

Research Dialogue

The need for public policies to promote healthier food consumption: A comment on Wansink and Chandon (2014)

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Abstract

Current approaches to addressing obesity have fallen short. This is largely due to the many environmental forces that undermine people's self-regulatory capacity to be personally responsible for their food choices. Novel insights from the social sciences are needed to inform voluntary, health-promoting actions by companies, institutions, and citizens as well as the design of public health policies. Voluntary interventions that rely on nudges should complement traditional public health strategies such as taxation and restriction of child-targeted marketing in schools. In this commentary, we discuss four food policy issues that would benefit from consumer psychology research: (a) the restriction of food marketing to children, (b) provision of nutrition information through food labels, (c) improving school food environments, and (d) placing limits on portion sizes. Identifying effective solutions for obesity will require approaches that integrate psychological, public health, and legal perspectives and methods.

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Introduction

Despite stigmatization of overweight/obese individuals and significant health costs to individuals (Danaei et al., 2009; Puhl & Heuer, 2009) and society (Finkelstein, Trogon, Cohen, & Dietz, 2009), obesity remains a major public health problem. To date, individual level treatment has been only modestly effective and has not been readily available or financially accessible to the large segment of the United States population affected by obesity. Adults participating in behavioral weight loss programs can expect to lose 5–10% of their body weight

(Wadden & Butryn, 2003). Although such modest weight loss can improve weight-related problems such as hypertension and hyperlipidemia (Blackburn, 1995; Knowler et al., 2002), many people remain overweight or obese after treatment. In addition, patients completing several months of behavioral treatment can expect to regain 30–35% of the weight lost within one-year; 50% of patients will re-gain all the lost weight within five years (Perri & Corsica, 2002). Anti-obesity medications can produce comparably modest weight loss (Glazer, 2001; Yanovski & Yanovski, 2002), but many of these drugs have been taken off the market for serious side effects (Connolly et al., 1997) or have side effects that greatly reduce adherence (Ecinosa, Bernard, Steiner, & Chen, 2005).

Current approaches to addressing obesity have fallen short, and the many environmental forces undermining people's self-regulatory capacity make it difficult to be personally responsible for one's food choices. In their target article, Wansink and

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Chandon (2014-this issue) rightly point out that public health and medicine have been slow to incorporate insights from consumer psychology and related disciplines into solutions to prevent and reduce obesity. We agree with Wansink and Chandon (2014-this issue) that consumer psychology has much to offer public health. These social science insights can inform important voluntary, health-promoting actions by companies, institutions, and citizens, but we believe the application of these insights to public health *policies* must be simultaneously pursued to achieve real change.

Social scientists have been studying decision making for decades, but the field of public health has been slow to incorporate these insights into their interventions. Thaler and Sunstein (2009) popularized the idea that knowledge about decision making can be leveraged to encourage wiser choices while maintaining freedom. Their philosophy is “libertarian paternalism,” which suggests that private institutions and the government alter the choice environment to “nudge” people to make decisions they would like to make to improve their lives. Wansink and Chandon (2014-this issue), among others, believe that nudge approaches offer an ideal solution because they can be used to promote healthier behaviors, while preserving individual choice. They advocate for a “small steps approach” that draws on consumer psychology to design cost-effective, simple interventions to encourage healthier food choices. However, one concern is that “small steps” may produce small results and steer policy development away from more traditional legislative and regulatory measures that are likely to produce greater change. The good news is that we can accomplish both simultaneously. Voluntary nudge strategies as described by Wansink and Chandon (2014-this issue) should complement traditional public health strategies such as taxation and restriction of child-targeted marketing in schools. Perhaps most important, nudge insights discovered by consumer psychologists and behavioral economists should inform the design of public health policies.

In this commentary, we discuss four food policy issues that would benefit from consumer psychology research: (a) the restriction of food marketing to children, (b) provision of nutrition information through food labels, (c) improving school food environments, and (d) placing limits on portion sizes. Like Wansink and Chandon (2014-this issue) we believe that integrating psychological and public health perspectives and methods will increase the chance of identifying effective solutions for obesity. In addition to integrating these two disciplines, those conducting policy-relevant research should also work with legal experts when crafting their research questions and interpreting the results to understand what is legally permissible. Therefore, throughout this commentary, we include discussion of important legal concerns that policymakers and researchers should be aware of when designing policy interventions to improve health.

The need to address obesity through public policy

Over the last century, the health of the United States population has benefited the most from interventions focused on social and environmental determinants of health (e.g., good nutrition, sanitation) rather than medical advances (Marmot, 2005). Yet,

when we think about good health, we tend to focus on *healthcare*, even though the United States spends the most on healthcare and has some of the lowest rankings on health outcomes (Institute of Medicine, 2012).

Although individualism and self-determination reflect core American values, as a society we have agreed that the government has some role to play to protect the health and safety of its citizens. Policy is a powerful tool that can be used to correct an imbalance in forces influencing people to make choices that are misaligned with their self-interest. In the case of obesity, many people have a desire to have a healthy weight and/or to be disease-free, but as Wansink and Chandon (2014-this issue) describe, decisions about what to eat and how much to eat are greatly influenced by a variety of external factors. These environmental forces influence people to make decisions that are too often inconsistent with their health aspirations. When such inconsistencies exist between environmental forces and individual self-interest, policy can help level the playing field to promote health without undermining personal responsibility. There are many public health policy examples designed to achieve this balance. For example, people are required to wear seatbelts; the water system is fluoridated; children must be immunized before attending school; and taxes are levied on cigarettes and alcohol. These policies have been highly cost-effective in improving public health (White, Koplan, & Orenstein, 1985; Beck & Shults, 2009; Callinan, Clarke, Doherty, & Kelleher, 2010; Elder et al., 2010).

The public health success story of reducing global tobacco use offers important lessons that are also relevant to the fight against obesity. The answer to curbing tobacco consumption was largely through policy. Tobacco use, like obesity, is a major threat to public health with strong adverse private sector interests at stake. After links between smoking and lung cancer were made in the 1940s and 50s (Proctor, 2012), a series of policies to reduce smoking was pursued, despite strong industry opposition (Wisotzky, Albuquerque, Pechacek, & Park, 2004). The policies that reduced smoking were clean indoor air laws, prohibiting the sale of tobacco products to minors, increasing excise taxes on cigarettes, regulating tobacco advertising, disclosure of health harms through product packaging warning labels, and mass counter-advertising campaigns. These efforts were not subtle nudges like the ones recommended by Wansink and Chandon (2014-this issue) based on their review. However, this does not mean that consumer psychology does not have much to contribute in the fight against tobacco consumption. There is a great need for consumer psychology research to help improve existing tobacco policies, including research on effective anti-smoking media messages, the design of warning labels, the influence of other on-packaging marketing techniques, and the placement of tobacco products in stores to reduce purchase likelihood, among others.

Although we believe that the government has a central role to play in addressing obesity, concerns about government encroachment on people’s lives should be taken seriously. Wansink and Chandon (2014-this issue) summarize a number of creative, useful, and well-done studies, which demonstrate ways in which the food environment can be easily altered to encourage healthier food choices. However, many of these studies examine one-time interventions in cafeteria or restaurant settings without long-term

follow up. Also, many of the interventions have not been scaled up and tested in large numbers of cafeterias or restaurants. Finally, little is known about the logistics of implementing these seemingly simple, low-cost interventions in real-world school, restaurant, or workplace settings that are not partnered with research sites. These are important gaps for which empirical data are needed.

Consumer psychologists have already made enormous contributions to our understanding of the ways in which the current food environment encourages unhealthy choices. They have also shed light on potential ways the environment can be altered to promote healthier choices. However, it is hard to imagine that such nudge strategies would be voluntarily implemented and maintained on a large-enough scale in schools, workplaces, or restaurants without mandates or explicit, compelling incentives to do so. If these kinds of nudge strategies are not systematically implemented, enforced, and sustained, the impact is likely to be minimal.

Certainly food companies and restaurants are in a position to change the context in which people are making food choices. They could offer smaller portion sizes, use pricing strategies to raise the cost of unhealthy products, market healthier foods, etc., but the reality is that they lack strong financial incentives to do so; they are obligated to sell more food, not less. This does not mean that companies cannot make some voluntary changes to try to sell healthier products, and indeed some companies have already begun to do so (e.g., Starbucks switched their default milk from whole to 2%, McDonald's now serves apples with children's meals). However, given the magnitude of the obesity problem, it is unlikely that a few small, voluntary changes by some companies will lead to major, sustained changes in population eating habits.

Instead, public health may be protected more effectively and efficiently by well-developed regulatory law and policies that do not place undue burden on the consumer or limit their freedom. The New York City ban on the use of artificial *trans* fats by restaurants provides a good example. Over time, scientific research revealed that consumption of *trans* fats was associated with cardiovascular disease (Teegala, Willett, & Mozaffarian, 2009), and that *trans* fats pose a greater risk to health than other types of "bad" fats like saturated fat. In response to this research, the Food and Drug Administration required *trans* fats to be labeled on food packaging (Trans fat: (68 Federal Register 41434, 2003)), which prompted industry reformulation of some packaged foods (Otite, Jacobson, Dahmubed, & Mozaffarian, 2013). In 2006, the New York City Board of Health passed an ordinance prohibiting NYC restaurants from cooking with *trans* fat. Since then, NYC restaurants have switched to other fats without complaint from customers (Hirsh, 2013). Approaches such as imploring restaurants to voluntarily stop cooking with *trans* fats or requesting *trans* fat labeling on packaging or menus would never have been able to completely remove *trans* fats from restaurant food as quickly and effectively as these legal requirements did.

Public policies to address obesity

Reducing youth-targeted food marketing

Although much of food marketing occurs on television, companies use a range of mediums to market their products.

These include in-store sales and promotions, marketing in schools, advergames on websites, social media strategies, product placement, and event sponsorships, among others (Center for Science in the Public Interest, 2003; Harris, Pomeranz, Lobstein, & Brownell, 2009). The Institute of Medicine and others have reviewed the existing empirical evidence on the influence of food marketing and concluded that it can have persuasive effects on children's food preferences, short-term eating behaviors, and purchases (Institute of Medicine, 2005; Harris, Bargh, & Brownell, 2009; Harris, Pomeranz, Lobstein, & Brownell, 2009; Roberto, Baik, Harris, & Brownell, 2010; Cairns, Angus, Hastings, & Caraher, 2013). There is also evidence that children have a reduced capacity to understand the persuasive intent of advertising and the short- and long-term consequences of consuming unhealthy food (Pomeranz, 2010; Harris & Graff, 2012). Therefore, legally, it can be argued that such marketing is a deceptive means of proposing a commercial transaction to children and should be restricted accordingly (Pomeranz, 2010; Harris & Graff, 2012). For these reasons, public health advocates have called for the restriction of unhealthy food marketing to youth. Predictably, restrictions on marketing are generally opposed by the food industry, which has argued that youth have the same right as adults to obtain information from advertising (Hawkes, 2007). The First Amendment in the United States also presents a barrier to restricting food advertising, even to children. For example, marketing that occurs through media that are intended for adults (e.g., on billboards) cannot be restricted to protect children (Lorillard v. Reilly, 2001).

Countries without similar speech protections have successfully implemented restrictions on child-targeted food marketing, including the United Kingdom, France, and Ireland. In 2007, the United Kingdom was the first country to enact regulations on food advertising that require foods advertised during children's television programming to meet certain nutrition standards (Center for Science in the Public Interest, 2007; Ofcom, 2010). In Ireland, television commercials for foods high in salt, sugar, and/or fat cannot appear during children's television programming. In addition, commercial communications directed at children cannot include celebrities or sports figures, licensed characters, health or nutrition claims, or promotional offers (Broadcasting Authority of Ireland, 2013). A law was also proposed in France to prohibit advertising of high-calorie, nutrient-poor foods, but ultimately industry efforts led to a less stringent requirement that nutritional messages accompany radio and print advertisements for food and drink (Center for Science in the Public Interest, 2007; Hawkes, 2007). However, even when such restrictions are placed on commercials targeting youth during children's television programming, children are exposed to food marketing through a range of other media. Therefore, broad restrictions across media would be needed, but they are difficult to implement. Lobbying efforts by the advertising and food industry trade associations have been successful at thwarting worldwide regulatory efforts to curb child-targeted food marketing (Hawkes, 2007). Thus, most efforts to reduce food marketing exposure to youth have been self-regulatory (Rudd Center for Food Policy and Obesity, 2013). In the United States in 2009, Congress directed representatives from four federal agencies to form the Interagency Working Group (2011), which released sound recommendations for industry

self-regulation of food marketing based on the nutritional attributes of food and beverages in April 2011. However, the food industry refused to adopt the government backed standards, affirming that they would continue to abide by the industry self-regulatory body the Children's Food and Beverage Advertising Initiative (CFBAI), led by the Better Business Bureau (Watson, 2011). Eighteen food companies are members of the voluntary CFBAI, which is "designed to shift the mix of foods advertised to children under 12 to encourage healthier dietary choices and healthy lifestyles" (Council of Better Business Bureaus, 2006). However, the pledges apply only to certain types of marketing. For example, they exclude the retail environment, and define "child-directed" advertising as only including programming where children comprise at least 35% of the audience (Harris, Sarda, Schwartz, & Brownell, 2013). Further, the nutrition criteria for foods that can be marketed are significantly weaker than the Interagency Working Group standards (Center for Science in the Public Interest, 2011). Finally, networks that are not members of the CFBAI, like Nickelodeon, are relatively unrestricted in the placement of unhealthy food advertisements on children's programming, websites, and mobile apps (Bachman, 2013).

Historically, as food companies adopted self-regulatory pledges, they reformulated some products slightly to meet the new nutrition standards, but retained the same brands and product categories. Of course offering healthier versions of existing products might be helpful for consumers, but so much of food advertising focuses on promoting specific brands—like Pepsi and McDonald's—that sell healthy and unhealthy foods/beverages. Therefore, such advertising—even if some portion is for healthier products—builds brand preferences and customer loyalty for companies that largely sell and promote nutritionally poor foods.

One could argue that industry self-regulation coupled with the promotion of healthy foods would improve diet. However, given innate human taste preferences that favor the consumption of energy-rich tastes and foods (Beauchamp & Mennella, 2011), it is hard to imagine that advertising healthy foods (e.g., vegetables) will have close to the same effectiveness as advertising highly palatable, unhealthy foods. The more likely scenario is that healthier foods might be purchased and consumed more frequently if the marketing of unhealthy foods is significantly curbed. In addition, if the marketing of less healthy foods is reduced, companies would have an incentive to make healthier foods tastier.

To inform policy discussions, more research is needed to understand the complexity of food marketing effects on children's food preferences, choices, and consumption, especially with respect to newer marketing strategies. Hawkes (2007) also identified several gaps in the evidence linking food marketing with poor diet and obesity. For example, research is needed to understand the role food marketing plays in shaping food preferences relative to other influences such as taste, price, or access. There is also a need for research exploring causal relationships between food marketing and obesity among youth. The ability of existing regulations to improve dietary habits and prevent obesity must also be evaluated and more research on food marketing in developing countries is needed (Hawkes, 2007). Finally, we need to understand whether the same techniques that

are used to market unhealthy foods can be effectively used to sell healthy foods (Chandon & Wansink, 2012).

Nutrition information provision policies

The most recent significant nutrition information provision policy enacted in the United States to promote healthier choices is menu labeling, which requires restaurants to provide calorie information on menus so that it is visible at the point-of-purchase. Menu labeling was first introduced in New York City in 2006, and after two unsuccessful lawsuits by the restaurant industry, was implemented in the city in 2008. Menu labeling was also subsequently included in the United States Patient Protection and Affordable Care Act, which will require chain restaurants with 20 or more locations to display calorie information on their menus nationwide (Nutrition labeling of standard menu items at chain restaurants, 2010).

Consumer psychology research suggests a need for calorie labeling to inform consumers. We know, for example, that people have difficulty estimating the calorie content of restaurant food (Block et al., 2013) and this is especially true for certain restaurants such as Subway relative to other chains like McDonald's (Chandon & Wansink, 2012). In addition, people are prone to certain biases such as the negative calorie illusion, which leads consumers to think meals are lower in calories when a healthy side dish is added to the meal versus the meal without the side dish (Chernev, 2011).

The existing research on the effectiveness of menu labeling is mixed. Some studies find that it encourages consumers to order and/or eat fewer calories (Burton, Creyer, Kees, & Huggins, 2006; Bassett et al., 2008; Chu, Frongillo, Jones, & Kaye, 2009; Roberto, Larsen, Agnew, Baik, & Brownell, 2010; Bollinger, Leslie, & Sorensen, 2011; Auchincloss et al., 2013), while other studies have found minimal effect (Harnack et al., 2002; Downs, Loewenstein, & Wisdom, 2009; Elbel, Kersh, Brescoll, & Dixon, 2009; Tandon, Wright, Zhou, Rogers, & Christakis, 2010; Finkelstein, Strombotne, Chan, & Krieger, 2011). The mixed findings are likely due to differences in study designs and settings. Some studies have been randomized-controlled trials in the lab, while others have been observational field studies. Studies have also differed based on the types of restaurants/cafeterias examined, the population sampled, and the time periods evaluated. Although the jury is still out on whether menu labeling will ultimately have a significant impact on public health, the public is generally in favor of the policy (Krieger & Saelens, 2013), and consumers have the right to know the nutritional content of the foods they are eating and giving to their children. In addition, such disclosure policies might motivate the food industry to reformulate their products, as some manufacturers did following the mandate of *trans* fat labels (Otite et al., 2013).

However, Wansink and Chandon rightly point out that there are limitations to "eating calculus." Disclosing nutrition information does not guarantee that people will choose foods based on that information. However, the effectiveness of information disclosure policies should also be evaluated when coupled with other strategies designed to encourage healthier choices, such as smaller portion sizes, promotion of healthier foods, and restriction of child-targeted marketing in schools, among others.

There is also a need for consumer research on more meaningful ways to present nutrition information that relies less on numeric information. For example, Thorndike and colleagues found that displaying traffic light food labels on a menu in a hospital cafeteria coupled with a choice architecture intervention to promote healthier beverages was associated with increased sales of healthy “green” foods and decreased sales of less healthy “red” foods among a racially and socioeconomically diverse group of patrons (Levy, Riis, Sonnenberg, Barraclough, & Thorndike, 2012; Thorndike, Sonnenberg, Riis, Barraclough, & Levy, 2012). The results have also been sustained for two years (Thorndike, Riis, Sonnenberg, & Levy, 2014). Such a labeling system leverages automatic associations people have between certain colors and their meanings (Bergum & Bergum, 1981); green means “go” and red means “stop” (Liu, Wisdom, Roberto, Liu, & Ubel, 2014).

Wansink and Chandon (2014-this issue) assert that government mandates of nutrition information result in companies competing on taste, price, and convenience, rather than on health. However, there has been an explosion of industry-initiated front-of-package labeling schemes over the years such as Pepsico’s Smart Spot, Kraft’s Sensible Solution, and Kellogg’s Nutrition-at-a-Glance (Wartella, Lichtenstein, Yaktine, & Nathan, 2011), suggesting that companies compete via these means as well. Governments have also made efforts to implement uniform front-of-pack labeling systems. The United Kingdom’s Food Standards Agency developed a multiple traffic light front-of-pack labeling system that highlights amounts of total fat, saturated fat, sugar, and salt in food products; this is a voluntary system being used by some food manufacturers in the United Kingdom (Triggle, 2013). Recently, Ecuador was the first country to announce that it would adopt a country-wide traffic light front-of-package labeling system (Guthrie, 2013). Other countries, such as the Netherlands, have implemented the Choices checkmark symbol, which is a shelf-tag symbol that highlights products as healthy choices if they meet specific dietary guidelines developed by an independent international scientific committee (Dotsch-Klerk & Jansen, 2008). In addition, there have been policy discussions in the United States about requiring a label to appear on the front of packaged foods that would quickly provide consumers with key information about a food’s nutritional profile (Food Labeling Modernization Act of 2013). Given the FDA’s and other countries’ interest in front-of-package labeling, there is a need for consumer research on the optimal design for such labeling systems to help guide consumers to healthier choices.

Altering school food environments

There is promising evidence that the types of “small steps” approaches outlined by Wansink and Chandon (2014-this issue), such as improving the convenience and attractiveness of healthy foods and locating the presentation of healthier items at the beginning of the lunch line, can promote healthier choices and consumption at school (Wansink, Just, & Payne, 2012; Hanks, Just, & Wansink, 2013; Wansink & Hanks, 2013). However, an important empirical question is whether using behavioral science to re-engineer the school food environment has the capacity to

shape long-term behavior. To our knowledge, this question has yet to be answered. Further, the extent to which schools have sufficient resources to make and sustain even relatively simple changes is unclear. The implementation of nudge interventions will also require significant institutional, financial, and operational resources (Budd, Schwarz, Yount, & Haire-Joshu, 2012). Certainly, efforts such as Wansink’s Smarter Lunchrooms (<http://smarterlunchrooms.org/homepage>), where researchers partner with schools to implement low-cost, evidence-based interventions in cafeterias should be applauded and offer important opportunities to collect real-world, longitudinal data on the effectiveness of such interventions.

However, these types of nudges in the school food environment are more likely to have sustained success if they occur in the presence of strong school food policies such as the restriction of marketing to children in schools, elimination of sugary drinks sold in vending machines, and nutrition standards for foods sold during meals or for snack, among others. In France, for example, schools are not permitted to have vending machines that sell food and drink (Mercer, 2005). The United Kingdom has also prohibited the sale of certain foods in schools (United Kingdom Department of Education, 2013) and six provinces in Canada have implemented school food guidelines (Hawkes, 2007). In the United States, the Healthy, Hunger-Free Kids Act of 2010 mandated major improvements to nutritional quality standards for all foods provided to children at school, including the school meals program as well as proposed regulations to “competitive” snacks and beverages sold at schools (named as such because they compete with foods sold as part of the National School Lunch Program). Although these regulations represent historic changes to the school food environment, such regulations alone also cannot ensure that children will eat those healthier foods provided. This is where social science interventions should be coupled with policy efforts to encourage children to consume healthier foods.

In addition to healthy food standards, information presented in the school environment should foster positive nutrition and not undermine public health efforts. Therefore, schools should be cognizant of the marketing messages youth receive while on school grounds. There are strong arguments that school property should not contain any advertising material given the nature and purpose of school. Fortunately, the United States First Amendment applies differently to school property than the other venues discussed above (Graff, 2008). The Supreme Court recognizes that children are a captive audience while in school (Bethel School District v. Fraser, 1986) and that children may reasonably perceive advertising to bear the approval of school officials (Hazelwood School District v. Kuhlmeier, 1988). Therefore, school districts can and should limit advertising on school campuses, including on buses, on vending machines, and in the cafeteria, hallways, and classrooms.

Portion size limits

Empirical research has consistently demonstrated that large portion sizes increase short-term energy intake among children and adults (Rolls, Morris, & Roe, 2002; Rolls, 2003; Rolls, Roe, Kral, Meengs, & Wall, 2004a, 2004b; Rolls, Roe, & Meengs,

2007; Fisher & Kral, 2008). This is concerning because large portion sizes are often the default at many restaurants and marketplace portion sizes have not decreased appreciably during the time that obesity has become recognized as a significant public health concern (Young & Nestle, 2002).

In 2012, New York City's Board of Health adopted a regulation attempting to limit the serving size of sugary beverages available for sale in the city. This regulation was proposed because of the growing evidence that sugary drink consumption is linked to weight gain and obesity as well as diabetes and risk factors for cardiovascular disease (Ebbeling et al., 2006; Ebbeling et al., 2012; Pan et al., 2013). The 2012 New York City ordinance set a maximum cup size of 16 oz permissible for sale and self-service at food service establishments. The regulation represents an example of a policy informed by social science insights. Given that consumers tend to stick with defaults (Samuelson & Zeckhauser, 1988), the policy changes the default to a smaller portion, but preserves freedom by enabling the consumer to buy as many drinks as he/she would like.

In New York City, retailers and the beverage industry, among other groups, sued to prevent enforcement of the serving size regulation. Although two lower courts ruled against the city, the state's highest court accepted the city's appeal in October 2013, so the legality of the ordinance is currently under consideration. No court thus far has found that enacting a portion cap to address obesity is irrational. Rather, the lower court found that specific aspects of the regulation were "arbitrary and capricious," such as a scientifically-based exclusion of milk-based drinks, and the rule's exclusion of retail establishments beyond the Board's jurisdiction (*New York Statewide Coalition v. New York City Department of Health*, 2013a, 2013b). However, despite public perceptions that the proposed portion size cap violates personal freedom, there is no fundamental legal right to purchase a particular portion size of a sugary beverage (Pomeranz & Brownell, 2012). In fact, the United States Supreme Court has upheld similar types of state and local laws against legal challenge (*Schmidinger v. Chicago*, 1913; *Minnesota v. Clover Leaf Creamery Co.*, 1981). The government has the authority to protect the health and safety of its citizens by regulating products offered for sale. This includes restricting the serving size of a known public health threat (i.e., sugary beverages), the location of products in stores (i.e., tobacco placement behind sales counters), and even banning a particularly dangerous product (i.e., caffeinated alcoholic drinks). All of these strategies are available to address food and beverage products with public health ramifications.

It remains to be seen whether the sugary drink portion cap will be upheld in New York City, but in the meantime, research on these kinds of portion limit policies is needed to understand how they influence consumers and whether there are unintended consequences, such as purchasing multiple drinks or switching to other beverages (e.g., alcohol) not subject to the cap.

Conclusion

This is an exciting and important time for interdisciplinary partnerships between consumer psychology and public health

and medicine given the increased interest among governments in using behavioral research to design effective policies and interventions. The best example of this is Britain's behavioral insights team, commonly referred to as the "Nudge" unit, which is committed to testing nudges in real-world field experiments. Earlier this year, the White House also announced the launch of a behavioral insights team that is eager to partner with social scientists (Thaler, 2013). Wansink and Chandon (2014-this issue) hope that this will be the "Century of Behavior Change;" we hope it will be the "Century of Evidence-Based Policy." Voluntary nudges to promote health should certainly be encouraged and institutions and companies implementing them deserve praise for those efforts. Consumer psychology has an important role to play in generating insights for novel, cost-effective public health interventions. Basic behavioral research studies in the laboratory and field are needed to test innovative ideas that have the potential to be scaled up for population-level interventions. However, to produce meaningful change in obesity prevalence, such efforts should be coupled with and inform policy approaches. We believe behavioral scientists, partnered with legal experts and policymakers, can help design effective public health policies to address obesity.

References

- Auchincloss, A. H., Mallya, G. G., Leonberg, B. L., Ricchezza, A., Glanz, K., & Schwarz, D. F. (2013). *American Journal of Preventive Medicine*, 45, 710–719.
- Bachman, K. (2013, March 14). *Ad blasts Nickelodeon for airing junk food spots group says Nick should adopt nutrition policies like Disney and Ion*. Adweek (Retrieved from: <http://www.adweek.com/news/advertising-branding/ad-blasts-nick-airing-junk-food-ads-147917>).
- Bassett, M. T., Dumanovsky, T., Huang, C., Silver, L. D., Young, C., Nonas, C., et al. (2008). Purchasing behavior and calorie information at fast-food chains in New York City, 2007. *American Journal of Public Health*, 98, 1457–1459.
- Beauchamp, G. K., & Mennella, J. A. (2011). Flavor perception in human infants: Development and functional significance. *Digestion*, 83(Suppl. 1), 1–6.
- Beck, L. F., & Shults, R. A. (2009). Seat belt use in states and territories with primary and secondary laws — United States, 2006. *Journal of Safety Research*, 40, 469–472.
- Bergum, B. O., & Bergum, J. E. (1981). Population stereotypes: An attempt to measure and define. *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, 25, 662–665.
- Bethel School District v. Fraser, 478 US 675 (1986).
- Blackburn, G. L. (1995). Effect of degree of weight loss on health benefits. *Obesity Research*, 3, 211S–216S.
- Block, J. P., Condon, S. K., Kleinman, K., Mullen, J., Linakis, S., Rifas-Shiman, S., et al. (2013). Consumers' estimation of calorie content at fast food restaurants: Cross sectional observational study. *British Medical Journal*, 23(346), f2907.
- Bollinger, B., Leslie, P., & Sorensen, A. (2011). Calorie posting in chain restaurants. *American Economic Journal: Economic Policy*, 3, 91–128.
- Broadcasting Authority of Ireland (2013, June 4). BAI issues rules on food advertising to children. Retrieved from: <http://www.bai.ie/?p=3374>.
- Budd, E. L., Schwarz, C., Yount, B. W., & Haire-Joshu, D. (2012). Factors influencing the implementation of school wellness policies in the US, 2009. *Preventing Chronic Disease*, 9, E118.
- Burton, S., Creyer, E. H., Kees, J., & Huggins, K. (2006). Attacking the obesity epidemic: The potential health benefits of providing nutrition information in restaurants. *American Journal of Public Health*, 96, 1669–1675.

- Cairns, G., Angus, K., Hastings, G., & Caraher, M. (2013). Systematic reviews of the evidence on the nature, extent and effects of food marketing to children. A retrospective summary. *Appetite*, *62*, 209–215.
- Callinan, J. E., Clarke, A., Doherty, K., & Kelleher, C. (2010). Legislative smoking bans for reducing secondhand smoke exposure, smoking prevalence and tobacco consumption. *The Cochrane Library*, *4*, 1–128.
- Center for Science in the Public Interest (2003). Pestering parents: How food companies market obesity to children. (Retrieved from:). http://cspinet.org/new/pdf/pages_from_pestering_parents_final_pt_1.pdf
- Center for Science in the Public Interest (2007). Food marketing in other countries. (Retrieved from:). http://www.cspinet.org/nutritionpolicy/foodmarketing_abroad.pdf
- Center for Science in the Public Interest (2011). Putting nutrition into nutrition standards for marketing to kids: How marketed foods Measure up to the Interagency Working Group's proposed nutrition principles for food marketed to children. Retrieved from: <http://cspinet.org/new/pdf/iwg-report.pdf>
- Chandon, P., & Wansink, B. (2012). Does food marketing need to make us fat? A review and solutions. *Nutrition Reviews*, *70*, 571–593.
- Chernev, A. (2011). The dieter's paradox. *Journal of Consumer Psychology*, *21*, 178–183.
- Chu, Y. H., Frongillo, E. A., Jones, S. J., & Kaye, G. L. (2009). Improving patrons' meal selections through the use of point-of-selection nutrition labels. *American Journal of Public Health*, *99*, 2001–2005.
- Connolly, H. M., Crary, J. L., McGoan, M. D., Hensrud, D. D., Edwards, B. S., Edwards, W. D., et al. (1997). Valvular heart disease associated with fenfluramine–phentermine. *New England Journal of Medicine*, *337*, 581–588.
- Council of Better Business Bureaus (2006). Children's food and beverage advertising initiative. Retrieved from: <http://www.bbb.org/us/childrens-food-and-beverage-advertising-initiative/>
- Danaei, G., Ding, E. L., Mazaffarian, D., Taylor, B., Rehman, J., Murray, C. J., et al. (2009). The preventable causes of death in the United States: Comparative risk assessment of dietary, lifestyle, and metabolic risk factors. *PLoS Medicine*, *6*, e1000058.
- Dotsch-Klerk, M., & Jansen, L. (2008). The Choices programme: A simple, front-of-pack stamp making healthy choices easy. *Asia Pacific Journal of Clinical Nutrition*, *17*, 383–386.
- Downs, J. S., Loewenstein, G., & Wisdom, J. (2009). Strategies for promoting healthier food choices. *American Economic Review*, *99*, 159–164.
- Ebbeling, C. B., Feldman, H. A., Chomitz, V. R., Antonelli, T. A., Gortmaker, S. L., Osganian, S. K., et al. (2012). A randomized trial of sugar-sweetened beverages and adolescent body weight. *New England Journal of Medicine*, *367*, 1407–1416.
- Ebbeling, C. B., Feldman, H. A., Osganian, S. K., Chomitz, V. R., Ellenbogen, S. J., & Ludwig, D. S. (2006). Effects of decreasing sugar-sweetened beverage consumption on body weight in adolescents: A randomized, controlled pilot study. *Pediatrics*, *117*, 673–680.
- Ecinoso, W., Bernard, D., Steiner, C., & Chen, C. (2005). Use and costs of bariatric surgery and prescription weight loss medications. *Health Affairs*, *24*, 1039–1046.
- Elbel, B., Kersh, R., Brescoll, V. L., & Dixon, B. (2009). Calorie labeling and food choices: A first look at the effects on low-income people in New York City. *Health Affairs (Millwood)*, *28*, 1110–1121.
- Elder, R. W., Lawrence, B., Ferguson, A., Naimi, T. S., Brewer, R. D., Chattopadhyay, S. K., et al. (2010). The effectiveness of tax policy interventions for reducing excessive alcohol consumption and related harms. *American Journal of Preventive Medicine*, *38*, 217–229.
- Finkelstein, E. A., Strombotne, K. L., Chan, N. L., & Krieger, J. (2011). Mandatory menu labeling in one fast-food chain in King County, Washington. *American Journal of Preventive Medicine*, *40*, 122–127.
- Finkelstein, E. A., Trogdon, J. G., Cohen, J. W., & Dietz, W. (2009). Annual medical spending attributable to obesity: Payer- and service-specific estimates. *Health Affairs (Millwood)*, *28*, w822–w831.
- Fisher, J. O., & Kral, T. V. (2008). Portion sizes and obesity: Response of fast-food companies. *Physiology & Behavior*, *94*, 39–47.
- Food Labeling Modernization Act of 2013, H.R. 3147.
- Glazer, G. (2001). Long-term pharmacotherapy of obesity 2000: A review of efficacy and safety. *Archives of Internal Medicine*, *161*, 1814–1824.
- Graff, S. K. (2008). First Amendment implications of restricting food and beverage marketing in schools. *The Annals of the American Academy of Political and Social Science*, *615*, 157–177.
- Guthrie, A. (2013, Dec 27). Junk food feels the heat in Latin America. *The Wall Street Journal* (Retrieved from: <http://online.wsj.com/news/articles/SB10001424052702304773104579270523572200790>).
- Hanks, A. S., Just, D. R., & Wansink, B. (2013). Smarter lunchrooms can address new school lunchroom guidelines and childhood obesity. *Journal of Pediatrics*, *162*, 867–869.
- Harnack, L. J., French, S. A., Oakes, J. M., Story, M. T., Jeffery, R. W., & Rydell, S. A. (2002). Effects of calorie labeling and value size pricing on fast food meal choices: Results from an experimental trial. *International Journal of Behavioral Nutrition and Physical Activity*, *5*, 63.
- Harris, J. L., Bargh, J. A., & Brownell, K. D. (2009). Priming effects of television food advertising on eating behavior. *Health Psychology*, *28*, 404–413.
- Harris, J. L., & Graff, S. K. (2012). Protecting young people from junk food advertising: Implications of psychological research for First Amendment law. *American Journal of Public Health*, *102*, 214–222.
- Harris, J. L., Pomeroy, J. L., Lobstein, T., & Brownell, K. D. (2009). A crisis in the marketplace: How food marketing contributes to childhood obesity and what can be done. *Annual Review of Public Health*, *30*, 211–225.
- Harris, J. L., Sarda, V., Schwartz, M. B., & Brownell, K. D. (2013). Redefining “child-directed advertising” to reduce unhealthy television food advertising. *American Journal of Preventive Medicine*, *44*, 358–364.
- Hawkes, C. (2007). Regulating food marketing to young people worldwide: Trends and policy drivers. *American Journal of Public Health*, *97*, 1962–1973.
- Hazelwood School District v. Kuhlmeier, 484 U.S. 260 (1988).
- Healthy, Hunger-Free Kids Act of 2010, 42 U.S.C. §1751 (2010).
- Hirsh, J. M. (2013 November 7). *Can you taste the difference of no trans fat? Probably not.* The Huffington Post (Retrieved from: http://www.huffingtonpost.com/2013/11/07/trans-fat-ban_n_4234831.html).
- Institute of Medicine (2005, Dec 5). *Food marketing to children and youth: Threat or opportunity?* Washington, DC: National Academies Press (Retrieved from: <http://www.iom.edu/Reports/2005/Food-Marketing-to-Children-and-Youth-Threat-or-Opportunity.aspx>).
- Institute of Medicine (2012, April 10). *For the public's health: Investing in a healthier future.* Washington, DC: National Academies Press (Retrieved from: <http://iom.edu/Reports/2012/For-the-Publics-Health-Investing-in-a-Healthier-Future/Press-Release.aspx>).
- Knowler, W. C., Barrett-Connor, E., Fowler, S. E., Hamman, R. F., Lachin, J. M., Walker, E. A., et al. (2002). Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *New England Journal of Medicine*, *346*, 393–403.
- Krieger, J., & Saelens, B. E. (2013). *Impact of menu labeling on consumer behavior: A 2008–2012 update.* Healthy Eating Research Review. Robert Wood Johnson Foundation.
- Levy, D. E., Riis, J., Sonnenberg, L. M., Barraclough, S. J., & Thorndike, A. N. (2012). Food choices of minority and low-income employees: A cafeteria intervention. *American Journal of Preventive Medicine*, *43*, 240–248.
- Liu, P. J., Wisdom, J., Roberto, C. A., Liu, L. J., & Ubel, P. A. (2014). Using behavioral economics to design more effective food policies to address obesity. *Applied Economic Perspectives and Management*, *36*, 6–24.
- Lorillard v. Reilly, 533 U.S. 525 (2001).
- Marmot, M. (2005). Social determinants of health inequalities. *Lancet*, *365*, 1099–1104.
- Mercer, C. (2005, Sep 2). France launches controversial school vending machine ban. (NUTRAingredients.com, Retrieved from:). <http://www.nutraingredients.com/Regulation/France-launches-controversial-school-vending-machine-ban>.
- Minnesota v. Clover Leaf Creamery Co., 449 U.S. 456 (1981).
- New York Statewide Coalition v. New York City Department of Health, 970 N.Y.S.2d 200 (N.Y. App. Div. 2013, July 30).
- New York Statewide Coalition v. New York City Department of Health, Supreme Court Decision and Order (Tingling J. March 11, 2013).
- Nutrition labeling of standard menu items at chain restaurants Sec 4205. HR 3590. 2010.

- Ofcom (2010, July 26). *HFSS advertising restrictions*. Final review (Retrieved from: <http://stakeholders.ofcom.org.uk/binaries/research/tv-research/hfss-review-final.pdf>).
- Otite, F. O., Jacobson, M. F., Dahmubed, A., & Mozaffarian, D. (2013). Trends in trans fatty acids reformulations of US supermarket and brand-name foods from 2007 through 2011. *Preventing Chronic Disease, 10*, E85.
- Pan, A., Malik, V. S., Hao, T., Willett, W. C., Mozaffarian, D., & Hu, F. B. (2013). Changes in water and beverage intake and long-term weight changes: Results from three prospective cohort studies. *International Journal of Obesity (London), 37*, 1378–1385.
- Perri, M. G., & Corsica, J. A. (2002). Improving maintenance of weight lost in behavioral treatment of obesity. In Thomas A. Wadden, & Albert J. Stunkard (Eds.), *Handbook of obesity treatment* (pp. 357–379). New York: Guilford Press.
- Pomeranz, J. L. (2010). Television food marketing to children revisited: The Federal Trade Commission has the constitutional and statutory authority to regulate. *Journal of Law Medicine and Ethics, 38*, 98–116.
- Pomeranz, J. L., & Brownell, K. D. (2012). Portion sizes and beyond—government's legal authority to regulate food-industry practices. *New England Journal of Medicine, 367*, 1383–1385.
- Proctor, R. (2012). The history of the discovery of the cigarette–lung cancer link: Evidentiary traditions, corporate denial, global toll. *Tobacco Control, 21*, 87–91.
- Puhl, R. M., & Heuer, C. A. (2009). The stigma of obesity: A review and update. *Obesity (Silver Spring), 17*, 941–964.
- Roberto, C. A., Baik, J., Harris, J. L., & Brownell, K. D. (2010). Influence of licensed characters on children's taste and snack preferences. *Pediatrics, 126*, 88–93.
- Roberto, C. A., Larsen, P. D., Agnew, H., Baik, J., & Brownell, K. D. (2010). Evaluating the impact of menu labeling on food choices and intake. *American Journal of Public Health, 100*, 312–318.
- Rolls, B. J. (2003). The supersizing of America: Portion size and the obesity epidemic. *Nutrition Today, 38*, 42–53.
- Rolls, B. J., Morris, E. L., & Roe, L. S. (2002). Portion size of food affects energy intake in normal-weight and overweight men and women. *American Journal of Clinical Nutrition, 76*, 1207–1213.
- Rolls, B. J., Roe, L. S., Kral, T. V., Meengs, J. S., & Wall, D. E. (2004). Increasing the portion size of a sandwich increases energy intake. *Journal of the American Dietetic Association, 104*, 367–372.
- Rolls, B. J., Roe, L. S., Kral, T. V., Meengs, J. S., & Wall, D. E. (2004). Increasing the portion size of a packaged snack increases energy intake in men and women. *Appetite, 42*, 63–69.
- Rolls, B. J., Roe, L. S., & Meengs, J. S. (2007). The effect of large portion sizes on energy intake is sustained for 11 days. *Obesity, 15*, 1535–1543.
- Rudd Center for Food Policy and Obesity (2013). Pledges on food marketing to children. (Available at: <http://www.yaleruddcenter.org/marketingpledges/search.aspx>)
- Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty, 1*, 7–59.
- Schmidinger v. Chicago, 226 U.S. 578 (1913).
- Tandon, P. S., Wright, J., Zhou, C., Rogers, C. B., & Christakis, D. A. (2010). Nutrition menu labeling may lead to lower-calorie restaurant meal choices for children. *Pediatrics, 125*, 244–248.
- Teegala, S. M., Willett, W. C., & Mozaffarian, D. (2009). Consumption and health effects of trans fatty acids: A review. *Journal of AOAC International, 92*, 1250–1257.
- Thaler, R. (2013, August 24). *Public policies made to fit people*. The New York Times (Retrieved from: http://www.nytimes.com/2013/08/25/business/public-policies-made-to-fit-people.html?_r=0).
- Thaler, R., & Sunstein, C. (2009). *Nudge: Improving decisions about health, wealth, and happiness*. New York: Penguin Group.
- Thorndike, A. N., Riis, J., Sonnenberg, L., & Levy, D. E. (2014). Traffic-light labels and choice architecture: Promoting healthy food choices. *American Journal of Preventive Medicine, 46*, 143–149.
- Thorndike, A. N., Sonnenberg, L., Riis, J., Barraclough, S., & Levy, D. E. (2012). A 2-phase labeling and choice architecture intervention to improve healthy food and beverage choices. *American Journal of Public Health, 102*, 527–533.
- Trans fat: (68 Federal Register 41434, 2003, July 11).
- Triggie, N. (2013, June 18). *Food labelling: Consistent system to be rolled out*. BBC News (Retrieved from: <http://www.bbc.co.uk/news/health-22959239>).
- United Kingdom Department of Education (2013, Sept 10). School food standards. (Retrieved from: <http://www.education.gov.uk/schools/adminandfinance/schooladmin/a0012940/school-food-standards>)
- Wadden, T. A., & Butryn, M. L. (2003). Behavioral treatment of obesity. *Endocrinology Metabolism Clinics of North America, 32*, 981–1003.
- Wansink, B., & Chandon, P. (2014). Slim by design: Redirecting the accidental drivers of mindless overeating. *Journal of Consumer Psychology, 24*, 413–431 (this issue).
- Wansink, B., & Hanks, A. S. (2013). Slim by design: Serving healthy foods first in buffet lines improves overall meal selection. *PLoS ONE, 8*, e77055.
- Wansink, B., Just, D. R., & Payne, C. R. (2012). Can branding improve school lunches? *Preventive Medicine, 55*, 330–332.
- Wartella, E. A., Lichtenstein, A. H., Yaktine, A., & Nathan, R. (2011). *Front-of-package nutrition rating systems and symbols: Promoting healthier choices. Phase II report*. Washington, DC: Institute of Medicine.
- Watson, E. (2011, October 14). *GMA: There is no middle ground on kids marketing proposals*. Food Navigator (Retrieved from: <http://www.foodnavigator-usa.com/Markets/GMA-There-is-no-middle-ground-on-kids-marketing-proposals>).
- White, C. C., Koplan, J. P., & Orenstein, W. A. (1985). Benefits, risks and costs of immunization for measles, mumps and rubella. *American Journal of Public Health, 75*, 739–744.
- Wisotzky, M., Albuquerque, M., Pechacek, T. F., & Park, B. Z. (2004). The National Tobacco Control Program: Focusing on policy to broaden impact. *Public Health Reports, 119*, 303–310.
- Yanovski, S., & Yanovski, J. (2002). Drug therapy: Obesity. *New England Journal of Medicine, 346*, 591–602.
- Young, L. R., & Nestle, M. (2002). The contribution of expanding portion sizes to the US obesity epidemic. *American Journal of Public Health, 92*, 246–249.