Creating an Environment in Which Youths Are Encouraged to Eat a Healthier Diet

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More than one-third of young people in the United States are either obese or at risk of becoming obese. The authors consider how food marketers have contributed to this problem and how they might help resolve it. The article organizes the marketing activities of food-related companies around the classic four Ps. The authors first discuss product, price, and promotion in terms of past, present, and potential future industry actions. They then discuss place as a function of four key commercial end points in the food channel: (1) supermarkets, (2) convenience stores, (3) restaurants, and (4) schools. The authors consider government actions in terms of how they affect the actions of both the food industry and consumers. Throughout the article, the authors consider how extant research can be extended in an effort to better understand and address the youth obesity problem.

Obesity rates among adolescents in the United States have tripled since 1963. More than one-third (33.6%) of U.S. children and adolescents are either obese or at risk of becoming obese (Ogden et al. 2006), with significant variations across ethnic and socioeconomic groups. Overweight children have a 70% chance of being overweight or obese as adults and an 80% chance if one or more parent is overweight or obese. Obesity increases various health-related risks both in childhood and into adulthood (American Heart Association 2005). It is estimated that at current rates, the lifetime risk of type 2 diabetes (and many related health problems) is 30% for boys and 40% for girls (McGinnis, Gootman, and Kraak 2006). Other associated health problems for which obesity increases the risk include high cholesterol, high blood pressure, asthma, and general poor health (Koplan, Liverman, and Kraak 2005).

A meta-analysis of 64 intensive obesity-prevention programs (Stice, Shaw, and Marti 2006) found that only 21% of efforts worked in the short run and only 5% had effects that lasted for any significant time beyond the program’s termination. It is not surprising that programs with self-selected participants tended to be more effective. Moreover, the meta-analysis found that mandated improvements in diet and exercise were not significantly related to larger effect sizes. Programs with adolescents were somewhat more successful than were those with younger children.

A Case Study

A recent case demonstrates the challenges that lie ahead in addressing the increasingly serious problem of obesity. The case involved an intense effort of a single school in Osceola County, Fla., to improve what children ate for breakfast and lunch at the school (Belkin 2006). The U.S. Census data for 2004 indicate that the county had a population of slightly less than 232,000. Personal per-capita income was $20,811, compared with $31,469 for the entire state. In terms of race and ethnicity, 77.2% of the county residents are white; 29.4%, Hispanic; 7.4%, African American; 2.2%, Asian; and 13.2%, other (U.S. Census Bureau 2004).

In the Florida school effort, it was expected that the children would be reluctant to try new (and “strange”) foods. Program administrators realized early on that they could not just place the new foods out in the cafeteria—they needed to explain and “promote” the foods. Several other factors, however, did take the program administrators by surprise. Costs of healthier food ingredients were significantly higher than the ingredients the schools typically received from the U.S. Department of Agriculture (USDA) or other large-scale food providers (e.g., lower-fat cheese slices cost $0.04 more per slice than the regular higher-fat version). As a result of limited government subsidies for meals, the price differentials are highly significant.

The program administrators also failed to anticipate fully that parents and teachers would be as reluctant as the children to support the changes. The school administrators and staff reported disliking at least some of the new foods themselves. At least by their physical appearance, many, if not most, of the teachers did not seem to represent positive role models for good nutrition and exercise. Many teachers did not use the program-provided educational materials, explaining that they did not have time or that they involved too much work. State requirements posed a challenge as...
well. Many of the teachers said that they would not use the educational materials because they needed to focus on getting their students to pass the mandated state tests.

Although some of these difficulties are limited to the school environment, many others are associated with the broader culture. The program clearly represented a threat to many of the parents. Some complained about their children being put on a diet. Others worried that the children would like the food so much that they would be reluctant to eat the food at home. Despite the program, parents continued to raise money for the parent–teacher organization by selling fast food in the parking lot once a week.

The broader culture is such that children have learned to associate fast food with rewards. In the Florida school, honor-roll students receive a coupon for a meal at McDonald’s once per grading period. The lure of foods such as pizza and nachos (“à la carte foods”) in the school cafeteria is so strong that the program administrators acknowledged that it was impossible to do away with them. Moreover, given the need to show improvements in the children’s health as a concrete outcome, the program administrators quickly recognized that the myriad competing influences operating on the children—home, friends, fast food, television, video games, and so on—may limit their success.

### Key Downstream, Midstream, and Upstream Actors in the Food Marketing System

The Florida school case emphasizes the complexity of both trying to improve children’s dietary patterns and identifying which actors need to be won over in the process. It provides some understanding of how each actor must be convinced that the benefits of the dietary changes being pursued outweigh the costs to them personally and to their institution (beyond the benefits to the children; for a discussion of this perspective, see Andreasen 2006). We model the network of actors involved using an upstream–downstream metaphor that we derived from the work of Wallack and colleagues (1993) and adapted for our purposes. The metaphor helps position the actors and institutions in the food-marketing system. Wallack and colleagues begin by describing how most change efforts have focused on the downstream victims of the social/health problem in question and point to efforts to try to save them from drowning (i.e., by using direct persuasive change efforts).

### Downstream Actors

Although much of this article focuses on what is done or what might be done further upstream, ultimately it is the young people themselves and their eating behaviors that must change. Children and adolescents control considerable amounts of discretionary monies. More than one-third (36%) of teenagers shop for at least a portion of their family’s food, and close to three-quarters (72%) help at least once a week with meal preparation (Lempert 2004). The U.S. Census Bureau estimated that in 2005, 5- to 11-year-olds would spend between $17 billion and $23 billion themselves, spending 30% of that, or $5.8 billion, on food and beverages (as cited in Lempert 2004).

Although we do not focus on physical activity in this article, one-third of adolescents do not partake in the recommended levels of moderate or vigorous activity. Ten percent of adolescents are completely inactive, and levels of physical activity drop as adolescents age (Institute of Medicine [IOM] 2004). Moreover, the data, based on self-reports, may represent overestimates (Pate et al. 2002). It is evident that encouraging youths to engage in increased levels of physical activity and providing opportunities for them to do so is a critical part of the goal of improved health and fewer cases of obesity.

As downstream targets of the food industry, parents must also change their behavior. Many of the issues we discuss herein, such as the impact of food labeling and the general availability of healthier foods at supermarkets than at convenience stores, affect parents more directly than children. The foods that parents provide for their children and the example they set by virtue of what they themselves eat are likely critical factors (Hanson et al. 2005; Neumark-Sztainer et al. 2003). Some researchers have even noted significant correlations between not only parent and child snack intake but also eating motivations and levels of body dissatisfaction (Brown and Ogden 2004).

The more frequently families eat together, the healthier are the children’s dietary habits (Gillman et al. 2000). Parents’ fruit and vegetable consumption is the best predictor of young children’s fruit and vegetable consumption (Cooke et al. 2003; Wardle, Carnell, and Cooke 2005). The same is true for soft drink consumption (Grimm, Harnack, and Story 2004). Modeling behavior (Bandura 1977) and parents simply providing access to particular foods seem to be effective strategies. In contrast, when parents restrict access to specific foods, apply pressure for children to eat specific foods, or reward children for eating a disliked food, the strategy backfires and children are less likely to follow their parents’ preferences or dictates (Birch 1999).

Six in ten mothers of preschoolers and three in four mothers of 6- to 17-year-olds are in the labor force. More than 70% of such mothers work full-time (U.S. Department of Health and Human Services [USDHHS] 2003). The more hours that women work outside the home, the more likely their children are to be obese. This effect is most pronounced in children from upper-income households (Anderson, Butcher, and Levine 2003). The trends associated with full-time working mothers and dual-career families that are hypothesized to be related to the increase in childhood obesity include fewer family meals; more eating out, particularly at fast-food restaurants; and increased demand for convenience and prepared foods (McGinnis, Gootman, and Kraak 2006).

Wallack and colleagues’ (1993) metaphor implies that though everything possible must be done to save drowning victims downstream, it may be worthwhile to move upstream to see how and why they got into the river—into the predicament—to begin with. Somewhat further upstream (or, in our terminology, “midstream”), Wallack and colleagues identify many actors in the system, including, in our case, the various people and institutions in the food-marketing system whose actions are in many ways responsible for the fate of those “drowning” downstream. The perspective of Wallack and colleagues is that saving the...
drowning victims by influencing the actions of upstream actors is far more important and effective than is focusing on (and, in some cases, blaming) the downstream victims.

**Midstream Actors**

In the food-marketing system, the key participants operating at midstream include, most directly, food growers and food-processing firms and their distributors and advertisers; outside-the-home food purveyors, including restaurants, fast-food chains and otherwise, convenience stores, grocery stores, and supermarkets; schools; and the media. We subsequently consider how each of these actors contributes to shaping the environment in which children and their parents make food choices. Andreasen (2006) suggests that marketing can be used to motivate key individuals in each of these institutions to work toward a desired social goal, such as addressing youth obesity.

**Upstream Actors**

Still further upstream, Wallack and colleagues (1993) locate broader background societal problems (e.g., poverty), which they describe as the root causes of the downstream problem. We view government as situated at this most-upstream level. Government (i.e., politicians and the legislature) operates upstream and, by setting public policy, helps shape the environment in which midstream or downstream actors must operate (Andreasen 2006; Wallack et al. 1993). Laws, including those that structure economic incentives and disincentives, provide a framework within which the food industry, the media, and schools conduct themselves. Regulatory bodies such as the Food and Drug Administration (FDA) and the Federal Trade Commission (FTC) give structure to legislation by virtue of their regulatory actions. Marketing can inform these steps to make them more effective.

**Upstream Versus Downstream Flows of Influence**

Influence can flow upstream as well. Customer preferences guide industry actions. Parents’ and teachers’ associations influence school actions. Constituents (especially at election time) and industry lobbyists influence legislators. Marketing can be effective in shaping the agenda or priorities of both legislators and regulators by encouraging them to take steps that result in healthier diets for children (for a discussion of the related media advocacy strategy, see Wallack et al. 1993).

Furthermore, upstream and downstream marketing efforts need not be mutually exclusive (Andreasen 2002; Goldberg 1995; Rothschild 1999). For example, downstream, at the individual level, improving children’s media literacy may enhance their ability to evaluate advertising messages critically so that they are more vigilant in processing them. At the same time, at midstream, the media environment itself might change so that the nature and balance of the food messages to which children are exposed favor healthier options. Upstream actions by the government, such as either constraining the advertising of less healthful food or encouraging the development of messages promoting healthier foods and healthful eating, may also promote the balance.

**Midstream and Upstream Actors and the Four Ps**

We next use marketing’s classic four Ps to describe how the food-marketing system has contributed to the problem of youth obesity and how it can contribute to the solution. We draw on a wide body of recent research to establish both what is understood at this point and what research needs to be done to help address the youth obesity problem (see Figure 1).

As with the marketing of other products, the marketing of food centers on the basics of marketing, the four Ps—product, price, promotion, and place—as midstream companies attempt to shape their offerings to reach parents and children, their downstream consumers, more effectively. We first consider a basic aspect of the product: taste. We then review additional product-related issues, particularly packaging, with a focus on mandatory package labels. It is not surprising that price is a key dimension. We review the somewhat-sparse data on price elasticity and sensitivity for food, particularly as it regards youths. We consider the impact of the farm bill subsidies on food costs. In addition to focusing on price in a separate section, we find that price is also a critical factor in issues such as the type of stores located in lower-income areas and their relative prices for healthier foods. In discussing food promotion, we begin by exploring the degree to which food advertising affects youths’ dietary choices and patterns. We also anticipate how alternative messages for healthier foods might be created—by whom and creatively—by tapping into youth motives.

Finally, we focus on the commercial end points of the food channel—the place where foods are sold: supermarkets; smaller grocery stores and convenience stores; restaurants, fast-food chains, and full-service restaurants; and schools. We pay particular attention to what occurs in the schools, given how central they are to children’s and adolescents’ day. Children and adolescents not only spend a good part of their day in school but also eat one and often two meals there. Moreover, schools can educate students about the link between nutrition and health and promote its importance.

Note that some of the marketing functions, such as price, are relatively unidimensional and/or are covered in a less extensive body of research, particularly as they relate to food and youths; thus, they receive a briefer discussion. Others, such as promotion, are relatively multidimensional and have more extensive research, which calls for a broader discussion. In addition, at each point, we consider the present and potential role of government and governmental regulations.

**Product**

The Paramount Importance of Taste

Researchers have noted that the taste of food products is the most important factor that guides the food preferences and choices of children, adolescents, and adults, both in general and specifically for fruits and vegetables (French et al. 1999; Neumark-Sztainer et al. 2003). Taste is the number-one factor that children cite as influencing their restaurant
choice ("really important" by 84% of children; Strottman International 2004).

If taste is critical in motivating food choices, the question becomes, How does one enhance the perceived taste of fruits and vegetables? No doubt a strawberry dipped in chocolate appeals a lot more to children (and adults) than a plain strawberry. To the extent that food producers and processors view such “compromises” as likely to help sell a particular food, and to the extent that nutritionists view them as acceptable in terms of health, such compromises may be an effective strategy. It should be relatively straightforward for companies to determine, for example, which (low-fat) dips are tasty enough that they help sell vegetables to children and adolescents.

Along these lines, McDonald’s sells sliced apples, but with a caramel sauce to enhance their appeal. Kraft Foods has run commercials for salad dressing that feature vegetables displayed prominently and attractively with the dressing poured over them. Nestlé has launched what it labels a better-tasting nutrition bar, “something that tastes more like a candy bar” (Thompson 2005, p. 3). Inevitably, the balance that some of the new offerings strike will be controversial. Mars’s Kid-Didits snacks (including chocolate cookies and pretzels) are an example of what critics have labeled “green-washing”—the effort by food companies to present less healthful foods in a more positive light (Thompson 2007).

Packaging: The Value of Convenience

Can “making it as convenient to eat fresh produce as it is to open a bag of chips” (Munoz 2005, p. B1) lead children to eat more fruits and vegetables? Simple experimental designs could be structured to determine whether children evaluate the same fruits and vegetables more positively and select them more often if they are “dressed” in more interesting and more helpful packaging. Examples of this strategy include Sunkist Growers’ Fun Fruit—sliced oranges kept fresh in special plastic packaging—Del Monte’s precut melons and bagged grapes, and Mann Packing’s 2-ounce salad “snack packs” in a bag. A significant drawback is that the added processing of such products substantially increases prices.

Packaging: The Challenge of Developing Effective Product Labeling

The National Labeling and Education Act

What is the most effective way to use package labeling to guide the consumer to healthier foods? One approach is the federal government’s 1990 National Labeling and Education Act (NLEA 1990), an effort to specify exactly what can and cannot be stated about nutrient content as well as nutrient and health claims on package labels. Given consumers’ penchant for processing information using simplifying heuristics, which we discuss subsequently, the approach has had limited success. Acknowledging this tendency, PepsiCo has developed a simple green symbol called Smart Spot, which now appears on the packages of more than 100 of the company’s products that its blue-ribbon panel identifies as healthier (see http://www.pepsico.com). In guiding the consumer to healthier products, Smart Spot is intended to remove the consumer’s need to study the more detailed nutrient information on the label. Researchers need
to assess the extent to which the ability to use this simplifying heuristic will attract the consumer and to what extent it is effective in improving consumer health.

The NLEA mandates the prominent display of nutrient information in a label format that includes the percentage of the daily values that each nutrient represents. It also regulates stated serving sizes to those that realistically reflect what people eat. In addition, the NLEA regulates health claims (e.g., “Diets low in sodium can help blood pressure”) and descriptive nutrient-content claims (e.g., low fat, high fiber) with restrictions on exactly what can be said and under what circumstances (FDA 1994). Broadly, the intent of the NLEA was to provide consumers with more accurate health information so that they could make better, healthier choices and to encourage the development and promotion of more, healthier food products. Despite the NLEA’s ambitious aims, researchers have found that the government’s goals for the NLEA have, in general, not been fulfilled as intended.

Confirming the idea of consumers as “cognitive misers” (Fiske and Taylor 1991), researchers have found that consumers tend to use simplifying heuristics in the processing of food labels. For example, they rely on easy-to-digest health claims and descriptive nutrient-content claims rather than on the more comprehensive and complex Nutrition Facts panel (Balasubramanian and Cole 2002). Consumers are likely to focus on negative nutrition attributes (e.g., fat) and ignore positive ones (e.g., calcium). Consumers also tend to focus on information related to fat and to ignore or misperceive other nutrients (e.g., sodium) (Garretson and Burton 2000). In another study, consumer judgments as to the overall healthiness of a product were unrelated to systematic variation in the percentage of daily values of the nutrients in the food (Barone et al. 1996).

Researchers have suggested that labels with simplified information motivate more use of information and are more effective (e.g., Burton, Biswas, and Netemeyer 1994; Moorman 1996; Viswanathan and Hastak 2002). Innovative proposals in this regard include providing average nutrient values for a product category to serve as a reference point (Barone et al. 1996) and incorporating the USDA’s (2005a) Healthy Eating Index. Although such proposals have limitations, preliminary tests of consumer response to each have been positive (Barone et al. 1996; Garretson and Burton 2000).

The range of products typically studied to date has been limited, and much of the data were collected more than a decade ago, when the NLEA first took effect. As a result, it remains important to assess how consumers process labels today, now that they have gained considerable experience with them. Furthermore, research has not traced the potential links between information processing of the labels in stores and ultimate purchases and between purchase patterns and related health outcomes. For example, did the NLEA restrictions reduce or eliminate misleading claims with product categories such as oils and cookies? If so, did this result in improved health (Caswell et al. 2003; Ippolito 2003)?

Although consumers have not responded to the NLEA as legislators and the FDA might have hoped, the law appears also to have failed in its goal to encourage food-processing firms to develop, produce, and promote more, healthier foods. Would food-processing companies and produce growers generate more competition and do more to promote their products if restrictions on health claims and comparative labeling statements were loosened? For example, if they were permitted to tout smaller reductions in calories and carbohydrate content associated with their foods (which they are currently not able to do), would new product development and competition on these dimensions increase with commensurate contributions to public health (Ippolito 2003)? It would be useful to assess the early responses of food-processing firm executives to the various proposed forms of reduced restrictions.

Labeling and Youths

Although the research we reviewed with regard to labeling has focused on adults, it is also important to assess the extent to which youths process food labels and how the information on the labels influences their food choices. There is a broadly held view that children’s long-term, heavy exposure to television over the past several decades has resulted in their shorter attention spans and lesser motivation to expend energy in processing the printed word. Thus, it might be anticipated that youths are less likely than adults to pay attention to and be influenced by the NLEA-based labels. However, the attention span hypothesis has not been substantiated (Anderson et al. 2001).

Labeling and Packaging Innovations in the Private Sector

Several companies, including Procter & Gamble, Kraft, Pepperidge Farm, General Mills, Frito-Lay, and Coca-Cola, have addressed one aspect of the “calorie” issue by developing 100-calorie “portion control” packages for products such as Pringles, Oreos, Chips Ahoy, Wheat Thins, Goldfish Crackers, Doritos, Cheetos, and Coca-Cola (many of these have been on the market long enough to register considerable success; Horovitz 2006; Warner 2005b). The underlying reason for this innovation was the confusion that can be generated by the fact that packages and containers are currently permitted to offer “servings” that range from half to double the standard actual serving size. The immediate impetus for the development of the 100-calorie packages may be that the FDA is considering an initiative that would mandate full-package information, including more realistic information on the number of servings and total calories per package, to supplement the current per-serving information (Seiders and Petty 2004). As with Smart Spot, the underlying hypothesis with regard to the 100-calorie portion-control packaging is that the ability to use the simplifying heuristic will attract the consumer.

Price

In this section, we explore the issues of both price elasticities for foods and the relative costs of healthier versus less healthful foods. We consider food costs in terms of the structure of the food industry, farm bill subsidies, and tax (dis)incentives.

Price Elasticities

With limited data available, price elasticities for foods need to be assessed in a more detailed way, particularly for
youths and for different demographic segments. A study focusing on high school students found that fruit and vegetable consumption was lower in zip codes where prices were higher or where the price of fast food was lower (Powell et al. 2007). Some more demographically specific data are available for adults, in which researchers have found that consumers in supermarkets in upscale areas of Chicago were less price sensitive and that African Americans and Hispanics were more price sensitive (Hoch et al. 1995). A review of five quasi-experimental studies (including two in schools, which we discuss later in this article) also provides evidence that people respond positively to lowered prices for fruits, vegetables, and low-fat snacks. However, the review also concluded that the effect may be limited to choices made at the particular place where the lower-cost foods were available and may not carry over to other settings (Faith et al. 2007).

**Industry Structure and Costs for Healthier Foods**

Healthier foods such as lean meats, fish, and fresh vegetables and fruit cost considerably more than calorie-dense foods (those high in refined grains, sugar, and fat; Drewnowski 2004; see also Meltzer 2006). The structure and size of food-related firms may determine, in part, the relative costs of healthier foods. Because many fruit and vegetable growers are fairly small, they do not typically gain the same economies of scale as food-processing firms. (Adding to the fragmentation in the marketplace, many of the fruits and vegetables consumed are imported.) A resultant hypothesis is that the relative advantage food processors have with regard to economies of scale likely contributes to a favorable price differential for their products.

Several cooperative associations have been established to represent growers, such as Produce for Better Health Foundation (www.5aday.com) and the California Tree and Grape League (www.cgtfl.com); however, with limited budgets for promotion and often representing a wide variety of different kinds of produce, such associations are likely to provide only a limited remedy. Supportive government subsidies may help, but to date, the bulk of the considerable subsidies from the federal farm subsidy program (i.e., the farm bill) have gone predominantly to grain growers (particularly corn growers) rather than to produce growers (Philpott 2006). It is only recently (under pressure from cheaper imports) that the many independent fruit and produce growers have developed a lobbying group to seek out federal subsidies in a revision of the farm bill (Barrionuevo 2006). At the time of this writing, the House version of the farm bill (Barrionuevo 2005) also provides greatly expanded assistance to fruit and vegetable growers (Rogers 2007).

**Financial and Tax (Dis)incentives**

Can positive and/or negative financial incentives influence market structure and product demand? A Danish econometric model found mixed results for a combination of negative and positive tax incentives, with greater effects likely in combination with promotional efforts (Smed, Jensen, and Denver 2005). A parallel effort to simulate the effects of positive incentives in the U.S. economy would be useful. Some negative incentives are currently in place: In 2000, 18 U.S. states taxed “unhealthful” foods such as candy and soft drinks. However, given the strenuous opposition to the taxes, the degree to which this strategy might be successfully extended is an open question (Brownell and Horgen 2004; Jacobson and Brownell 2000).

Can the private sector create effective financial incentives to motivate people to eat healthier foods? A few private incentive programs have been developed; for example, the Phoenix Insurance Company offers discounts of up to 20% on life insurance policies to customers whose body mass index (BMI) is verified to be relatively low, between 19 and 25. Premiums drop by 5% for every five years that a policyholder maintains a healthy BMI ratio, up to a maximum of 20% after 20 years (Associated Press 2007). How effective this program is and whether any of the effect trickles down to the children of the adults involved remains unclear.

**Promotion**

As we noted previously, there are multiple dimensions of food advertising and promotion to consider. Here, we consider (1) the impact of food advertising on youths, (2) how restricting existing advertising or creating alternative messages for healthier foods might redress the balance between advertising for healthful and unhealthful foods, and (3) what institutions might create these messages and what themes or youth motives they might draw on most effectively.

**The Nature of Food Advertising Directed to Children**

Children are exposed to high levels of advertising for foods, and the most recent estimates range from more than 4400 food commercials per year for 2- to 7-year-olds to 7600 for 8- to 12-year-olds and 6000 for 12- to 17-year-olds. Of these food commercials, 34% are for candy and snacks, 28% are for cereal, and 10% are for fast food (Gantz et al. 2007; see also FTC 2006). The assessment of the impact of food advertising on children has been highly controversial (see, e.g., Ashton 2004). As we note subsequently, the consensus perspective is that food advertising influences young people’s food choices. However, several issues have been raised regarding this conclusion. For example, critics argue that the studies relied on are primarily more than 20 years old and are heavily focused on television advertising (Ashton 2004).²

To be sure, today’s media environment is a different one from that of 20 years ago, and targeted children’s television channels (including Nickelodeon, the Cartoon Network, the Disney Channel, Fox Kids, and others) vastly expand the television offerings that expose children to food commercials. This implies that there is a potentially greater effect of food advertising on young people today than there was

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²Although the age of many of the studies cited is an issue, the basic process associated with a child exposed to a set of commercials is not itself likely to have changed much over time. For example, a more recent study that paralleled previous ones found that preschoolers exposed in the short run to embedded commercials for certain foods were more likely to prefer such foods than were their classmates who were not so exposed (Borzekowski and Robinson 2001).
decades ago. Similarly, there is a considerable array of newer alternative advertising vehicles, including video games (Moore 2006; Stanley 2006), corporate Web sites (Moore 2006), cell phones (Cuneo 2006; Yuan 2006), in-store television networks (Frazier 2005a, b; Hays 2005), and the expanded placement of branded products in television and films (Linn 2004; Vranica and Steinberg 2004). It is likely that advertising in these rapidly growing media adds to the impact of television advertising on youths; thus, the need for research to assess such effects is evident. In contrast, some have speculated that children have become more cynical in processing commercials than they were several decades ago; thus, children may be less vulnerable to advertising and promotional influences. However, evidence from neuroscience concludes otherwise. Adolescents’ reasoning and judgment under cold cognition situations may be almost the equivalent to that of adults. However, in more emotional or volatile hot cognition situations, in which youths often perceive themselves as operating, the development of the brain leaves them at a distinct processing and judgmental disadvantage through the teenage years (Pechmann et al. 2005).

Advertising’s Impact on Youths’ Food Intake

Previous questions aside, recent comprehensive and critical analyses of the available data have attempted to provide a more solid footing for the overall conclusions that have been drawn regarding advertising’s effects on youths (Hastings et al. 2003; McGinnis, Gootman, and Kraak 2006). Relying in particular on the work of Hastings and colleagues (2003), the U.K. Office of Communications (Ofcom) concluded that “advertising has a modest direct effect on children’s food choices” (Ofcom 2004, p. 23). Drawing on the work of both Hastings and colleagues and its own more comprehensive analysis, the IOM (McGinnis, Gootman, and Kraak 2006) concluded that for children aged 2 to 11 (but not adolescents aged 12 to 18), there is considerable evidence that television advertising influences their food and beverage preferences, purchase requests, and short-term consumption patterns.

To some extent, the multiple studies that Hastings and colleagues and IOM review allow for an assessment of the degree of convergence or triangulation (Webb et al. 1966) in the findings across divergent methodologies, particularly in correlational and controlled experimental studies. It is, in part, this sense of convergence that has led both the IOM (McGinnis, Gootman, and Kraak 2006) and Ofcom (2004) to conclude that there is a valid causal relationship between youths’ exposure to food advertising and their food choices and short-term eating patterns. In contrast, evidence on the impact of television advertising on “usual dietary intake” and level of obesity is far more tentative. The typical reliance on correlational studies linking levels of exposure to television advertising and obesity makes it impossible to rule out alternative explanations (e.g., increased sedentary behavior associated with television viewing). Moreover, given the covariation between levels of television viewing and sedentary behavior, any experimental effort to manipulate one without affecting the other would be difficult, if not impossible.

Achieving a Balance: The Advertising of Healthful and Unhealthful Foods

If exposure to food advertising leads youths to select less healthful foods, altering the balance of food messages to which they are exposed may be a useful strategy. This could be achieved either by restricting advertising for unhealthful foods or by enhancing the level of advertising for healthier foods. Seiders and Petty (2004) argue that efforts in the 1970s to use regulatory actions to limit advertising to children failed and likely would fail again. Moreover, given First Amendment issues, the constitutionality of such measures is also difficult to predict (McGinnis, Gootman, and Kraak 2006). Nevertheless, given the rapidly changing U.S. political climate, it is difficult to predict the odds of efforts to regulate food advertising to children. Recently, the FTC subpoenaed 44 major food, beverage, and chain restaurant firms to request their marketing plans for targeting children. The data are intended as input for a report to the Senate (Edwards 2007; Teinowitz 2007).

The Alliance for American Advertising, representing food advertisers, the Grocery Manufacturers Association, the American Association of Advertising Agencies, and the Association of National Advertisers, strenuously opposes efforts to restrict their current promotional efforts legally. In the lead are the three leading advertisers of packaged food to children, General Mills, Kellogg, and Kraft Foods (Ellison 2005a, b).

Instead, 11 leading food companies, which account for more than two-thirds of all food and beverage television advertising (including Kraft Foods, PepsiCo, McDonald’s, Coca-Cola, and Kellogg), have moved forward with voluntary restrictions. They have pledged to devote at least half of their television, radio, print, and Internet advertising directed at children to promoting healthier products and healthier lifestyles. In addition, they have agreed to stop advertising products that do not meet certain nutritional standards to children under 12 (Barnes 2007; Better Business Bureau 2006; McKay and Adamy 2006). Both Kraft and Kellogg have withdrawn their commercials from Channel One, the commercial venture that provides ten minutes of television news each school day to middle and high school students in schools across the country, with paid commercial messages directed to the youths embedded in the newscast (Atkinson 2005).

Can voluntary restrictions result in significant changes in the advertising environment to positively affect the health outcomes for youths? The IOM in the United States has taken a wait-and-see stance on the degree to which significant voluntary restraints are forthcoming and the extent to which they have a meaningful impact before engaging in efforts to develop restrictive governmental regulations (Koplan, Liverman, and Kraak 2005).

Evidence to date of the effects of efforts to restrict or ban food advertising is mixed. For example, in the Canadian province of Quebec, which banned all advertising directed to children, one study found that those most affected by the law reported having fewer children’s sugared cereals in their homes (Goldberg 1990). However, as are most bans, the Quebec ban was far from hermetic, and as a result, getting youths to make healthier choices as a function of their
exposure to fewer advertisements for unhealthful foods may be difficult. Indeed, much of the television that children watch is at a time when adults are watching; as a result, children are likely to be exposed to a considerable amount of food advertisements, regardless of any child-focused television advertising ban (McGinnis, Gootman, and Kraak 2006). This is a reason we consider the value of teaching children media literacy with the goal of increasing their vigilance in processing advertising.

**Developing Alternative Food Messages**

As we noted previously, a way to alter the balance of healthful to unhealthful food advertising seen by youths is to encourage the development of positive food messages either for specific foods or for eating more healthfully in general. In turn, this may have a positive effect on youths’ food choices. This strategy may prove useful because the heavy advertising for sugared snacks, sweetened beverages, and fast-food restaurants (Gantz et al. 2007) may lead to the perception that such foods are consumed even more frequently than is the case. Such a perceived norm could serve to “validate” these foods and beverages in youths’ eyes and encourage them to gravitate toward such choices. Although it remains for research to determine the extent to which this process is operative with foods, there is some parallel evidence that the process is operative with heavy cigarette advertising and its effects on adolescents' smoking initiation (Botvin et al. 1993; Chassin, Presson, and Sherman 1984; Leventhal, Glynn, and Fleming 1987).

Several institutions are working to develop messages that promote the value of eating healthier foods, including the Ad Council, which coordinates its Healthy Lifestyles public-service campaign with the USDHHS Small Steps campaign (Ad Council 2007), and the William J. Clinton Foundation and American Heart Association’s Alliance for a Healthy Generation, which has teamed previously with Nickelodeon and more recently with Channel One to produce and air positive nutritional messages (Clinton Foundation 2007). It is important to evaluate the impact of the efforts on young viewers’ food-related attitudes and behaviors. (Although Channel One no longer carries food-related advertising, about one-quarter of Nickelodeon’s advertising is for food, with the majority of the advertisements—88%—deemed to be for foods of “poor nutritional quality”; Batada and Wootan 2007.)

A considerably more ambitious approach is to develop a center with a mandate to develop national advertising campaigns that promote youths’ healthier eating. Legislation in France could provide the model for funding such an institution. Under a law passed in France in 2004 and put into effect by spring 2007, for television and radio advertisements that deal with food or beverages (other than water), marketers can either add a government-prescribed health message to the advertisement or pay a tax equivalent of 1.5% of their annual advertising budget to the French national institute created to promote healthier eating (Jardine and Wentz 2005). The French center is to be an autonomous, free-standing institution funded by industry and, in that sense, resembles another possible model, the American Legacy Foundation, the Washington, D.C.–based institution that is responsible for an ongoing, nationwide antitobacco campaign targeting youths. The tobacco industry has funded the antitobacco campaign as a function of the tobacco settlement of 1998 between the industry and the attorneys general of 46 states (National Association of Attorneys General 1998).

If the French experience is any example, it is highly likely that the food industry will object strenuously to this approach; however, it may be politically less unpalatable than restrictive regulations of the type that now govern the advertising of foods in the United Kingdom. As of January 2007, all U.K. advertisements for junk foods during television programs targeted at children younger than 16 are banned. Junk foods are understood to mean calorie-dense foods, including those that are high in refined grains, fat, and sugar. The ban also includes advertisements during children’s programs on children’s channels as well as during adult programs that a large number of children watch. The measures include all cable and satellite children’s channels as well as broadcast channels (BBC News 2006).

Among the difficulties in putting these regulations into effect is the challenge of operationally defining unhealthful foods. Many in the food industry maintain that there are no unhealthful foods, only the overconsumption of food. However, of late, some industry players such as Kraft have been able to identify foods that are less healthful and to market them differently. Although the measure may not be perfect, nutritionists appear to be comfortable determining the calorie or energy density of foods per gram, with foods such as chocolate, potato chips, and doughnuts measuring quite high (Drewnowski 2004).

A rationale for an approach that bolsters the presentation of healthier foods in the media is apparent in the comparative advantage of food-processing firms over food growers or their distributors. This advantage is a function, at least in part, of the ability of food-processing firms to more readily package, store, and distribute their products nationally and for long periods. This ability provides the opportunity to develop national branding and, with it, large-scale national advertising and promotion. For these reasons, any large-scale effort to expose consumers (including youths) to a wider, more health-oriented “portfolio” of fruits and vegetables (that may be branded) will likely need some sort of government intervention, by way of subsidies or tax incentives.

**Alternative Food Messages: Education Versus Motivation**

A potential goal for a national center charged with developing messages for healthier foods and for eating more healthfully is to promote research to identify underlying motives that could be used effectively in the messages. Intuitively, the motives most directly implicated are the desire for foods that taste good and for those that are nutritious.

Ellen, Bone, and Stuart (1998) suggest that educating young people about the importance of eating nutritional, healthier foods is unlikely to change their behavior. Nevertheless, given the noncontroversial nature of such messages, they are likely to continue being developed (Seiders and Petty 2004). A primary educational vehicle for communi-
eating nutrition information has been the USDA’s (2005b) food pyramid, which it recently amended to allow for more flexible, individual guidance. However, the new version has been criticized for its ambiguity (Pivonka 2006). Another highly salient educational vehicle promoting healthful eating, the 5 a Day Campaign is also to be changed in favor of “Fruits & Veggies—More Matters,” with the hypothesis that it is simpler, more understandable, and, as a result, more compelling (Harvester Online 2006). Given the uncertainty about the effectiveness of these types of educational change efforts and given that there will likely be considerable investment in disseminating both new messages, it is important to assess responses to them by both youths and their parents. With various levels of cognitive processing abilities, children of different ages likely will respond differently to the new change efforts.

Data that point to the relatively low salience of nutritional information for youths underscore the degree to which relying on such information may be an uphill battle. As we noted previously, taste is critical in motivating restaurant and food choices. Only 27% of students report that health motivates them in making food choices (Shannon et al. 2002), and only 17% of students indicated that the food being “healthy” was “really important” in their selection of a restaurant—the lowest of 13 factors presented to them (Strotman International 2004). Indeed, both children and adolescents tend to believe that taste and the nutritional value of foods are inversely related (Baranowski et al. 1993).

Educational materials about the value of eating healthful foods may represent a necessary but not sufficient element in persuading young people to eat more healthfully. If this is the case, it is important to consider developing messages that combine such information with a strategy that links healthful foods to key youth motives, including (1) the desire to grow up or be older (using the concept of social modeling; Bandura 1977); (2) youths’ desire to make their own decisions, free of pressure from (food) advertisers; (3) fitting in and being accepted by peers (using conformity concepts; Berndt 1979); (4) having fun (using the hedonic concept; Holbrook and Hirschman 1982); (5) saving time (using the concepts of speed and convenience—especially for teens at breakfast; Neumark-Sztainer et al. 1999; Story and Resnick 1986); and (6) a developing concern for others, particularly their families (using the concept of empathy; Steinberg 1993).

Such efforts would do well to model on promotional examples that the food industry provides. For example, the promotional effort for Mars’s Kid-Didits makes the snacks “feel fun and cool for kids and [they] don’t say ‘healthy’ directly which by default implies it tastes terrible” (Thompson 2007, p. 4). The goal is to empower kids using achievement and aspiration themes. In this regard, it is encouraging to note the Disney Corporation’s decision to license and entertain unique characters to promote healthy foods to key youth motives, including (1) the desire to grow up or be older (using the concept of social modeling; Bandura 1977); (2) youths’ desire to make their own decisions, free of pressure from (food) advertisers; (3) fitting in and being accepted by peers (using conformity concepts; Berndt 1979); (4) having fun (using the hedonic concept; Holbrook and Hirschman 1982); (5) saving time (using the concepts of speed and convenience—especially for teens at breakfast; Neumark-Sztainer et al. 1999; Story and Resnick 1986); and (6) a developing concern for others, particularly their families (using the concept of empathy; Steinberg 1993).

The Potential of Counteradvertising

Tobacco Counteradvertising as a Model

Although youth obesity and underage smoking are not analogous problems, at least some lessons may be learned from the American Legacy Foundation’s effective antitobacco Truth campaign (Farrelly et al. 2005). The campaign eschews the typical health- and risk-oriented themes and instead focuses on key youth motivators, including independence and rebellion. The campaign goal is to create an attractive brand identity, “Truth,” in which teens are encouraged to identify with youths who are not opposed to experimenting with tobacco; who are risk takers, dreamers, rebels, and edgy (Evans and Wasserman 2001); and who reject smoking. Thus, a nonsmoking lifestyle is cast as socially desirable and linked to the attractive images typically associated with smokers (Evans et al. 2004).

The campaign portrays the tobacco industry as manipulatively seeking to get teens to smoke and, in so doing, robbing them of their independence. The intent is to tap into a reactance motivation (Brehm and Brehm 1981), thus heightening the youths’ desire for personal control and independence from the tobacco industry. The thematic goals of the Truth campaign have been empirically supported in a study using two-stage structural equation modeling. When known confounders were controlled for, exposure to the campaign was correlated with both the desire to make independent decisions regarding tobacco and positive social imagery about not smoking. In turn, these outcomes were correlated with the likelihood of smoking uptake (Evans et al. 2004). Portraying appealing youths as making their own decisions independently and being drawn to healthful foods is an evident way to parallel the Truth campaign approach.

Soft Drinks as a Potential Target

Given the many types of unhealthful foods produced by a highly diverse industry, it is difficult for counteradvertising with such a broad focus to be effective. However, it has been suggested that, given the volume of soft drinks adolescents consume, the category could and should be the focus of any counteradvertising campaign (Marchione 2006). Almost three-quarters (73%) of adolescent boys and 62% of adolescent girls reported that they consumed carbonated soft drinks (primarily regular/sugared) on any given day. Those who consume soft drinks obtain 10% to 11% of their total energy intake from such drinks (French, Lin, and Guthri 2003).

A meta-analysis of 88 studies found a clear association between soft drink consumption and increased energy intake and body weight. Experimental studies controlling for various extraneous variables yielded the strongest rela-
tionship between soft drink intake and body weight, with a moderate effect size ($r = .24$; Vartanian, Schwartz, and Brownell 2007). For example, a recent 25-week experiment provided diet sodas to half a set of teens for them to substitute for sugared sodas or beverages. Those who received the diet sodas reduced their consumption of sugared drinks by 82%. The heaviest among the teens (those in the top one-third of BMI scores) experienced significant reductions in their BMI (Ebbeling et al. 2006). Although the evidence linking consumption of soft drinks and youth obesity is growing, the sponsorship of any campaign targeting soft drinks would be an issue, likely limited to advocacy groups.

**Place**

The ready availability of tasty, healthful foods at a reasonable price is critical in the effort to address obesity. In this section, we consider the retail providers of food, from supermarkets with their wide offerings but uneven geographic distribution to omnipresent convenience stores that particularly attract youths. We also consider restaurants, both fast food and full service, and schools, in which youths consume a considerable portion of their caloric intake.

**Supermarkets**

To date, public health efforts focusing on supermarkets have typically involved generic campaigns both in the media and at the front of stores with broad appeals to buy healthier foods. The most extensive of these, the California 5 a Day—for Better Health! statewide campaign, lasted three years and resulted in no significant increase in fruit and vegetable consumption (Foerster et al. 1995). Given the aisle-by-aisle, product-by-product nature of consumer decision making in supermarkets, campaigns should perhaps mirror this pattern. Such campaigns would require heavy, product-focused industry support.

In comparison with smaller grocery and convenience stores, supermarkets tend to offer a greater variety of healthier foods (Horowitz et al. 2004) at lower cost (Chung and Myers 1999; Mantovani et al. 1997). As such, it is problematic that supermarkets are less prevalent in low-income neighborhoods (Morland, Wing, and Roux 2002; Morland et al. 2002). A recent study documented the extent of this imbalance using the Dun & Bradstreet MarketPlace (2005) database. The software, which incorporates Standard Industrial Classification data associated with 28,050 zip codes, was used to generate the list and location of supermarkets nationwide. Income and racial/ethnic data were drawn from the 2000 census data and linked to the MarketPlace data. Low-income neighborhoods had only 75% as many chain supermarkets as middle-income neighborhoods. Even after income and other covariates were controlled for, African American neighborhoods had only 52% as many chain supermarkets as white neighborhoods, and Hispanic neighborhoods had only 32% as many chain supermarkets as non-Hispanic neighborhoods (Powell et al. 2007).

By providing tax incentives to induce supermarkets into lower-income neighborhoods, the government could help provide lower-income consumers with more, healthier food options at lower prices. Various state and municipal government programs now target certain lower-income urban areas and provide various incentives for industry to invest in those areas (e.g., the New York State Empire Zones Program; New York State Department of Labor 2006). The Robert Wood Johnson Foundation has contributed to the Food Trust to persuade supermarket operators to return to poor neighborhoods (Strom 2007). Wal-Mart is a company with a food chain that has taken advantage of such incentives. Although many support this policy, others have criticized it, in part because it tends to displace family-owned groceries already in the neighborhood (Leroy 2005).

**Convenience Stores**

Nationally, three of four teenagers shop at a convenience store at least once a week, staying an average of ten minutes per visit, or twice as long as adults; one-third of teenagers stop in at least two or three times a week (Chanil 2002). A healthier array of snack foods made prominently available in convenience stores might influence young people’s diets for the better. Efforts are afoot to place single-serving precut and bagged fruits and vegetables in convenience stores. This provides an opportunity to systematically assess the potential for these products, supported by effective in-store placement and promotion, to lead to healthier food choices by youths. Given the centrality of convenience stores for adolescents, this could be a very valuable strategy.

A study of unplanned or impulse purchases as a percentage of total sales for selected categories at convenience stores (by both adults and youths) indicated that sweet snacks (52%), candy/gum/mints (40%), and salty snacks (38%) were the three highest categories (Point of Purchase Advertising International [POPAI] 2002a, b). Convenience stores are the heaviest users of in-store point-of-purchase promotions (POPAI, n.d.). Such in-store programs, together with the prominent positioning of products such as sodas, sweets, and candy, likely have much to do with the programs’ level of success in convenience stores.

Last, although no national picture is available, two studies, one in New York City and the other in Los Angeles and Sacramento, indicate that the limited number of healthful foods typically available in convenience stores and smaller groceries may be even more limited in lower-income neighborhoods (Horowitz et al. 2004; Jetter and Cassady 2006).

**Restaurants**

Portion size contributes to obesity. Restaurants have widely used “super-sizing” (i.e., increasing the size of food items such as french fries and soft drinks for a partial price increase) as a competitive strategy, which has been well received (Hayes and Huffman 1995; Jeitschko and Pecchenino 2006). Because such “super-sized” foods tend to load consumers up with unnecessary levels of fats, cholesterol, and calories, consumer groups have pressured for their termination, and a few chains, such as McDonald’s, have complied (Center for Science in the Public Interest 2004).

Initial research shows that it is important to persuade restaurants to use smaller containers and plates. Whatever consumers may know cognitively with regard to appropriate food portions, they tend to eat what is on a plate (or to fill the plate and then eat what is on it). This tendency begins as early as five years of age (Rolls, Engell, and Birch 2000). A recent field experiment found that providing
people with a larger (rather than smaller) bowl or serving spoon induced them to unknowingly serve themselves relatively more ice cream (Wansink, van Ittersum, and Painter 2006; see also Wansink 2006). The subtle suggestiveness of this process appears to make it critical to educate people as to its operation. Unfortunately, the results of one study suggested that even warning people of this bias was not successful (Wansink, van Ittersum, and Painter 2005). The researchers concluded that it is more effective to adopt the concrete step of using smaller plates and utensils. The challenge remains to convince restaurants to adopt smaller serving sizes and to educate consumers about the serving-size effect. Relatedly, and more cognitively, countering the sometimes-subtle but sometimes-not-so-subtle idea of “more (food) for your money” is a challenge as well.

These concerns have become more critical, as out-of-home eating has become an increasingly prevalent phenomenon, with Americans spending almost half (47%) of their food dollars on meals and snacks outside the home (Stewart et al. 2004). From the 1970s to the 1990s, children and adolescents increased their intake of calories from fast food from 2% to 10% (Guthrie, Lin, and Frazao 2002). A study in the Chicago area that documented a disproportionate number of fast-food outlets near schools suggests the need to assess this factor more broadly (S. Bryn Austin et al. 2005).

Introduction of Healthier Foods

Changing the portfolio of products the fast-food industry sells so that it offers more, healthier foods appears to call for both upstream and downstream marketing efforts. Such efforts would involve upstream encouragement of fast-food chains (and other restaurants) to improve the nutritional quality of their foods and to promote the healthier choices. Efforts to date have been mixed, as some fast-food chains have pursued this path more aggressively and/or successfully than others (Gray 2006; MacArthur 2005a, b). Efforts should also involve downstream encouragement and persuasion of youths and parents to opt for the healthier offerings more often. Without this positive consumer reaction, efforts to encourage a wider, healthier array of food offerings in restaurants would have difficulty succeeding.

Changing food choices in fast-food restaurants is an important goal. Although correlational data need to be interpreted with caution, the frequency of adolescents’ eating at fast-food restaurants is positively associated with the total number of calories they consume, the percentage of calories they consume from fat, and the number of daily servings of sodas and french fries they eat and is negatively correlated with their consumption of fruits, vegetables, and milk (French, Story, et al. 2001).

In-Restaurant Promotion and Signage

Simply introducing healthier foods is unlikely to be sufficient; restaurants must promote them as heavily as they do their less healthful menu items. The extent to which promotion is effective in expanding the market for healthier food options, either in its own right or in interaction with other factors, needs to be tested. Signage and menu descriptors are critical because what consumers actually “taste” is, at least in part, a function of how products are labeled and advertised. In one experiment with adults, the same lunch meals were sold in a cafeteria but labeled differently on different days. For example, on some days, one such meal was identified as “Succulent Italian Seafood Filet,” but on other days, it was labeled merely as “Seafood Filet.” Those who bought and ate the foods when they were described in an embellished way reported that the foods were more appealing to the eye and tasted significantly better and that after eating the meal, they felt more comfortably full and satisfied (Wansink, van Ittersum, and Painter 2005). This strategy bears testing with youths.

At present, the FDA does not have regulatory authority to require nutritional displays in restaurants (Mathews and Leung 2003). The pending Federal Menu Education and Labeling Bill would require restaurant chains with 20 or more outlets to display calorie, fat, and sodium information. Concerned about costs, full-service restaurants have lobbied against the bill, as they routinely change their menus and the recipes for given items on the menu (Gray and Brat 2005). New York and Seattle have mandated the prominent display of nutrient and calorie information for all restaurants in the city that serve standardized meals and have published their calorie content—primarily fast-food outlets (Adamy 2006a, b). Washington, D.C., and other cities may follow suit (Squires 2007a). Perhaps hoping to avoid this type of public policy move on a broader scale, McDonald’s is to provide extensive nutrition information on the packaging of most food items in its stores worldwide. Although some critics consider the move inadequate, it is a useful experiment (Warner 2005a).

Schools

As a unique channel in the food-distribution system, we consider schools in some detail, examining the influence of in-school product, price, and promotion factors on children’s food choices. The subsequent evidence suggests that altering the array of foods presented to children in schools can have a significant effect on their choices. The passage of the Child Nutrition and WIC Reauthorization Act has required school districts that participate in the federal meal programs structure to meet increased wellness guidelines by the 2006–2007 school year (Government Accountability Office [GAO] 2005). The guidelines target the array of foods provided by school breakfast and lunch programs and those in vending machines, as well as the level of physical activity in which the children engage. Researchers will need to assess (1) the extent to which the new law succeeds in altering the array of foods in the school so that more, healthier options are made available; (2) the effects of such an altered array on young people’s food choices; and (3) the effects on observed levels of obesity.

The opportunity and challenge is considerable: Most schools offer the federally funded National School Lunch Program and School Breakfast Program. On an average school day, approximately 60% of children in such schools participate in the lunch program and approximately 37% participate in the breakfast program (Fox et al. 2004). Twenty percent of middle schools and high schools have contracts with fast-food restaurants (Wechsler et al. 2001). Two-thirds of elementary schools and approximately nine in ten middle and high schools have à la carte foods for sale.
Given that most à la carte foods are relatively high in fat and/or sugar and low in nutritional value, it is not surprising that in one research study, the availability of à la carte items was negatively related to students’ consumption of fruits and vegetables and positively associated with total fat and saturated fat intake (French et al. 2003; Kubik et al. 2003).

Product Assortment and Quality

Two government pilot programs have been introduced with the goal of increasing the availability of fruits and vegetables in schools. The 2002 farm bill provided $6 million for the Fruit and Vegetable Pilot Program to distribute fresh and dried fruits and fresh vegetables to elementary and secondary schools. The Department of Defense’s Fresh Produce Program has the same goal. The schools themselves have also begun to incorporate produce from school gardens and farmers’ markets to improve the array of fruits and vegetables available to students at lunchtime (McGinnis, Gootman, and Kraak 2006; Waters 2006).

The strategy of placing more fruits and vegetables in salient locations in the cafeteria and in vending machines is, at least in theory, a relatively simple one and deserves extensive testing. There is conflicting preliminary evidence as to how well the strategy works. In one study, increasing the availability of a broader range of healthier à la carte foods for high school students (supported by student-led schoolwide promotions) led to significant increases in sales of the targeted foods (French et al. 2004). However, a second study increasing the availability of fruits, juice, and vegetables as part of schools meals for elementary school students showed only marginal increases in the selection of fruit and none for vegetables or juice (Perry et al. 2004). A possible reason for the differences in outcomes between the two studies is that, in the latter study, the produce came not unbundled, as in French and colleagues’ (2004) study, but as a package with the school meal (French 2007).

The taste of the healthier foods offered is a critical factor as schools struggle to implement the requirements of the Child Nutrition and WIC Reauthorization Act. With that in mind, efforts are afoot to work with school-based food preparers to help them improve the nutritional quality, appearance, and taste of school meals (Center for Advancing Nutrition and Activity 2006).

Over time, pressure has been building for stricter regulation of soft drinks and high-fat and sweetened snacks in the schools. This has led major beverage firms to agree to halt sales of sugared sodas in schools and to limit the size and calorie content of other beverages sold (McKay 2006). This is a good example of the effectiveness of influence from (1) downstream to upstream units and (2) alliances operating horizontally. Downstream, parents are key among those pressuring the schools for change, whereas the midstream-operating Clinton Foundation and American Heart Association made arrangements with the beverage companies (McKay 2006).

These changes will need to be traced to determine whether they have the intended effect or whether youths find alternative channels (e.g., nearby convenience stores) to maintain their pattern of beverage choices. The potential for change is considerable, given that in 2003–2004, almost half of elementary schools and approximately nine in ten middle and high schools had vending machines; in addition, 30% of elementary schools, 65% of middle schools, and almost 75% of high schools had exclusive beverage contracts (GAO 2005).

Price

With limited discretionary spending, it might be anticipated that youths are fairly price sensitive in their food purchases in school. Preliminary evidence suggests that lowering the cost for fruits in schools increases student demand, but less so for vegetables. When the price of fresh fruit, baby carrots, and salads in two high schools was reduced by 50%, sales of fruit increased fourfold and carrot sales increased by about twofold; there was no significant change in the sales of salads (French et al. 1997). Similarly, when researchers manipulated the price of low-fat snacks in vending machines over two years in 12 high schools and 12 worksites, price reductions were associated with increases in low-fat snack sales (French, Jeffrey, et al. 2001).

Promotion Through In-Class Curricula: Media Literacy

Although schools do not necessarily view themselves as involved in promotion, they do engage in change efforts. The most prevalent of these efforts have used health education and prevention-based curricula but have not been very successful (French and Stables 2003). Media literacy is a different approach. As we noted previously, efforts to shield youths from advertising for high-fat and sugared foods and beverages, whether through voluntary restrictions or regulations, are likely to be partial at best. As such, there has been a growing sense that if youths can be made more media literate, their increased vigilance in processing the food and beverage commercials to which they are exposed would protect them. School educators appear to be receptive to the concept (Gonzales et al. 2004; Sallis 1993), and at least on the basis of preliminary tests, the approach seems to hold some promise. Three experimental interventions, two that focused on tobacco advertising (Erica W. Austin et al. 2005; Gonzales et al. 2004) and another on alcohol advertising (Goldberg et al. 2006), suggest that this approach may be effective.

Conclusions

Thanks in part to analyses by Nestle (2002) and Brownell and Horgen (2004), as well as several reports by the IOM and government agencies, youth obesity is now viewed as a major societal and, indeed, worldwide health problem (World Health Organization 2005). It is understood that the problem has been shaped in some measure by the marketing efforts of the food industry and that the help of this same industry is needed to ameliorate the problem. The focus on the problem appears to be ongoing, with a consistent stream of new initiatives introduced by government, industry, and nongovernmental organizations. Only recently did the Robert Wood Johnson Foundation announce a $500 million commitment over the next five years to fight child obesity (Strom 2007). The 2007 USDA farm bill is unusual in its focus on the same issue, with a proposal to spend $500 million over ten years or $50 million per year for the purchase.
of additional fresh fruits and vegetables for use in the federal school lunch and breakfast programs (USDA 2007).

**Prioritizing Private and Public Actions in Addressing Youth Obesity**

We subsequently use Hoyer and MacInnis’s (2004) motivation, opportunity, opportunity framework to help prioritize actions in both the private and the public sectors that are being undertaken or that might be undertaken to address the problem of youth obesity.

**Opportunity: Availability of and Access to Healthful Foods**

To succeed in changing youths’ diets, the availability of healthier foods is a key first step. The opportunity for adults or children to choose healthier foods is plainly limited if the foods are not available. Without access, generating the motivation or ability to seek out healthful foods is relatively pointless (and frustrating). Research shows that simply making foods (healthful or unhealthful) available in the home is a strong predictor of what children will eat. Similarly, in schools, making fruits, vegetables, and other appealing healthier foods available and prominently placed (on the cafeteria line or in vending machines) encourages youths to choose them.

The Child Nutrition and WIC Reauthorization Act has mandated that schools provide healthier foods. The USDA’s (2007) farm bill proposes that schools be required to bring their menus into compliance with USDA dietary guidelines (Squires 2007b). Putting real “teeth” to the Child Nutrition Act seems to be critical. As we noted previously, both the Department of Defense and the USDA have current programs to increase the supply of fruits and vegetables to schools. The 2007 farm bill proposes substantial increases in funding support for this initiative. The successful growth of such programs could prove helpful. Evaluating their effectiveness in improving children’s diets will be useful.

As we discussed previously, the opportunity for residents of lower-income neighborhoods to find fruits and vegetables at reasonable prices is constrained because of the reduced numbers of supermarkets in their neighborhoods. However, there exist state investment incentives that attempt to interest industry, including supermarkets, to enter such neighborhoods, and the Robert Wood Johnson Foundation has contributed to this effort. Should such incentives succeed, it will be important to assess how much of a change in purchase and eating habits occurs in lower-income neighborhoods when they manage to secure a supermarket.

**Motivation**

Efforts to increase the consumer’s motivation to seek out healthful foods cannot lag far behind efforts to make the foods more available. Healthier food options that go begging on school cafeteria lines, in restaurants, and in supermarkets would soon be scaled back or terminated. How best should motivation be generated? For an answer, it is worthwhile to look to the themes employed by food companies, in which the profit motive demands a relatively immediate and positive response by consumers. The motives typically tapped are those that are central to youths: Foods are portrayed as fun and are shown vividly and as tasting good (Gantz et al. 2007); given that nutrition is perceived to be negatively correlated with taste, relatively little is said about it. In comparison, the current Small Steps campaign, sponsored by the USDHHS and the Ad Council, features appealing children but static and relatively unappealing portrayals of the focal foods.

Tapping into a different motivation, the teaching of media literacy is intended not simply to give children an understanding of how media and advertising operate but, more important, to motivate them to be more vigilant in regard to the advertising targeted at them. Because youths are likely to remain exposed to messages for less healthful foods, schools should be encouraged to develop appropriate media literacy programs. These efforts can build on programs that have successfully focused on alcohol and tobacco advertising. This field is a relatively new one, and monitoring the effectiveness of various approaches would be valuable.

Promotions that motivate healthful food choices are equally important in venues such as restaurants—simply increasing availability is likely not enough. It is a challenge for food-processing firms and restaurants to consider whether they can produce and provide healthier foods at a profit. However, part of the problem involves stimulating demand for the products. For restaurant chains, this means not only placing healthful options on the menu but also actively promoting them both on the premises and in the media. A recent flyer for McDonald’s had two-for-one coupons for sandwich items but not salads. (It would be interesting to assess the degree to which sales of apple slices at McDonald’s would jump if customers encountered the smell of apples rather than fries as they entered the restaurants.)

Although promotions are likely to increase customers’ interests in healthful foods made available in restaurants, in the home, parents’ exhortations or other forms of promoting healthier foods tend to backfire. The most successful motivator is the parents’ modeling behavior and the accessibility of the healthier foods.

The nutrient and calorie labeling now on packaging as a result of the NLEA is a good example of the need to generate consumer motivation and not just provide the opportunity or access to information. The evidence suggests that most consumers tend not to process these labels or, if they do, tend to use simplifying heuristics. As cognitive misers, they find the information overly complex. Recognizing this, food companies have been successful in offering consumers simplifying solutions, including PepsiCo’s Smart Spot and Kraft’s, General Mills’s and others’ 100-calorie snack packages. Government efforts to adapt the current NLEA labels will need to recognize these dynamics. Suggestions such as including the average nutrient values for the relevant product category or incorporating the USDA Healthy Eating Index could increase the use of nutrient and calorie labeling and should be assessed.

New York City and Seattle are requiring restaurants to give customers the ability to evaluate the caloric and nutritional values associated with the foods they order in a prominent and timely manner. To the extent that other
major cities follow suit, this could be an important step nationally. Much as with the calorie and nutrient labels on packages, research needs to be conducted to help determine the best way to provide restaurant patrons with this information so that they will be motivated to process it and use it in guiding their food choices.

**Ability**

Ability refers to the necessary resources, including money, time, and product knowledge, that consumers need to pursue positive, healthful eating habits. To what extent can the prices of fruits and vegetables be lowered to enable more low- and middle-income consumers to buy them? In the 2007 farm bill, the USDA proposes a significant shift in its commodity support program—largely from its historical support for grains to vastly increased support for produce growers (Squires 2007b). Although this may be politically difficult to achieve, should increased support for produce growers be forthcoming, to what extent would subsidies trickle down to consumers in the form of more affordable produce? Research that provides a greater understanding of the economic structure of the food industry and the resultant cost structure for food would be useful.

Time, or the lack of it, is another critical resource that contributes to problematic dietary choices. That working mothers and dual-career families have less time for in-home food preparation is an important factor that has led Americans to consume almost half of all foods outside the home. These foods, especially in fast-food outlets, tend to be less nutritious. Any remedy that ignores this critical time constraint is bound to fail. One such failed effort was a USDA guide that was intended to help mothers choose and prepare low-cost healthful foods in the home. Unfortunately, the preparation time for the meals presented as part of this plan was estimated at an average of 16 hours per week, whereas the estimated time that a working mother realistically has to prepare meals was just 6 hours (Rose 2004). In retrospect, any effort to engage working mothers with the goal of increasing the number of meals prepared inside the home must acknowledge severe time limitations.

The same time limitations on working mothers and dual-career families may encourage the food industry to use the successful upscale Lean Cuisine or Healthy Choice lines of frozen foods as a model to appeal to working-class consumers. However, developing a healthful and appealing product line to serve a working-class family of five at a feasible price point that still leaves the company with a reasonable profit margin may prove a fairly tall order. Motivating consumers to purchase the product is a remaining issue.

Finally, although some may argue that most people know that fruits and vegetables are healthful choices, how these foods fit into an overall diet is less clear to many. To that end, the educational approach inherent in the (new) food pyramid, developed by the USDA and typically reviewed in schools, can be considered a necessary, if limited, step to enable young people to understand how to construct a healthful diet. Although the new food pyramid has the flexibility to be individually tailored, the argument that this comes at the expense of increasing its ambiguity deserves testing. Furthermore, determining how the pyramid (as a necessary but not sufficient instrument) might be used most effectively in conjunction with other change efforts would be an important research contribution.

**Conflicting Goals**

Although various actors and institutions are now taking innovative steps, there are many conflicting goals that represent serious constraints. For example, although the USDA has developed programs that underscore the value of eating fruits and vegetables, as we have noted, farm bill subsidies in general have not supported this goal.

Schools face a financial challenge on the cafeteria lines because students are attracted to the less healthful but profitable à la carte foods; in 2004, 30% of high schools generated more than $125,000 through à la carte and vending machine sales (GAO 2005). Paradoxically, schools use the à la carte revenues in part to help pay to improve the nutritional quality of government-mandated meals, given the level of funding for the latter (GAO 2005).

A goal of the NLEA was to stimulate the promotion of healthier fruits and vegetables, which is minuscule compared with promotion for less healthful processed foods. However, it is argued that the strictures the law has placed on food advertisers have had the opposite effect. Post-NLEA, there has been a significant reduction in the amount of advertising for fruits and vegetables, and orange juice advertisements are practically the only place where health claims are still seen (Ippolito 2003).

Although the major beverage firms have agreed to move sweetened carbonated drinks out of schools, many substitutes (e.g., sport drinks, orange juice, diet soda) do not meet nutritional purists’ goals. Both the beverage firms and the school administrators, fearing a loss of revenues, are eager to induce children to expend the same amount of money on these somewhat-healthier options. The question of moderation, balance, and incremental change is an inherent part of the discussion. In this regard, the most recent IOM report requested by Congress concluded that federally reimbursable school nutrition programs should be the main source of nutrition at school (Stallings and Yaktine 2007). Access to à la carte foods in school vending machines and cafeterias should be strictly limited; furthermore, à la carte foods that are made available should be limited to nutritious fruits, vegetables, whole grains, and nonfat or low-fat milk and dairy products, as consistent with the USDA’s 2005 Dietary Guidelines for Americans. High-fat and high-sugar foods such as potato chips and ice cream would be eliminated. In high schools, after-school access to pretzels and caffeine-free diet sodas would be permitted but not to sport drinks (see also Zhang 2007).

For restaurant chains such as McDonald’s, although the relative profitability of healthier offerings such as salads may be questioned, another perspective involves how McDonald’s or others define profit. As Andreasen (2006) points out, longer-term definitions of corporate profitability often involve some investment in corporate responsibility. Healthier foods may be more readily defined as profitable to the extent that their value to the firm lies partially in protecting its long-term position. Salads help McDonald’s sell the proposition that it offers the potential of a healthy balanced diet over time, if not at every meal, thus protecting its long-term position in the marketplace in the face of the cur-
rent pressure for healthier foods (the validity of this argument remains to be tested).

The federal government is still more likely to produce nutrition education programs than truly promotional campaigns that tap into key youth motives, but the latter would represent a useful contribution. The partnership between the USDA and the Ad Council to produce messages touting healthful foods for youths is a positive step in this regard. The creation of the National Center for Health Marketing within the Centers for Disease Control and Prevention (CDC; 2005) represents a significant opportunity for the federal government’s health programs, including efforts to combat obesity, to incorporate the marketing perspective. Finally, the partnerships between the nongovernmental organization Alliance for a Healthy Generation and the private-sector Nickelodeon and Channel One offers another opportunity to encourage the effective use of the media in promoting healthier diets for children.

This article calls attention to the complexity and multiple determinants of children’s and adolescents’ dietary patterns, which, together with parallel issues related to inadequate levels of physical activity, contribute to the current problematic levels of obesity. As the Florida school case discussed initially shows, improving children’s dietary intake is fraught with difficulties, and potential failure lurks around every corner. Many are now addressing the problem, and no doubt, the free market system and innovative players in that system will contribute to the solution. However, there are many pieces to the puzzle, and some stand in conflict with one another. In such circumstances, there is a need for coordination and oversight so that no critical piece falls between the cracks.

For all its possible negative connotations, a food czar charged with oversight, coordination, and consideration of conflicting goals may help with the solution. Given that the USDA, the FDA, and the CDC all have jurisdiction over food, comprehensive oversight calls for the role or office to be superordinate to these and other agencies. Because youth obesity is a pressing issue of national concern, the office might be housed in the executive office of the president, as is the Office of National Drug Control Policy, headed by the national drug czar.

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