<td>0.049</td>
<td>−0.034</td>
</tr>
<tr>
<td></td>
<td>(0.052)</td>
<td>(0.049)</td>
<td>(0.045)</td>
</tr>
<tr>
<td>Economic ideology</td>
<td>0.149</td>
<td>0.139</td>
<td>−0.080</td>
</tr>
<tr>
<td></td>
<td>(0.051)</td>
<td>(0.047)</td>
<td>(0.044)</td>
</tr>
<tr>
<td>Error correlation with Eq. (1)</td>
<td>1.00</td>
<td>0.80</td>
<td>0.04</td>
</tr>
<tr>
<td>Error correlation with Eq. (2)</td>
<td>0.80</td>
<td>1.00</td>
<td>−0.46</td>
</tr>
<tr>
<td>Error correlation with Eq. (3)</td>
<td>0.04</td>
<td>−0.46</td>
<td>1.00</td>
</tr>
<tr>
<td>Rsq</td>
<td>0.07</td>
<td>0.14</td>
<td>0.10</td>
</tr>
</tbody>
</table>

a Numbers in parentheses are standard errors.

b One asterisk indicates statistical significance at the 0.05 level or lower.

### Discussion

The issue of obesity has gained widespread attention across the US and around the globe. Labeled as an “epidemic” by some, obesity has sent scores of health officials, policymakers, and academic researchers searching for a solution. Many efforts to reduce obesity have been focused on changing the “food environment.” Nutrition labels have been added to foods in vending machines and restaurants, price adjustments have been implemented in many states to encourage (discourage) the eating of healthy (unhealthy) foods, fresh fruits and vegetables are now a requirement in many school lunch programs, and New York City’s Board of Health attempted to pass a controversial law restricting restaurants, movie theaters, sports arenas, etc. from selling sugar-sweetened beverages over sixteen ounces.

Despite efforts to regulate the food environment, most proposals have been met with limited success. In a number of studies, consumers have been reluctant to modify their food choices and many have taken offense that the government is telling them how to eat (Debate.org., 2012). This suggests at least some subset of consumers does not blame the food environment for the rise.
in obesity. The results in this paper, in fact, reveal that the public overwhelmingly blames individuals (and to a lesser extent parents) for the rise in obesity. Over 2.2 times as many people believe individuals are primarily to blame as believe that food manufacturers are to blame for the rise in obesity.

Thus, even though the “elites” (legislators, healthcare professionals, academics) regularly communicate that individuals are not to blame for the rise in obesity, this perspective has apparently not had much effect on public opinion. Indeed, our finding adds to a recurring theme noted by Oliver and Lee (2005), Harris et al. (2012), and Wang and Coup (2010) who have all found that the majority of people hold themselves responsible (as opposed to genetics, the food environment, etc.) for the food decisions they make.

This leads one to question what is causing this disconnect between the general public and the elites. Zaller (1992) contends such a divergence can result if: (1) individuals are not paying attention to elite discourse, or (2) the message of the elite is inconsistent with prior attitudes. Given the barrage of coverage about obesity, nutrition labels, soda bans, Michele Obama’s Let’s Move campaign, and so on, it seems unlikely that the general public is unaware of elites’ message about obesity. Hence, a more likely source of the disconnect is that the elites’ message (that the food environment, not individuals, is to blame for the rise in obesity) does not align with individuals’ prior attitudes. Another plausible explanation is that the message of food manufacturers and restaurateurs (i.e., advertising) has been more ubiquitous or persuasive than that of public health professionals. Understanding the interaction of each of these factors on public attitudes toward obesity represents a fruitful area of future research.

References


Israël, D., Hoaglin, D. C., & Battaglia, M. P. (2004). To take or not to take is the question anymore with the enhanced raking macro. In StUCGI Conference, Montreal, Canada.


